

MURATA PRODUCTS

Lineup 2021



2021 MURATA PRODUCTS Lineup

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Capacitors

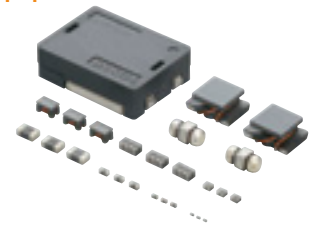
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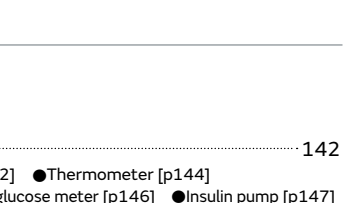
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Capacitors

The most comprehensive product lineup in the industry, providing ideal solutions, responding to all possible requirements.

Summary

Using Murata's unique ceramic material technology, we offer a wide lineup of products. Murata also offers technical support that includes design kits and a comprehensive set of software tools to simulate virtually any circuit condition, satisfying the demands of many applications. We are also expanding our lineup of products that use non-ceramic dielectric materials, such as silicon capacitors, to support various applications.

Lineup

- Ceramic Capacitors (SMD, lead type)
- Polymer Aluminum Electrolytic Capacitors
- Single-Layer Microchip Capacitors
- Thin Film Circuit Substrates (RUSUB) ●Variable Capacitors
- Silicon Capacitors ●Film Capacitors



<https://www.murata.com/en-global/products/capacitor>



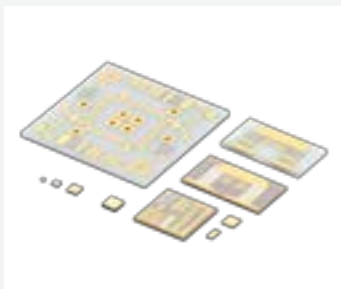
Ceramic Capacitors

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Murata offers the No. 1 most abundant lineup in the industry, responding to all possible needs, and proposing ideal solutions.

Polymer Aluminum Electrolytic Capacitors

These are high-capacity capacitors that are characterized by a low profile and low ESR. They handle the stabilization of voltage in circuits where serious voltage control is demanded, and contribute to the advanced features in customer products.



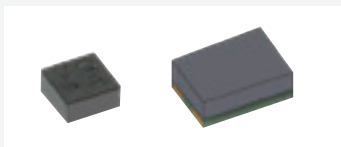
Single-Layer Microchip Capacitors

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Simple single-layer structure provides very reliable performance and excellent frequency characteristics. A wide selection of sizes from 0.25mm square enables the miniaturization of the circuit and higher density.

Thin Film Circuit Substrates (RUSUB)

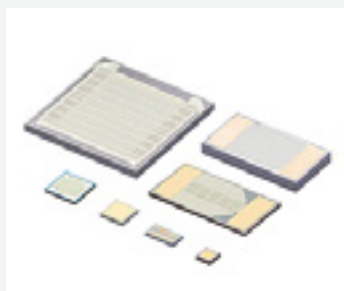
RUSUB technology combines capacitor and thin film resistor in one chip. Custom specifications (dimensions, capacitance values, etc.) are also available upon request.



Variable Capacitors

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Variable capacitors can carry out the variable of the capacitor by adjusting the tuning voltage. They are designed for frequency matching use for HF band (13.56MHz).



Silicon Capacitors

p36

Murata High-Density Silicon Capacitors are based on a MOS Semiconductor technology and utilize a 3D structure that substantially increases their performance and enables compact design. Silicon Capacitors offer small size and low thickness, superior reliability, and stability over high temperatures and high frequencies. They are the ideal choice for all demanding markets, such as Networking (RF Power and Broadband), Medical (Implantable devices), Automotive, or High-Reliability applications. Murata can provide customized Silicon Capacitors or Integrated Passive Devices (IPDs) to optimize your design.



Film Capacitors

p42

The FH series uses materials with high heat resistance. Therefore, it has a higher allowable ripple current under a higher temperature environment than conventional PP film capacitors.

This feature is more prominent in the high-frequency range. For example, when the ambient temperature is at 105°C, the PP film capacitors would be already at its limit for allowable ripple current, but because of the higher heat resistance of the FH series, the allowable ripple current can be increased drastically.

WEB Product Search Engine

<https://www.murata.com/search/productsearch?cate=cgsubCeramicCapacitors>

You can search for products in a variety of ways, including part number, specifications, and lineup.

1 Search by Part Number

You can search for capacitors by specifying the alphanumeric characters in the part number. The packing codes shown contain the substitute character "#". If you enter the official packing code, part numbers that contain that packing code will be matched.



2 Search by Specifications

You can search for SMD or lead type capacitors by indicating specifications such as application, capacitance, rated voltage, or temperature characteristics.

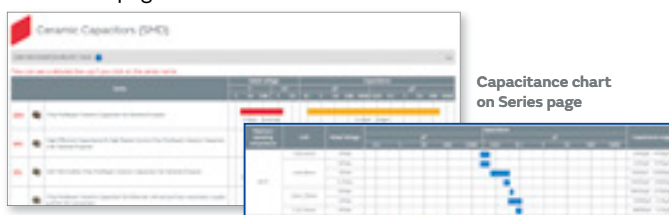
You can narrow your search by entering values of ranges, and by specifying product characteristics. The items for narrowing searches are linked, so specifying one condition causes selectable options for the other items to allow input only of conditions that match the relevant part numbers.



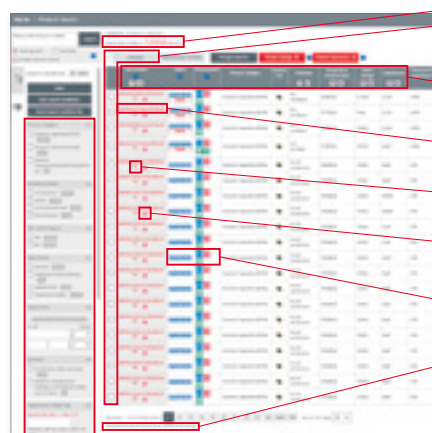
3 Search in the Lineups

You can search for capacitors by specifying the series lineup.

You can also confirm items such as characteristics and applications on each series page.



Search results



Displays the number of hits for the current search conditions in real time.

Compares the characteristics of the checked ☒ part numbers.

Click the ▲ mark for each item to switch between ascending and descending display.

Click a product name to display a details page listing more in-depth information.

You can download detailed spec sheets.

For some products it is possible to request a free sample.

Icons enable you to check the status and characteristics of products at a glance.

You can confirm the current conditions for narrowing the search results.

You narrow the search results to match the selected condition in real time.

Ceramic Capacitors, Polymer Aluminum Electrolytic Capacitors

Ceramic Capacitors, Polymer Aluminum Electrolytic Capacitors

Icons

	For applications that do not require a particular reliability, such as general equipment.
	Infotainment for Automotive Products for entertainment equipment like car navigation, car audio, and body control equipment like wipers and power windows.
	Powertrain/Safety for Automotive Products used for applications (running, turning, stopping, and safety devices) that particularly concern human life, such as in devices for automotive.
	Medical-grade products for Implanted Medical Devices These products are intended for use in implanted medical devices such as cardiac pacemakers, cochlear implants, insulin pumps, and gastric electrostimulators. They are suitable for use in non-critical circuits.*1 *1 Non-critical circuits This term refers to circuits in implanted medical devices that are not directly linked to life support, i.e., circuits that will not directly endanger the life of the patient should the functionality of the device be reduced or halted by failure of the circuit.
	AEC-Q200 compliant product
	Products that acquired safety standard certification IEC60384-14.
	Products that are based on the Electrical Appliance and Material Safety Law of Japan.
	Low dissipation for high frequency By devising ceramic materials and electrode materials, low dissipation is achieved in frequency bands of VHF, UHF, and microwave or beyond.
	Low inductance This capacitor is designed so that the parasitic inductance component (ESL) that the capacitor has on the high frequency side becomes lower.
	Product resistant to deflection cracking This capacitor is designed to prevent failures as much as possible by short mode caused by cracking when there is board deflection.
	Product with solder cracking suppression This capacitor is configured with metal terminals and leads connected to the chip. The metal terminals and leads relieve the stress from expansion and contraction of the solder, to suppress solder cracking.
	Product suitable for acoustic noise reduction and low distortion This product suppresses acoustic noise, which occurs when a ceramic capacitor is used, by devising the materials and configuration.
	No DC bias characteristics Polymer capacitor is no capacitance change with DC bias due to aluminum oxidized film for dielectric.
	Low-inductance product suitable for noise suppression This product has extremely low ESL and is suitable for suppression of noise, including high frequencies.
	Product for bonding Since gold is used for the external electrodes, the capacitor can be mounted by die bonding/wire bonding.
	Limited to Conductive Glue Mounting Since silver palladium is used for the external electrodes, the capacitor can be mounted by conductive adhesive.

Ceramic Capacitors, Polymer Aluminum Electrolytic Capacitors

Product Lineup

For general			
General	SMD		
	Solder mounting		
	Chip type		
	GRM		p6
	GR3	Low acoustic noise	High effective capacitance & high ripple current p8
	GRJ	Deflecting crack	Soft termination p8
	GR4		For information devices only p9
	GJM	High Q	p9
	GQM	High Q	p10
	GA2	Japanese Safety Law	Based on the Electrical Appliance and Material Safety Law of Japan p10
	GA3	Safety standard	p10
	LLL	Low ESL	LW reversed p11
	LLA	Low ESL	8 terminals p12
	LLM	Low ESL	10 terminals p12
	LLR	Low ESL	LW reversed controlled ESR p12
	NFM	Low ESL EMI Filter	3 terminals p12
	GJ4	Low acoustic noise	Low distortion p13
	On interposer board		
	ZRA	Low acoustic noise	p13
	ZRB	Low acoustic noise	p13
	Metal terminal type		
	KRM	Low acoustic noise Deflecting crack Soldering crack	p14
	KR3	Low acoustic noise Deflecting crack Soldering crack	High effective capacitance & high ripple current p14
	Resin molding SMD type		
	DK1	Safety standard	p30
	Polymer Aluminum Electrolytic Capacitors		
	ECAS	Low acoustic noise Deflecting crack Effective Cap	p31
	Wire bonding mounting		
Bonding	Chip type		
	GMA	Microchip	p14
	GMD		p15
	Lead type		
	Solder mounting		
	RDE	Low acoustic noise Deflecting crack Soldering crack	p24
	DE1	Safety standard	X1/Y1 Class certified product p26
	DE2	Safety standard	X1/Y2 Class certified product p27

Infotainment for automotive			
Infotainment	SMD		
	Solder mounting		
	Chip type		
	GRT		p15
	NFM	Low ESL EMI Filter	3 terminals p17

Powertrain/Safety for automotive			
Powertrain	SMD		
	Solder mounting		
	Chip type		
	GCM		p17
	GC3	Low acoustic noise	High effective capacitance & high ripple current p18
	GCJ	Deflecting crack	Soft termination p19
	GCQ	High Q	p20
	GCD	Deflecting crack	MLSC design p20
	GCE	Deflecting crack	Soft termination MLSC design p20
	LLC	Low ESL	LW reversed WEB p20
	NFM	Low ESL EMI Filter	3 terminals p20
	Metal terminal type		
	KCM	Low acoustic noise Deflecting crack Soldering crack	p21
	KC3	Low acoustic noise Deflecting crack Soldering crack	High effective capacitance & high ripple current p21
	KCA	Safety standard Low acoustic noise Deflecting crack Soldering crack	p21
	Limited to Conductive Glue Mounting		
	Chip type		
	GCB	Deflecting crack Soldering crack	Ni plating + Pd plating termination conductive glue mounting p22
	GCG	Deflecting crack Soldering crack	AgPd termination conductive glue mounting p22
	Lead type		
	Solder mounting		
	RCE	Low acoustic noise Deflecting crack Soldering crack	p28
	RHE	Low acoustic noise Deflecting crack Soldering crack	150°C operation leaded p29
	RHS	Low acoustic noise Deflecting crack Soldering crack	200°C operation leaded p30
	DE6	Safety standard	p30

Medical-grade products for implanted medical devices			
Medical Device	SMD		
	Solder mounting		
	Chip type		
	GCH		p23

Ceramic capacitors SMD type For General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose



GRM

Temperature Compensating Type

General

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GRM01	0.25X0.125 <008004>	25	0.20pF				100pF						
		16	0.20pF				100pF						
GRM02	0.4X0.2 <01005>	50	0.20pF				100pF						
		35				100pF							
		25	0.20pF				220pF						
		16	0.20pF				220pF						
		10			51pF	220pF							
		6.3			51pF	220pF							
GRM03	0.6X0.3 <0201>	100	0.10pF				100pF						
		50	0.10pF				1000pF						
		25	0.10pF				1000pF						
GRM15	1.0X0.5 <0402>	100				120pF	1000pF						
		50				270pF	8200pF						
		35					10000pF						
		25					10000pF						
		10					2400pF	4700pF					
GRM18	1.6X0.8 <0603>	250			10pF	47pF							
		100				1000pF	3900pF						
		50				1000pF	10000pF						
		10					5600pF	33000pF					
		6.3					24000pF	33000pF					
GRM21	2.0X1.25 <0805>	630			10pF	2200pF							
		250			10pF	10000pF							
		200			10pF	5600pF							
		100				1000pF	22000pF						
		50					2400pF	47000pF					
		10						33000pF	0.10μF				
GRM31	3.2X1.6 <1206>	2000			10pF	68pF							
		1000			10pF	1000pF							
		630			10pF	10000pF							
		500			10pF	4700pF							
		250					6800pF	22000pF					
		200					6800pF	10000pF					
		100					4300pF	0.10μF					
		50					11000pF	0.22μF					
GRM32	3.2X2.5 <1210>	25						0.15μF	0.22μF				
		2000				82pF	220pF						
		1000					1200pF	2200pF					
		630					1200pF	33000pF					
		500					1200pF	10000pF					
GRM42	4.5X2.0 <1808>	3150			10pF	100pF							
GRM43	4.5X3.2 <1812>	1000					2700pF	4700pF					
		630					12000pF	22000pF					
		500					12000pF	22000pF					
GRM55	5.7X5.0 <2220>	1000					5600pF	10000pF					
		630					27000pF	47000pF					
		500					27000pF	47000pF					

Continued on the following page. ↗

Ceramic Capacitor, Polymer Aluminum Electrolytic Capacitors

■ High Dielectric Constant Type

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GRM01	0.25X0.125 <008004>	10				100pF	680pF						
		6.3					1000pF	10000pF					
		4					3300pF	10000pF					
GRM02	0.4X0.2 <01005>	16				56pF	10000pF						
		10				56pF	0.10μF						
		6.3					680pF	0.47μF					
		4					15000pF	0.47μF					
		2.5						0.10μF	0.47μF				
GRM03	0.6X0.3 <0201>	50				100pF	1500pF						
		35							0.10μF				
		25				100pF	0.22μF						
		16				100pF	2.2μF						
		10					1000pF	2.2μF					
		6.3					1200pF	4.7μF					
		4					12000pF	4.7μF					
		2.5						0.22μF	4.7μF				
GRM15	1.0X0.5 <0402>	100				220pF	0.10μF						
		50					2200pF	1.0μF					
		35						0.22μF	2.2μF				
		25						22000pF	2.2μF				
		16						22000pF	2.2μF				
		10						47000pF	22μF				
		6.3						22000pF	22μF				
		4							0.47μF	22μF			
		2.5							2.2μF	22μF			
GRM18	1.6X0.8 <0603>	100					10000pF	0.10μF					
		50						0.22μF	2.2μF				
		35							0.47μF	10μF			
		25							0.22μF	10μF			
		16							0.47μF	10μF			
		10								2.2μF	22μF		
		6.3								2.2μF	47μF		
		4								2.2μF	47μF		
		2.5									10μF	47μF	
GRM21	2.0X1.25 <0805>	100						47000pF	1.0μF				
		50							0.47μF	10μF			
		35								1.0μF	10μF		
		25								2.2μF	22μF		
		16								4.7μF	22μF		
		10								4.7μF	47μF		
		6.3									10μF	100μF	
		4									22μF	100μF	
		2.5									47μF	100μF	
GRM31	3.2X1.6 <1206>	100								4.7μF			
		50								4.7μF	10μF		
		35									10μF		
		25									10μF	22μF	
		16									22μF	47μF	
		10									22μF	100μF	
		6.3									22μF	220μF	
		4									22μF	220μF	
		2.5											220μF
GRM32	3.2X2.5 <1210>	100									10μF		
		25										22μF	
		16									22μF	47μF	

Continued on the following page. ↗

Ceramic Capacitor, Polymer Aluminum Electrolytic Capacitors

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GRM32	3.2X2.5 <1210>	10										47μF	100μF	
		6.3										47μF	220μF	
		4										100μF	330μF	
		2.5										220μF	330μF	
GRM43	4.5X3.2 <1812>	1250						33000pF	47000pF					
		1000						33000pF	0.10μF					
		630						68000pF	0.10μF					
		500							0.15μF	0.22μF				
		250							0.15μF	0.47μF				
GRM55	5.7X5.0 <2220>	1250						68000pF	0.10μF					
		1000						68000pF	0.22μF					
		630							0.15μF	0.22μF				
		500							0.33μF	0.47μF				
		250							0.33μF	1.0μF				
		200							0.33μF	1.0μF				
GRMJN	1.8X1.0 <0704>	16									20μF	22μF		
		6.3										43μF		
GRMMD	0.5X0.25 <015008>	6.3									1.0μF			

High Effective Capacitance & High Ripple Current Chip Multilayer Ceramic Capacitors for General Purpose



GR3

General Low acoustic noise

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GR321	2.0X1.25 <0805>	250						10000pF	22000pF				
GR331	3.2X1.6 <1206>	630						10000pF	15000pF				
		450						10000pF	47000pF				
		250						33000pF	68000pF				
GR332	3.2X2.5 <1210>	630						22000pF	47000pF				
		450						68000pF	0.10μF				
		250						0.10μF	0.15μF				
GR343	4.5X3.2 <1812>	630						68000pF					
		450						0.15μF					
		250						0.22μF	0.33μF				
GR355	5.7X5.0 <2220>	630						0.10μF	0.22μF				
		450						0.22μF	0.47μF				
		250						0.47μF	1.0μF				

Chip Multilayer Ceramic Capacitors with Soft Termination for General Purpose



GRJ

General Deflecting crack

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GRJ03	0.6X0.3 <0201>	10								1.0μF			
		6.3								1.0μF			
GRJ15	1.0X0.5 <0402>	6.3									10μF		
GRJ18	1.6X0.8 <0603>	10									10μF		
		6.3								4.7μF	10μF		
GRJ21	2.0X1.25 <0805>	100								1.0μF			

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Ceramic Capacitor, Polymer Aluminum Electrolytic Capacitors

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GRJ21	2.0X1.25 <0805>	25									10μF		
GRJ31	3.2X1.6 <1206>	100									4.7μF		
		50									4.7μF		
GRJ32	3.2X2.5 <1210>	25									22μF		
		10									47μF		
GRJ43	4.5X3.2 <1812>	1000						33000pF	47000pF				
		630						68000pF	0.10μF				
		250							0.15μF	0.47μF			
GRJ55	5.7X5.0 <2220>	1000						68000pF	0.10μF				
		630							0.15μF	0.22μF			
		250							0.33μF	1.0μF			

 Chip Multilayer Ceramic Capacitors for Ethernet LAN and primary-secondary coupling of DC-DC converters



GR4

General

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GR442	4.5X2.0 <1808>	2000				100pF	1500pF						
GR443	4.5X3.2 <1812>	2000					1800pF	4700pF					
GR455	5.7X5.0 <2220>	2000						10000pF					

 Chip Multilayer Ceramic Capacitors for Splitter Circuit of G-Fast, xDSL



GR4

General

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GR431	3.2X1.6 <1206>	630					1000pF	4700pF					
GR432	3.2X2.5 <1210>	630					5600pF	15000pF					

 High Q Chip Multilayer Ceramic Capacitors for General Purpose ($\leq 100V_{dc}$)



GJM

General

High Q

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GJM02	0.4X0.2 <01005>	25	0.20pF		22pF								
		16	0.20pF		22pF								
GJM03	0.6X0.3 <0201>	100	0.30pF		15pF								
		50	0.20pF		15pF								
		25	0.20pF		33pF								
		6.3			22pF		33pF						
GJM15	1.0X0.5 <0402>	50	0.10pF		47pF								

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Ceramic Capacitor, Polymer Aluminum Electrolytic Capacitors

High Q Chip Multilayer Ceramic Capacitors for General Purpose (>100Vdc)



GQM

General

High Q

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GQM15	1.0X0.5 <0402>	200	0.10pF			33pF								
GQM18	1.6X0.8 <0603>	250	0.10pF			100pF								
GQM21	2.0X1.25 <0805>	500	0.20pF			22pF								
		250	0.20pF			150pF								
GQM22	2.8X2.8 <1111>	500	0.30pF			100pF								

Based on the Electrical Appliance and Material Safety Law of Japan Chip Multilayer Ceramic Capacitors for General Purpose



GA2

General

Japanese Safety Law

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vac (r.m.s.))	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GA242	4.5X2.0 <1808>	250					470pF	1000pF					
GA243	4.5X3.2 <1812>	250					2200pF	47000pF					
GA255	5.7X5.0 <2220>	250							0.10μF				

Safety Standard Certified Chip Multilayer Ceramic Capacitors for General Purpose Type GB / IEC60384-14 Class X2



GA3 Type GB

General

Safety standard

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vac (r.m.s.))	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GA355	5.7X5.0 <2220>	250						10000pF	56000pF				

Safety Standard Certified Chip Multilayer Ceramic Capacitors for General Purpose Type GD / UL60950-1



GA3 Type GD

General

Safety standard

Temperature Compensating Type

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vac (r.m.s.))	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GA342	4.5X2.0 <1808>	250			10pF	82pF							

High Dielectric Constant Type

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vac (r.m.s.))	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GA342	4.5X2.0 <1808>	250				100pF	1500pF						
GA343	4.5X3.2 <1812>	250					1800pF	4700pF					

Continued on the following page. ↗

Ceramic Capacitor, Polymer Aluminum Electrolytic Capacitors

Safety Standard Certified Chip Multilayer Ceramic Capacitors for General Purpose Type GF / IEC60384-14 Class X1/Y2 and UL60950-1



GA3 Type GF

Temperature Compensating Type



Series	LXW (mm) <Size Code (inch)>	Rated Voltage (V _{ac} (r.m.s.))	0.1p	1p	10p	100p	Capacitance Range (F)					
GA342	4.5X2.0 <1808>	250			10pF	82pF						

High Dielectric Constant Type

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (V _{ac} (r.m.s.))	0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GA342	4.5X2.0 <1808>	250				100pF	1000pF						
GA352	5.7X2.8 <2211>	250				100pF	1500pF						
GA355	5.7X5.0 <2220>	250					1800pF	4700pF					

LW Reversed Low ESL Chip Multilayer Ceramic Capacitors for General Purpose



LLL



Series	LXW (mm) <Size Code (inch)>	Rated Voltage (V _{dc})	0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
LLL15	0.5X1.0 <0204>	10							0.10μF				
		6.3							0.10μF	0.22μF			
		4							0.10μF	1.0μF			
		2.5							0.10μF	1.0μF			
LLL1U	0.6X1.0 <02404>	4									4.3μF		
		2.5									4.3μF		
LLL18	0.8X1.6 <0306>	50					2200pF	4700pF					
		25					10000pF	22000pF					
		16					10000pF	47000pF					
		10							0.10μF	0.22μF			
		6.3							0.22μF	2.2μF			
		4							0.22μF	4.7μF			
LLL21	1.25X2.0 <0508>	50					10000pF	22000pF					
		25					10000pF		0.10μF				
		16					22000pF		0.22μF				
		10							0.22μF	1.0μF			
		6.3							0.47μF	1.0μF			
		4							1.0μF	2.2μF			
LLL31	1.6X3.2 <0612>	50					10000pF		0.10μF				
		25					22000pF		0.47μF				
		16					22000pF		1.0μF				
		10							0.47μF	2.2μF			
		6.3							2.2μF	10μF			

Continued on the following page. ↗

Ceramic Capacitor, Polymer Aluminum Electrolytic Capacitors

8 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose



LLA

General

Low ESL

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
LLA18	1.6X0.8 <0603>	4							0.10μF	2.2μF			
LLA21	2.0X1.25 <0805>	25						10000pF	47000pF				
		16						47000pF	0.22μF				
		10						47000pF	0.47μF				
		6.3							0.22μF	1.0μF			
		4						22000pF	4.7μF				

10 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose



LLM

General

Low ESL

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
LLM21	2.0X1.25 <0805>	25						10000pF	22000pF				
		16						47000pF	0.10μF				
		6.3							0.22μF	0.47μF			
		4								1.0μF			

LW Reversed Controlled ESR Low ESL Chip Multilayer Ceramic Capacitors for General Purpose



LLR

General

Low ESL

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	ESR (mΩ)				Capacitance Range
			100	220	470	1000	
LLR18	0.8X1.6 <0306>	4					1.0μF

3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose



NFM

General

Low ESL

EMI Filter

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)														
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ				
NFM15	1.0X0.5 <0402>	16					2200pF	47000pF									
		10					2200pF	0.22μF									
		6.3						0.10μF	1.0μF								
		4						0.47μF	14μF								
		2.5							4.3μF	9.1μF							
NFM18	1.6X0.8 <0603>	16				100pF	0.10μF										
		10							2.2μF								
		6.3						0.22μF	10μF								
NFM21	2.0X1.25 <0805>	50				220pF	22000pF										
		25						0.10μF									
		16						0.22μF	1.0μF								
		10							1.0μF	4.7μF							
		6.3							2.2μF	10μF							

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Ceramic Capacitor, Polymer Aluminum Electrolytic Capacitors

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
NFM3D	3.2X1.25 <1205>	50				220pF	22000pF						
NFM31	3.2X1.6 <1206>	100					10000pF	0.10μF					
		50					10000pF	0.10μF					
		6.3									27μF		
NFM41	4.5X1.6 <1806>	100				470pF	22000pF						
		50								1.5μF			
		25								1.5μF			
NFMJM	1.2X0.9 <05035>	4									15μF	22μF	
		2.5										22μF	

Low Distortion Chip Multilayer Ceramic Capacitors for General Purpose



GJ4

General Low acoustic noise

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GJ421	2.0X1.25 <0805>	25							0.10μF	0.33μF			
GJ431	3.2X1.6 <1206>	100							0.10μF				
		25							0.47μF	1.0μF			

Low Acoustic Noise Chip Multilayer Ceramic Capacitors on Interposer Board for General Purpose



ZRA

General Low acoustic noise

Series	LXW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)												
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ		
ZRA21	2.4X1.65	25										22μF			
		16										22μF			
		6.3											47μF		
		4											47μF		

Low Acoustic Noise Chip Multilayer Ceramic Capacitors on Interposer Board for General Purpose



ZRB

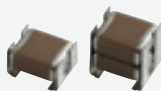
General Low acoustic noise

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
ZRB15	1.0X0.5 <0402>	25									2.2μF			
		16								2.2μF				
		10								2.2μF	10μF			
		6.3								4.7μF	10μF			
ZRB18	1.6X0.8 <0603>	35									4.7μF			
		25								4.7μF	10μF			
		16								10μF				
		10								10μF	22μF			
		6.3								10μF	47μF			
		4									22μF			

Continued on the following page. ↗

Ceramic Capacitor, Polymer Aluminum Electrolytic Capacitors

Metal Terminal Type Multilayer Ceramic Capacitors for General Purpose



KRM

Temperature Compensating Type

General

Deflecting crack

Soldering crack

Low acoustic noise

Series	LXW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
KRM55	6.1X5.1	1250						8200pF	10000pF				
		1000						8200pF	20000pF				
		630						15000pF	94000pF				

High Dielectric Constant Type

Series	LXW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
KRM21	2.2X1.25	25									10μF	22μF	
		16									10μF		
KRM31	3.5X1.7	100								1.0μF			
		50									4.7μF		
		35									10μF		
		25									10μF		
		50								2.2μF			
KRM55	6.1X5.3	100								2.2μF			
		630						68000pF	0.22μF				
		450							0.15μF	0.47μF			
		250							0.33μF	1.0μF			
		100							0.68μF	2.2μF			
		63								4.7μF	22μF		
		50								4.7μF	22μF		
		35								4.7μF	33μF		
		25								10μF	47μF		
										15μF	100μF		

High Effective Capacitance & High Allowable Ripple Current Metal Terminal Type Multilayer Ceramic Capacitors for General Purpose



KR3

General

Deflecting crack

Soldering crack

Low acoustic noise

Series	LXW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
KR355	6.1X5.3	630							0.10μF	0.56μF			
		450							0.22μF	1.2μF			
		250							0.47μF	2.2μF			

Wire Bonding Mount Multilayer Microchip Capacitors for General Purpose



GMA

General

Bonding

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GMA0D	0.38X0.38 <015015>	6.3							10000pF				
		10					820pF	10000pF					

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Ceramic Capacitor, Polymer Aluminum Electrolytic Capacitors

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GMA05	0.5X0.5 <0202>	100				100pF	1000pF						
		50				100pF	1000pF						
		25					1500pF	4700pF					
		16				430pF	4700pF						
		10					6800pF	22000pF					
		6.3					6800pF	0.10μF					
GMA08	0.8X0.8 <0303>	100				330pF	6800pF						
		50				330pF	6800pF						
		25					10000pF	22000pF					
		16				1000pF	22000pF						
		10					33000pF	0.10μF					
		6.3					33000pF	0.47μF					

Wire Bonding/AuSn Soldering Mount Chip Multilayer Ceramic Capacitors for General Purpose



GMD



Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GMD03	0.6X0.3 <0201>	25				100pF	1500pF						
		16					1800pF	3300pF					
		10					3900pF	10000pF					
		6.3						56000pF	0.10μF				
GMD15	1.0X0.5 <0402>	50				220pF	4700pF						
		25					5600pF	47000pF					
		16						56000pF	0.10μF				
		10						0.12μF	0.47μF				
		6.3							1.0uF				

Ceramic capacitors SMD type For Automotive

AEC-Q200 Compliant Chip Multilayer Ceramic Capacitors for Infotainment



GRT

Temperature Compensating Type



Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GRT03	0.6X0.3 <0201>	100	0.10pF	100pF									
		50	0.10pF	220pF									
		25	0.10pF	1000pF									
GRT15	1.0X0.5 <0402>	100	0.20pF	100pF									
		50	0.11pF	1000pF									
		25			10pF	1000pF							
GRT18	1.6X0.8 <0603>	100				120pF	1500pF						
		50					1200pF	10000pF					
		25					1200pF	10000pF					
GRT21	2.0X1.25 <0805>	100					1800pF	3300pF					
		50						18000pF	22000pF				

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Ceramic Capacitor, Polymer Aluminum Electrolytic Capacitors

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GRT21	2.0X1.25 <0805>	25					1800pF	2200pF					
GRT31	3.2X1.6 <1206>	100					3900pF		0.10μF				
		50						56000pF	0.10μF				
		25						0.10μF	0.12μF				
		16							0.12μF				

■ High Dielectric Constant Type

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GRT03	0.6X0.3 <0201>	35								0.10μF				
		25				100pF			0.10μF					
		16						10000pF	0.10μF					
		10					1500pF		1.0μF					
		6.3					2200pF		1.0μF					
		4						68000pF	1.0μF					
		2.5							1.0μF					
		GRT15	1.0X0.5 <0402>	50				220pF			0.10μF			
35									0.22μF	1.0μF				
25							5600pF		2.2μF					
16							10000pF		2.2μF					
10								0.22μF	4.7μF					
6.3							22000pF		4.7μF					
4								0.22μF	4.7μF					
2.5										10μF				
GRT18	1.6X0.8 <0603>	100					3300pF	10000pF						
		50							1.0μF	2.2μF				
		35							1.0μF	4.7μF				
		25						0.15μF	10μF					
		16						0.33μF	10μF					
		10							10μF	22μF				
		6.3							10μF	22μF				
		4							1.0μF	22μF				
GRT21	2.0X1.25 <0805>	2.5									22μF			
		100						47000pF						
		50							0.47μF	4.7μF				
		35								4.7μF				
		25							2.2μF	22μF				
		16							2.2μF	22μF				
		10							3.3μF	22μF				
		6.3							3.3μF	47μF				
GRT31	3.2X1.6 <1206>	4									47μF			
		2.5									47μF			
		50							1.0μF	10μF				
		35								10μF				
		25							1.5μF	10μF				
		16							1.5μF	22μF				
GRT32	3.2X2.5 <1210>	10									47μF			
		6.3									15μF	47μF		
		50							3.3μF	4.7μF				
		25								6.8μF				
		16									47μF			
		10									47μF			

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AEC-Q200 Compliant 3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for Infotainment



NFM



Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
NFM15	1.0X0.5 <0402>	4								10μF				
NFM18	1.6X0.8 <0603>	4									10μF			

Chip Multilayer Ceramic Capacitors for Automotive



GCM

Temperature Compensating Type



Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GCM03	0.6X0.3 <0201>	50	0.10pF				100pF							
		25	0.10pF				100pF							
GCM15	1.0X0.5 <0402>	50	0.10pF				1000pF							
GCM18	1.6X0.8 <0603>	100	0.47pF				10000pF							
		80				1600pF	3900pF							
		63				1600pF	3900pF							
		50				1000pF	10000pF							
GCM21	2.0X1.25 <0805>	630			10pF			2200pF						
		250			10pF			10000pF						
		100					1000pF	3300pF						
		80					4300pF	22000pF						
GCM31	3.2X1.6 <1206>	50					3000pF	22000pF						
		1000			10pF			1000pF						
		630			10pF			10000pF						
		250					6800pF	22000pF						
		100					1600pF	0.10μF						
GCM32	3.2X2.5 <1210>	80					27000pF	33000pF						
		50					11000pF	0.10μF						
		1000					1200pF	2200pF						
GCM43	4.5X3.2 <1812>	630					1200pF	33000pF						
		1000					2700pF	4700pF						
GCM55	5.7X5.0 <2220>	630					12000pF	22000pF						
		1000					5600pF	10000pF						
		630					27000pF	47000pF						

High Dielectric Constant Type

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GCM03	0.6X0.3 <0201>	25				100pF		3300pF						
		16				330pF		3300pF						
		10					1200pF		10000pF					
GCM15	1.0X0.5 <0402>	100				220pF		4700pF						
		50				220pF		0.10μF						
		25					4700pF		0.10μF					
		16					15000pF		0.22μF					
		10						0.10μF		1.0μF				
GCM18	1.6X0.8 <0603>	100					1000pF		22000pF					
		50					1000pF		0.22μF					

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Ceramic Capacitor, Polymer Aluminum Electrolytic Capacitors

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GCM18	1.6X0.8 <0603>	25							68000pF		1.0μF			
		16							0.12μF		1.0μF			
		6.3									2.2μF		10μF	
		4											10μF	
GCM21	2.0X1.25 <0805>	100						10000pF		1.0μF				
		50						10000pF		1.0μF				
		35								0.68μF		4.7μF		
		25								0.15μF		4.7μF		
		16								0.27μF		10μF		
		10								2.2μF		10μF		
		6.3										10μF		
GCM31	3.2X1.6 <1206>	100							0.22μF		2.2μF			
		50							0.22μF		4.7μF			
		35										10μF		
		25								0.47μF		10μF		
		16								4.7μF		10μF		
		10										22μF		
		6.3										22μF		
GCM32	3.2X2.5 <1210>	100										4.7μF		
		50								4.7μF		10μF		
		35										10μF		
		25									10μF		22μF	
		16										22μF		
		10								10μF		47μF		
		6.3										47μF		
	2.5											100μF		

High Effective Capacitance & High Ripple Current Chip Multilayer Ceramic Capacitors for Automotive



GC3



Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GC321	2.0X1.25 <0805>	250						10000pF	22000pF				
GC331	3.2X1.6 <1206>	630						10000pF	15000pF				
		450						10000pF	47000pF				
		250						33000pF	68000pF				
GC332	3.2X2.5 <1210>	630						22000pF	47000pF				
		450						68000pF	0.10μF				
		250							0.10μF	0.15μF			
GC343	4.5X3.2 <1812>	630							68000pF				
		450							0.15μF				
		250							0.22μF	0.33μF			
GC355	5.7X5.0 <2220>	630							0.10μF	0.22μF			
		450							0.22μF	0.47μF			
		250							0.47μF	1.0μF			

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Ceramic Capacitor, Polymer Aluminum Electrolytic Capacitors

Soft Termination Chip Multilayer Ceramic Capacitors for Automotive



GCJ



Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GCJ18	1.6X0.8 <0603>	100					1000pF		0.10μF					
		50					1000pF		0.22μF					
		35						33000pF	68000pF					
		25					1000pF		1.0μF					
		16						27000pF	0.47μF					
		10							0.22μF					
		6.3								2.2μF	4.7μF			
GCJ21	2.0X1.25 <0805>	250					1000pF		22000pF					
		100						27000pF	1.0μF					
		50						82000pF	1.0μF					
		35							0.12μF	0.47μF				
		25							0.12μF	2.2μF				
		16							0.27μF	4.7μF				
		10								2.2μF	10μF			
GCJ31	3.2X1.6 <1206>	1000					1000pF		10000pF					
		630					1000pF		22000pF					
		250						15000pF	0.10μF					
		100							0.15μF	2.2μF				
		50							0.47μF	4.7μF				
		35							0.47μF	10μF				
		25								2.2μF	10μF			
		16								1.5μF	10μF			
		10									6.8μF	22μF		
GCJ32	3.2X2.5 <1210>							15000pF	22000pF					
		630						6800pF	47000pF					
		250							68000pF	0.22μF				
		100								2.2μF	4.7μF			
		50								4.7μF	10μF			
		25								4.7μF	22μF			
		16								6.8μF	22μF			
		6.3										47μF		
GCJ43	4.5X3.2 <1812>	1000						33000pF	47000pF					
		630						33000pF	0.10μF					
		250							0.15μF	0.47μF				
GCJ55	5.7X5.0 <2220>	1000						68000pF	0.10μF					
		630							0.10μF	0.22μF				
		250							0.33μF	1.0μF				

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Ceramic Capacitor, Polymer Aluminum Electrolytic Capacitors

High Q Chip Multilayer Ceramic Capacitors for Automotive



GCQ



Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GCQ15	1.0X0.5 <0402>	50	0.10pF			47pF							

MLSC Design Chip Multilayer Ceramic Capacitors for Automotive



GCD



Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GCD18	1.6X0.8 <0603>	100					1000pF		22000pF				
		50					1000pF		22000pF				
		25							27000pF		47000pF		
GCD21	2.0X1.25 <0805>	100							27000pF		0.10μF		
		50							27000pF		0.10μF		
		16									0.47μF		

Soft Termination MLSC Design Chip Multilayer Ceramic Capacitors for Automotive



GCE



Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GCE18	1.6X0.8 <0603>	100					1000pF	22000pF						
		50					1000pF	22000pF						
		25							27000pF	47000pF				
GCE21	2.0X1.25 <0805>	100							27000pF	0.10μF				
		50							27000pF	0.10μF				

3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for Automotive



NFM



Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
NFM15	1.0X0.5 <0402>	4								1.0μF			
NFM18	1.6X0.8 <0603>	16								1.0μF			
		6.3								1.0μF			
		4									10μF		
NFM21	2.0X1.25 <0805>	50				220pF		22000pF					
		16							1.0μF				
		10						0.10μF	0.47μF				
NFM31	3.2X1.6 <1206>	100						10000pF					
		50						10000pF	0.10μF				

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Ceramic Capacitor, Polymer Aluminum Electrolytic Capacitors

Metal Terminal Type Multilayer Ceramic Capacitors for Automotive



KCM

Temperature Compensating Type



Series	LXW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
KCM55	6.1X5.1	1000						8200pF	20000pF					
		630						15000pF	94000pF					

High Dielectric Constant Type

Series	LXW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
KCM55	6.1X5.3	100									4.7μF	22μF		
		63									4.7μF	22μF		
		50									4.7μF	33μF		
		35									10μF	47μF		
		25									15μF	100μF		

High Effective Capacitance & High Allowable Ripple Current Metal Terminal Type Multilayer Ceramic Capacitors for Automotive



KC3



Series	LXW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
KC355	6.1X5.3	630							0.10μF	1.2μF			
		450							0.22μF	2.2μF			
		250							0.47μF	2.2μF			

Safety Standard Certified Metal Terminal Type Multilayer Ceramic Capacitors for Automotive



KCA



Series	LXW (mm)	Rated Voltage (Vac (r.m.s.))	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
KCA55	6.1X5.1	250				100pF		10000pF					

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Ceramic Capacitor, Polymer Aluminum Electrolytic Capacitors

Ni Plating + Pd Plating termination Conductive Glue Mounting Chip Multilayer Ceramic Capacitors for Automotive



GCB



Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GCB15	1.0X0.5 <0402>	100					1000pF	10000pF					
		50					1000pF	47000pF					
		25						6800pF	0.10μF				
		16						15000pF	0.10μF				

AgPd Termination Conductive Glue Mounting Chip Multilayer Ceramic Capacitors for Automotive



GCG

Temperature Compensating Type



Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GCG15	1.0X0.5 <0402>	50		10pF				470pF					
GCG18	1.6X0.8 <0603>	100			10pF			10000pF					
		50			10pF			2200pF					
GCG21	2.0X1.25 <0805>	50					1000pF	10000pF					

High Dielectric Constant Type

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GCG15	1.0X0.5 <0402>	50				220pF		4700pF					
		25					5600pF		10000pF				
		16						15000pF		0.10μF			
GCG18	1.6X0.8 <0603>	100					1000pF		0.10μF				
		50					1000pF		0.22μF				
		25							0.12μF		0.47μF		
		16							0.15μF		1.0μF		
		10									2.2μF		
		6.3									2.2μF		
GCG21	2.0X1.25 <0805>	50							0.15μF		1.0μF		
		35								0.68μF		1.0μF	
		25								0.27μF		1.0μF	
		16								0.33μF		4.7μF	
		10										10μF	
		6.3										10μF	
GCG31	3.2X1.6 <1206>	50							0.22μF		0.33μF		
		25								1.0μF		4.7μF	
		16								0.68μF		4.7μF	
		6.3										22μF	
GCG32	3.2X2.5 <1210>	50									10μF		
		35									10μF		
		25									10μF	22μF	
		16									6.8μF	10μF	
		6.3											47μF

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Ceramic capacitors SMD type For Medical Devices

Chip Multilayer Ceramic Capacitors for Implantable Medical devices
(Non Life support circuit)



GCH

Medical Device

Temperature Compensating Type

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GCH15	1.0X0.5 <0402>	50		10pF			1000pF							
GCH18	1.6X0.8 <0603>	100		10pF			1500pF							
		50					1500pF	3300pF						
GCH21	2.0X1.25 <0805>	630		10pF			2200pF							
		100					2200pF	3300pF						
		50					4700pF	22000pF						
GCH31	3.2X1.6 <1206>	100					4700pF	10000pF						
		50					33000pF	0.10μF						

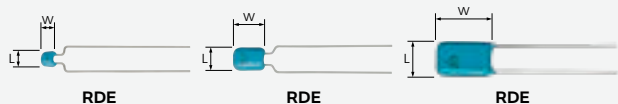
High Dielectric Constant Type

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GCH03	0.6X0.3 <0201>	25					1000pF							
GCH15	1.0X0.5 <0402>	100				220pF	4700pF							
		50				220pF	0.10μF							
		25					10000pF	47000pF						
		16						47000pF	0.22μF					
		10						0.10μF	1.0μF					
GCH18	1.6X0.8 <0603>	100					10000pF	22000pF						
		50					3300pF	0.22μF						
		25						0.10μF	1.0μF					
		16						0.47μF	4.7μF					
		10							2.2μF					
GCH21	2.0X1.25 <0805>	6.3							2.2μF					
		100					47000pF	1.0μF						
		50						0.47μF	1.0μF					
		35						1.0μF	4.7μF					
		25						2.2μF	4.7μF					
		16						2.2μF	4.7μF					
GCH31	3.2X1.6 <1206>	10							4.7μF	10μF				
		6.3								10μF				
		100						0.22μF						
GCH32	3.2X2.5 <1210>	50								2.2μF				
		16								10μF				
		10								4.7μF				
		6.3									22μF			
											47μF			

Continued on the following page. ↗

Ceramic capacitors lead type For General Purpose

Leaded MLCC for General Purpose



Temperature Compensating Type

General

Deflecting crack

Soldering crack

Low acoustic noise

Series	LXW (mm)	Rated Voltage (Vdc)	0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
RDE5C	4.0X3.5	100		1.0pF				1500pF					
		50		1.0pF				3900pF					
	4.5X3.5	630			10pF			2200pF					
		250			10pF			10000pF					
		100					1800pF	3300pF					
		50					4700pF	22000pF					
	5.0X3.5	100		1.0pF				3300pF					
		50		1.0pF				22000pF					
	5.5X4.0	1000			10pF			1000pF					
		630			10pF			4700pF					
		250			10pF			22000pF					
		100					3900pF	22000pF					
RDE7U	4.5X3.5	250				100pF		4700pF					
		1000			10pF			1000pF					
	5.5X4.0	630			10pF			4700pF					
		250						6800pF					
		1000					1500pF	2200pF					
	5.5X5.0	630						6800pF					
		250						33000pF					
		1000					3300pF	4700pF					
	7.5X5.5	630						15000pF					
		1000						6800pF					
	7.5X8.0	630						33000pF					
		1000						20000pF					
	7.7X13.0	630						94000pF					

High Dielectric Constant Type

Series	LXW (mm)	Rated Voltage (Vdc)	0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
RDEC7	4.0X3.5	25							0.22μF	1.0μF			
		50								1.0μF			
	4.5X3.5	25									2.2μF		
		50								1.0μF			
	5.0X3.5	50							0.22μF	2.2μF			
		25									4.7μF		
	5.5X4.0	50								4.7μF	10μF		
		25										10μF	
	5.5X5.0	100							1.5μF	2.2μF			
		50									10μF		
		25									22μF		
	5.5X7.5	100								4.7μF			
		50									22μF		
		25										47μF	
RDED7	5.5X4.0	630					10000pF	15000pF					
		450					10000pF	47000pF					

Continued on the following page. ↗

Ceramic Capacitor, Polymer Aluminum Electrolytic Capacitors

Series	LXW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
RDED7	5.5X4.0	250							33000pF	68000pF				
	5.5X5.0	630							22000pF	47000pF				
		450								68000pF	0.10μF			
		250								0.10μF	0.15μF			
	7.5X5.5	630								68000pF				
		450									0.15μF			
		250								0.22μF	0.33μF			
	7.5X7.5	450								0.22μF	0.56μF			
		250								0.47μF	1.0μF			
	7.5X8.0	630								0.10μF	0.27μF			
	7.7X12.5	450									1.0μF	1.2μF		
		250										2.2μF		
	7.7X13.0	630								0.47μF	0.56μF			
RDER7	4.0X3.5	100					220pF							
		50					220pF				0.10μF			
		25									0.10μF			
	4.5X3.5	500					1000pF			10000pF				
		250					1000pF			22000pF				
		100							33000pF		0.47μF			
		50								0.15μF	0.47μF			
	5.0X3.5	100					220pF			0.47μF				
		50					220pF			0.47μF				
		25								0.10μF				
	5.5X4.0	1000					470pF			10000pF				
		630					1000pF			22000pF				
		500							15000pF	47000pF				
		250							33000pF	0.10μF				
		100								0.15μF	1.0μF			
		50								0.68μF	2.2μF			
	5.5X5.0	1000							15000pF	22000pF				
		630							33000pF	47000pF				
		500							68000pF	0.10μF				
		250								0.15μF	0.22μF			
		50										3.3μF		
	7.5X5.5	1000							33000pF	47000pF				
		630							68000pF	0.10μF				
		500								0.15μF	0.22μF			
		250								0.33μF	0.47μF			
	7.5X7.5	500								0.33μF	0.47μF			
		250								0.68μF	1.0μF			
	7.5X8.0	1000							68000pF	0.10μF				
		630								0.15μF	0.22μF			
	7.7X12.5	500								0.68μF	1.0μF			
		250									2.2μF			
	7.7X13.0	1000								0.22μF				
		630									0.47μF			

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Ceramic Capacitor, Polymer Aluminum Electrolytic Capacitors

Safety Standard Certified Lead Type Disc Ceramic Capacitors for General Purpose Type RA [500Vac (r.m.s.) product] / IEC60384-14 Class X1/Y1



DE1 Type RA

Temperature Compensating Type

General Safety standard

Series	Rated Voltage	D (mm)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
DE11X	X1: 500Vac (r.m.s.), Y1: 500Vac (r.m.s.)	6.0 to 9.0			10pF	68pF								

High Dielectric Constant Type

Series	Rated Voltage	D (mm)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
DE1B3	X1: 500Vac (r.m.s.), Y1: 500Vac (r.m.s.)	6.0 to 9.0				100pF	680pF							
DE1E3	X1: 500Vac (r.m.s.), Y1: 500Vac (r.m.s.)	8.0 to 14.0					1000pF	4700pF						

Safety Standard Certified Lead Type Disc Ceramic Capacitors for General Purpose Type RA [250Vac, 300Vac rated] / IEC60384-14 Class X1/Y1



DE1 Type RA

Temperature Compensating Type

General Safety standard

Series	Rated Voltage	D (mm)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
DE11X	X1: 440Vac (r.m.s.), Y1: 300Vac (r.m.s.)	6.0 to 8.0			10pF	68pF								
	X1: 440Vac (r.m.s.), Y1: 250Vac (r.m.s.)	6.0 to 8.0			10pF	68pF								

High Dielectric Constant Type

Series	Rated Voltage	D (mm)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
DE1B3	X1: 440Vac (r.m.s.), Y1: 300Vac (r.m.s.)	6.0 to 8.0				100pF	680pF							
	X1: 440Vac (r.m.s.), Y1: 250Vac (r.m.s.)	6.0 to 8.0				100pF	680pF							
DE1E3	X1: 440Vac (r.m.s.), Y1: 300Vac (r.m.s.)	7.0 to 12.0					1000pF	4700pF						
	X1: 440Vac (r.m.s.), Y1: 250Vac (r.m.s.)	7.0 to 12.0					1000pF	4700pF						

Safety Standard Certified Lead Type Disc Ceramic Capacitors for General Purpose Type RB [X1:760Vac(r.m.s)product] / IEC60384-14 Class X1/Y1



DE1 Type RB

Temperature Compensating Type

General Safety standard

Series	Rated Voltage	D (mm)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
DE11X	X1: 760Vac (r.m.s.), Y1: 500Vac (r.m.s.)	6.0 to 9.0			10pF	68pF								

Continued on the following page. ↗

Ceramic Capacitor, Polymer Aluminum Electrolytic Capacitors

■ High Dielectric Constant Type

Series	Rated Voltage	D (mm)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
DE1B3	X1: 760Vac (r.m.s.), Y1: 500Vac (r.m.s.)	6.0 to 9.0				100pF	680pF							
DE1E3	X1: 760Vac (r.m.s.), Y1: 500Vac (r.m.s.)	8.0 to 14.0				1000pF	4700pF							

■ Safety Standard Certified Lead Type Disc Ceramic Capacitors for General Purpose Type SA [400Vac (r.m.s.) product] / IEC60384-14 Class X1/Y2



DE2 Type SA

General Safety standard

■ Temperature Compensating Type

Series	Rated Voltage	D (mm)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
DE21X	X1: 440Vac (r.m.s.), Y2: 400Vac (r.m.s.)	6.0 to 9.0			10pF	68pF							

■ High Dielectric Constant Type

Series	Rated Voltage	D (mm)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
DE2B3	X1: 440Vac (r.m.s.), Y2: 400Vac (r.m.s.)	6.0 to 8.0				100pF	680pF							
DE2E3	X1: 440Vac (r.m.s.), Y2: 400Vac (r.m.s.)	7.0 to 17.0				1000pF	10000pF							

■ Safety Standard Certified Lead Type Disc Ceramic Capacitors for General Purpose Type SA [250Vac, 300Vac rated] / IEC60384-14 Class X1/Y2



DE2 Type SA

General Safety standard

■ Temperature Compensating Type

Series	Rated Voltage	D (mm)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
DE21X	X1: 300Vac (r.m.s.), Y2: 300Vac (r.m.s.)	6.0 to 8.0			10pF	68pF								
	X1: 300Vac (r.m.s.), Y2: 250Vac (r.m.s.)	6.0 to 8.0			10pF	68pF								

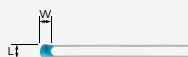
■ High Dielectric Constant Type

Series	Rated Voltage	D (mm)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
DE2B3	X1: 300Vac (r.m.s.), Y2: 300Vac (r.m.s.)	6.0 to 7.0				100pF		680pF						
	X1: 300Vac (r.m.s.), Y2: 250Vac (r.m.s.)	6.0 to 7.0				100pF		680pF						
DE2E3	X1: 300Vac (r.m.s.), Y2: 300Vac (r.m.s.)	6.0 to 15.0					1000pF		10000pF					
	X1: 300Vac (r.m.s.), Y2: 250Vac (r.m.s.)	6.0 to 15.0					1000pF		10000pF					

Continued on the following page. ↗

Ceramic capacitors lead type For Automotive

Leaded MLCC for Automotive



RCE

Temperature Compensating Type



Series	LXW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
RCE5C	3.6X3.5	100		10pF				1500pF					
		50		10pF				3900pF					
	4.0X3.5	630			10pF			2200pF					
		250			10pF			10000pF					
		100					1800pF	3300pF					
		50					4700pF	22000pF					
	5.5X4.0	1000			10pF			1000pF					
		630			10pF			4700pF					
		250			10pF			22000pF					
		100					3900pF	10000pF					
		50					27000pF	0.10μF					
RCE7U	4.0X3.5	250				100pF		4700pF					
	5.5X4.0	1000			10pF			1000pF					
		630			10pF			4700pF					
		250						6800pF	10000pF				
	5.5X5.0	1000					1500pF	2200pF					
		630						6800pF	10000pF				
	7.5X5.5	1000					3300pF	4700pF					
		630						15000pF	22000pF				
	7.5X8.0	1000						6800pF	10000pF				
		630						33000pF	47000pF				
	7.7X13.0	1000							20000pF				
630									94000pF				

High Dielectric Constant Type

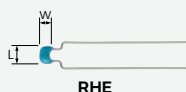
Series	LXW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
RCEC7	4.0X3.5	50								1.0μF				
	5.5X4.0	50								4.7μF				
	5.5X5.0	100							1.5μF	2.2μF				
		50								10μF				
	5.5X7.5	100								4.7μF				
		50									22μF			
RCER7	3.6X3.5	100				220pF	22000pF							
		50				220pF	0.10μF							
		25						0.10μF	0.22μF					
	4.0X3.5	250				1000pF	22000pF							
		100					33000pF	0.33μF						
		50						0.15μF	0.47μF					
		25						0.33μF	1.0μF					
		5.5X4.0	1000				1000pF	10000pF						
	630					1000pF	22000pF							
	250						33000pF	0.10μF						
	100							0.15μF	1.0μF					
	50								0.68μF	2.2μF				
	25								1.5μF	4.7μF				

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Ceramic Capacitor, Polymer Aluminum Electrolytic Capacitors

Series	LXW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
RCER7	5.5X5.0	1000						15000pF	22000pF					
		630						33000pF	47000pF					
		250							0.15μF	0.22μF				
		50								3.3μF	4.7μF			
		25									10μF			
	5.5X7.5	50									10μF			
		25										22μF		
	7.5X5.5	1000						33000pF	47000pF					
		630							68000pF	0.10μF				
		250								0.33μF	0.47μF			
	7.5X7.5	250								0.68μF	1.0μF			
	7.5X8.0	1000							68000pF	0.10μF				
		630								0.15μF	0.22μF			
	7.7X12.5	250									2.2μF			
	7.7X13.0	1000								0.22μF				
		630									0.47μF			

150°C Operation Leaded MLCC for Automotive



Temperature Compensating Type



Series	LXW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
RHE5G	3.6X3.5	100				100pF	1500pF							
		50				100pF	3900pF							
	4.0X3.5	100					1800pF	3300pF						
		50						4700pF	10000pF					

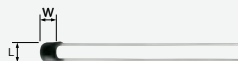
High Dielectric Constant Type

Series	LXW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
RHEL8	3.6X3.5	100				220pF			22000pF					
		50				220pF			0.10μF					
		25							0.10μF		0.22μF			
	4.0X3.5	100						33000pF		0.10μF				
		50								0.15μF		0.33μF		
		25								0.33μF		1.0μF		
	5.5X4.0	100								0.15μF		0.22μF		
		50									0.47μF		2.2μF	
		25									1.5μF		4.7μF	
	5.5X5.0	50									3.3μF		4.7μF	
		25											10μF	
	5.5X7.5	50											10μF	
		25											22μF	

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Ceramic Capacitor, Polymer Aluminum Electrolytic Capacitors

200°C Operation Leaded MLCC for Automotive



RHS

Temperature Compensating Type



Series	LXW (mm)	Rated Voltage (Vdc)	0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
RHS7G	3.9X3.5	100				100pF	1500pF						
	4.2X3.5	100					1800pF	3300pF					
RHS7J		200				100pF	4700pF						
	5.5X4.0	500				100pF	4700pF						
		200					6800pF	10000pF					

High Dielectric Constant Type

Series	LXW (mm)	Rated Voltage (Vdc)	0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
RHSQ9	3.9X3.5	100					4700pF	22000pF					
	4.2X3.5	100						33000pF	0.10μF				
	5.5X4.0	100							0.15μF	0.22μF			

Safety Standard Certified Lead Type Disc Ceramic Capacitors for Automotive



DE6



Series	Rated Voltage	D (mm)	0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
DE6E3	X1: 440Vac (r.m.s.), Y2: 300Vac (r.m.s.)	7.0 to 12.0					1000pF	4700pF					

Resin Molding SMD Type Ceramic Capacitors

Safety Standard Certified Resin Molding SMD Type Ceramic Capacitors for General Purpose



DK1

Temperature Compensating Type



Series	Rated Voltage	LXW (mm)	0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
DK11X	X1: 440Vac (r.m.s.), Y1: 300Vac (r.m.s.)	11.4X6.0				10pF	47pF						
	X1: 440Vac (r.m.s.), Y1: 250Vac (r.m.s.)	11.4X6.0				10pF	47pF						

High Dielectric Constant Type

Series	Rated Voltage	LXW (mm)	0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
DK1B3	X1: 440Vac (r.m.s.), Y1: 300Vac (r.m.s.)	11.4X6.0				100pF	680pF						
	X1: 440Vac (r.m.s.), Y1: 250Vac (r.m.s.)	11.4X6.0				100pF	680pF						
DK1E3	X1: 440Vac (r.m.s.), Y1: 300Vac (r.m.s.)	11.4X6.0					1000pF	1500pF					
	X1: 440Vac (r.m.s.), Y1: 250Vac (r.m.s.)	11.4X6.0					1000pF	1500pF					

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Polymer Aluminum Electrolytic Capacitors



ECAS

General

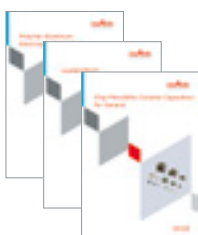
Deflecting
crackLow
acoustic
noiseEffective
Cap

Series	LXW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)										100μ	1000μ
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ		
ECAS	7.3X4.3	25									10μF	33μF		
		20										33μF	47μF	
		16									6.8μF	68μF		
		10									10μF	150μF		
		6.3									10μF	330μF		
		4										68μF	330μF	
		2.5										330μF	470μF	
		2										100μF	470μF	



Detailed Catalogs

For more details, please refer to our printed catalogs and the PDF catalogs on our website.



- Chip Multilayer Ceramic Capacitors for General Cat. No. C02E
- Chip Multilayer Ceramic Capacitors for Automotive Cat. No. C03E
- Lead Type Disc Ceramic Capacitors (Safety Standard Certified, DC2k to DC6.3kV)
- Resin Molding SMD Type Ceramic Capacitors (Safety Standard Certified) Cat. No. C85E
- Polymer Aluminum Electrolytic Capacitors Cat. No. C90E
- Leaded MLCC Cat. No. C49E

Single-Layer Microchip Capacitors, Thin Film Circuit Substrates (RUSUB)

Single-Layer Microchip Capacitors, Thin Film Circuit Substrates (RUSUB)

Single-Layer Microchip Capacitors

Very reliable performance and excellent frequency characteristics

Temperature Compensating Type

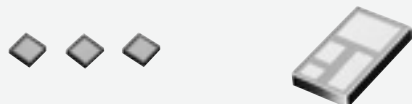


Capacitance Change (Temperature Range)	Series	Size (mm)	Rated Voltage (Vdc)	Capacitance Range at 25°C (pF)					Operating Temperature Range (°C)
				0.1	1	10	100	1000	
0±30ppm/°C (-25 to 85°C)	CLB0A	0.25X0.25	100	0.1					-55 to 125
	CLB0C	0.35X0.25	100	0.2					-55 to 125
	CLB0D	0.38X0.38	100	0.2	0.4				-55 to 125
	CLB0S	0.50X0.50	100	0.3	0.6				-55 to 125
	CLB0E	0.55X0.38	100	0.5	0.6				-55 to 125
	CLB0F	0.64X0.64	100	0.6	1.0				-55 to 125
	CLB0G	0.70X0.50	100	0.7	1.0				-55 to 125
	CLB0H	0.71X0.38	100	0.7	0.8				-55 to 125
	CLB0J	0.76X0.76	100	0.9	1.3				-55 to 125
	CLB09	0.90X0.90	100	1.0	1.8				-55 to 125
	CLB1A	1.00X0.64	100	1.1	1.6				-55 to 125
	CLB1B	1.09X0.76	100	1.5	2.0				-55 to 125
	CLB1C	1.27X1.27	100	2.2	3.6				-55 to 125
	CLB1E	1.49X0.90	100	2.0	2.7				-55 to 125
	CLB1G	1.73X1.27	100	3.9	4.7				-55 to 125
	CLB1H	1.78X1.78	100	3.9	6.8				-55 to 125
	CLB2C	2.19X1.27	100	5.1					-55 to 125
	CLB2E	2.29X2.29	100	6.2	10				-55 to 125
	CLB2L	2.95X1.78	100	7.5	10				-55 to 125
	CLB3G	3.71X2.29	100	11	16				-55 to 125
-750±60ppm/°C (-25 to 85°C)	CLB0A	0.25X0.25	100	0.3	0.7				-55 to 125
	CLB0B	0.30X0.25	100	0.8					-55 to 125
	CLB0C	0.35X0.25	100	0.9					-55 to 125
	CLB0D	0.38X0.38	100	0.9	1.6				-55 to 125
	CLB0S	0.50X0.50	100	1.0	2.4				-55 to 125
	CLB0E	0.55X0.38	100	1.8	2.4				-55 to 125
	CLB0F	0.64X0.64	100	2.0	4.3				-55 to 125
	CLB0G	0.70X0.50	100	2.7	3.0				-55 to 125
	CLB0H	0.71X0.38	100	2.7					-55 to 125
	CLB0J	0.76X0.76	100	3.0	6.2				-55 to 125
	CLB09	0.90X0.90	100	3.3	6.8				-55 to 125
	CLB1A	1.00X0.64	100	4.7	6.2				-55 to 125
	CLB1B	1.09X0.76	100	6.8	7.5				-55 to 125
	CLB1C	1.27X1.27	100	7.5	15				-55 to 125
	CLB1E	1.49X0.90	100	7.5	9.1				-55 to 125
	CLB1H	1.78X1.78	100	13	15				-55 to 125
	CLB2E	2.29X2.29	100	20					-55 to 125

All Single Layer Microchip Capacitors are produced after receiving an order.

Single-Layer Microchip Capacitors, Thin Film Circuit Substrates (RUSUB)

High Dielectric Constant Type



Capacitance Change (Temperature Range)	Series	Size (mm)	Rated Voltage (Vdc)	Capacitance Range at 25°C (pF)					Operating Temperature Range (°C)
				0.1	1	10	100	1000	
±10% (-25 to 85°C)	CLB0A	0.25X0.25	100			5.6	12		-55 to 125
	CLB0B	0.30X0.25	100			13	15		-55 to 125
	CLB0C	0.35X0.25	100			16	18		-55 to 125
	CLB0D	0.38X0.38	100			18	30		-55 to 125
	CLB05	0.50X0.50	100			22	43		-55 to 125
	CLB0E	0.55X0.38	100			33	43		-55 to 125
	CLB0F	0.64X0.64	100			43	75		-55 to 125
	CLB0G	0.70X0.50	100			47	68		-55 to 125
	CLB0H	0.71X0.38	100			47	56		-55 to 125
	CLB0J	0.76X0.76	100			68	110		-55 to 125
	CLB09	0.90X0.90	100			68	130		-55 to 125
	CLB1A	1.00X0.64	100			82	120		-55 to 125
	CLB1C	1.27X1.27	100				160	200	-55 to 125
	CLB1E	1.49X0.90	100				150	160	-55 to 125
	CLB1G	1.73X1.27	100				300		-55 to 125
	CLB1H	1.78X1.78	100				300	430	-55 to 125
	CLB2E	2.29X2.29	100				470	620	-55 to 125
+30, -80% (-25 to 85°C)	CLB0A	0.25X0.25	100			27	33		-55 to 125
	CLB0B	0.30X0.25	100			36	39		-55 to 125
	CLB0C	0.35X0.25	100			43	51		-55 to 125
	CLB0D	0.38X0.38	100			62	82		-55 to 125
	CLB05	0.50X0.50	100			75	130		-55 to 125
	CLB0E	0.55X0.38	100			91	120		-55 to 125
	CLB0F	0.64X0.64	100			130	220		-55 to 125
	CLB0G	0.70X0.50	100			150	200		-55 to 125
	CLB0H	0.71X0.38	100			130	150		-55 to 125
	CLB0J	0.76X0.76	100				200	300	-55 to 125
	CLB09	0.90X0.90	100				200	390	-55 to 125
	CLB1A	1.00X0.64	100				240	360	-55 to 125
+30, -90% (-25 to 85°C)	CLB0A	0.25X0.25	100			36	56		-55 to 125
	CLB0D	0.38X0.38	100			91	150		-55 to 125
	CLB05	0.50X0.50	100			130	220		-55 to 125
	CLB0F	0.64X0.64	100				220	390	-55 to 125
	CLB0J	0.76X0.76	100				330	560	-55 to 125
	CLB09	0.90X0.90	100				390	680	-55 to 125

All Single Layer Microchip Capacitors are produced after receiving an order.

Single-Layer Microchip Capacitors, Thin Film Circuit Substrates (RUSUB)

Thin Film Circuit Substrates (RUSUB)

Customizable capacitors for impedance matching for RF power amplifiers and decoupling for optical communication devices.

■ Features

- Single-layer structure enhances self-resonant frequency, which allows stable operation even at a high frequency range.
- RUSUB technology achieves miniaturization of the device by combining a single-layer capacitor and a thin film resistor. In addition, it contributes to attenuation of unnecessary noise.
- By utilizing Au electrodes, die bonding with AuSn and wire bonding with gold wire are possible.
- A wide selection of substrate materials meets customers' requirements. (Please refer to the following table.)

Function	Dielectric Constant (ϵ_r) *1	Size min. (mm) (LxWxT) *2	Temperature Characteristics of Capacitance (ppm/°C) *3	Through Hole	TaN Resistance	L/S min. (μm) *4	Coefficient of Thermal Expansion (ppm/°C) *1	Temperature Conductivity (ppm/(m·°C)) *1
Impedance Matching	9	0.25X0.25X0.10	-	○	○	30/30 (Au thickness 4 μm)	4.6	200.0
	10	0.25X0.25X0.20	-	○	○		7.0	33.5
	39	0.25X0.25X0.10	0 $\pm$ 30	×	○		6.6	1.9
	90	0.25X0.25X0.10	-330 $\pm$ 120	×	○		9.2	2.3
	150	0.25X0.25X0.10	-750 $\pm$ 120	×	○		11.7	2.0
	250	0.25X0.25X0.10	-750 $\pm$ 600	×	○		12.2	4.0
Decoupling	3000	0.25X0.25X0.10	$\pm$ 10%	×	○	50/50 (Au thickness 8 μm)	10.7	2.5
	10000	0.25X0.25X0.10	+30, -80%	×	×		10.5	1.6
	15000	0.25X0.25X0.10	+30, -90%	×	×		14.0	2.4
	30000	0.25X0.25X0.25	$\pm$ 25%	×	○		11.2	7.35

*1 : Typical value

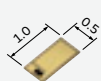
*2 : L = length, W = width, T = thickness

*3 : Temperature Range: -25 to 85°C, Reference Temperature: 25°C

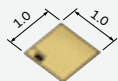
*4 : L = line, S = space

Single-Layer Microchip Capacitors, Thin Film Circuit Substrates (RUSUB)

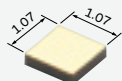
Thirteen types of standard products suitable for decoupling are also available.



RUCYT101 Series



RUCYT201 Series



RUCQD Series

(in mm)

Part Number	Size (mm) (LxWxT)	Capacitor			Resistor	
		Capacitance (pF)	Temperature Characteristics of Capacitance (-25 to 85°C)	Rated Voltage (V)	Resistance (Ω)	Temperature Coefficient of Resistance (ppm/°C)
RUCYT101K00009GNTC	1.0X0.5X0.11	100	±10%	100	50±20%	-70±50
RUCYT101K00011GNTC	1.0X0.5X0.11	100			100±20%	
RUCYT101K00012GNTC	1.0X0.5X0.11	100			200±20%	
RUCYT201K00010GNTC	1.0X1.0X0.12	200			50±20%	
RUCYT201K00013GNTC	1.0X1.0X0.12	200			100±20%	
RUCYT201K00014GNTC	1.0X1.0X0.12	200			200±20%	
RUCQD101RCC007GNTC	0.34X0.34X0.25	100	±25%	65	-	-
RUCQD431RCC001GNZB	0.70X0.70X0.25	430				
RUCQD471RCC002GNZB	0.73X0.73X0.25	470				
RUCQD511RCC003GNZB	0.76X0.76X0.25	510				
RUCQD561RCC004GNZB	0.80X0.80X0.25	560				
RUCQD102RCC008GNZB	1.07X1.07X0.25	1000				
RUCQD201ZCC005GNZB	1.10X0.60X0.25	200×4				

*Several samples for impedance matching are also available for your evaluation. Please find the details at the following link: <https://www.murata.com/en-global/products/capacitor/rusub/matching>

Detailed Catalogs

For more details, please refer to our printed catalogs and the PDF catalogs on our website.



• Single-Layer Microchip Capacitors/Thin Film Circuit Substrates

Cat. No. C01E

Variable Capacitors, Silicon Capacitors

Variable Capacitors

Variable capacitors can carry out the variable of the capacitor by adjusting the tuning voltage. They are designed for frequency matching use for HF band (13.56MHz).

LXRW_V Series





(in mm)

LXRW0YV Series

LXRW19V Series

Series	LxW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
LXRW0Y	0.6X0.6	CSP			33pF	200pF							
LXRW19	1.3X0.9	DFN			33pF	200pF							

Silicon Capacitors

Murata High-Density Silicon Capacitors are based on a MOS Semiconductor technology and utilize a 3D structure that substantially increases their performance and enables compact design. Silicon Capacitors offer small size and low thickness, superior reliability, and stability over high temperatures and high frequencies. They are the ideal choice for all demanding markets, such as Networking (RF Power and Broadband), Medical (Implantable devices), Automotive, or High-Reliability applications. Murata can provide customized Silicon Capacitors or Integrated Passive Devices (IPDs) to optimize your design.

Product Lineup

	Thickness	Standard (150°C)	High temp.	Operating Frequency
 Solder Mounting	100μm	LPSC R All (p37)		XBSC (100GHz+) UBSC (60GHz+) BBSC (40GHz) ULSC (20GHz) UBDC (60GHz+)
	400μm	HSSC All (p37)	HTSC (200°C) XTSC (250°C) (H)	(B) (p38, 39)
 Wire-bonding vertical	100μm	WLSC P A B (p40)		UWSC (26GHz+) (down to 10pH)
	250μm	WBSC P A B (p40)	WTSC (200°C) WXSC (250°C) (A P H)	(B P) (p40)
 Wire-bonding / Embedded horizontal	100μm	EMSC All M (p37, 41)		UBEC (60GHz+) BBEC (40GHz) ULEC (20GHz) (B) (p39)
	250μm		ETSC (200°C) EXSC (250°C) (H) ATSC (200°C) (A) (p38, 41)	

Target application

A Automotive H High Reliability B BroadBand M Medical
 All All applications P Power Amp for RF R RFID

High stability and reliability Si capacitors (HSSC)



BV 11V BV 30V

Series	Size (inch)	Size (mm)	Capacitance Range (F)											
			47p	100p	470p	1n	10n	22n	33n	47n	100n	1μ	3.3μ	
HSSC	1812	4.70X3.60												
	1206	3.40X1.80												
	0805	2.20X1.40												
	0603	1.80X1.10												
	0402	1.20X0.70												
	0201	0.80X0.60												

(1) 0201 - 10nF available in BV 11 and BV 30.

Low-profile Si capacitors down to 100μm (LPSC)



BV 11V BV 30V

Series	Size (inch)	Size (mm)	Capacitance Range (F)											
			47p	100p	330p	470p	1n	10n	22n	33n	47n	100n	1μ	
LPSC	1206	3.40X1.80												
	0805	2.20X1.40												
	0603	1.80X1.10												
	0402	1.20X0.70												
	0402	1.20X0.70												
	0201	0.80X0.60												
	0201	0.80X0.60												

Xtreme temperature Si capacitors up to 250°C (HTSC/XTSC)



BV 11V BV 30V

Series	Size (inch)	Size (mm)	Capacitance Range (F)										
			47p	100p	470p	1n	10n	22n	33n	47n	100n	1μ	3.3μ
HTSC XTSC	1812	4.70X3.60											
	1206	3.40X1.80											
	0603	1.80X1.10											
	0402	1.20X0.70											
	0201	0.80X0.60											

Wire-bondable or embedded low-profile Si capacitors down to 100μm (EMSC)



BV 11V BV 30V

Series	Size (inch)	Size (mm)	Capacitance Range (F)									
			390p	470p	680p	1n	10n	33n	47n	100n	220n	1μ
EMSC	1208	3.07X2.07										△
	0605	1.59X1.32								△		
	0505	1.32X1.32							△		△	
	0404	1.07X1.07						△		△		
	0202	0.63X0.63	△	△	△	△	△					

△ Available parts. For other values, contact your Murata sales representative. △ Under development.

Silicon Capacitors

Extreme temperature wire-bondable Si capacitors up to 250°C (ETSC/EXSC)



BV 11V

BV 30V

Series	Size (inch)	Size (mm)	Capacitance Range (F)												
			390p	470p	680p	1n	10n	33n	47n	100n	220n	1μ	2.2μ	3.3μ	4.7μ
ETSC EXSC	2016	5.07X4.07													△
	1616	4.07X4.07										△		△	
	1612	4.07X3.07											△		
	1208	3.07X2.07										△			
	0605	1.59X1.32								△					
	0505	1.32X1.32							△		△				
	0404	1.07X1.07						△		△					
	0202	0.63X0.63	△	△	△	△	△								

Ultra broadband surface mounted Si capacitor up to 100GHz+ (XBSC)



BV 11V

BV 30V

Series	Size (inch)	Size (mm)	Capacitance Range (F)			
			1n	5.6n	10n	22n
XBSC	0201	0.60X0.30			△	△
	0201M	0.60X0.30	△	△	△	△

Ultra broadband surface mounted Si capacitors up to 60GHz+ (UBSC)



BV 11V

BV 30V

Series	Size (inch)	Size (mm)	Capacitance Range (F)					
			1n	5.6n	10n	22n	47n	100n
UBSC	0402	1.20X0.70						△
	0201	0.80X0.60	△		△	△	△	
	0201M	0.60X0.30	△	△	△	△	△	

Ultra broadband surface mounted Si capacitors up to 40GHz (BBSC)



BV 11V

BV 30V

Series	Size (inch)	Size (mm)	Capacitance Range (F)					
			1n	5.6n	10n	22n	47n	100n
BBSC	0402	1.20X0.70						△
	0201	0.80X0.60	△		△	△	△	
	0201M	0.60X0.30	△	△	△	△	△	

△ Available parts. For other values, contact your Murata sales representative. △ Under development.

Ultra broadband surface mounted Si capacitors up to 20GHz (ULSC)



BV 11V

BV 30V

Series	Size (inch)	Size (mm)	Capacitance Range (F)					
			1n	5.6n	10n	22n	47n	100n
ULSC	0603	1.80X1.10						
	0402	1.20X0.70						
	0201	0.80X0.60						
	0201M	0.60X0.30						

Ultra Broadband surface mounted differential Si capacitors pairs up to 60GHz+ (UBDC)



BV 11V

BV 30V

Series	Size (inch)	Size (mm)	Capacitance Range (F)	
			2x5.6n	2x10n
UBDC	0402M	1.00X0.50		
UBDC	0302M	0.80X0.50		

Ultra broadband wire-bondable embedded Si capacitors up to 60GHz+ (UBEC)



BV 11V

BV 30V

Series	Size (inch)	Size (mm)	Capacitance Range (F)					
			1n	3.3n	5.6n	10n	33n	100n
UBEC	0404	1.07X1.07						
	0201M	0.60X0.30						

Ultra broadband wire-bondable embedded Si capacitors up to 40/20GHz (BBEC/ULEC)



BV 11V

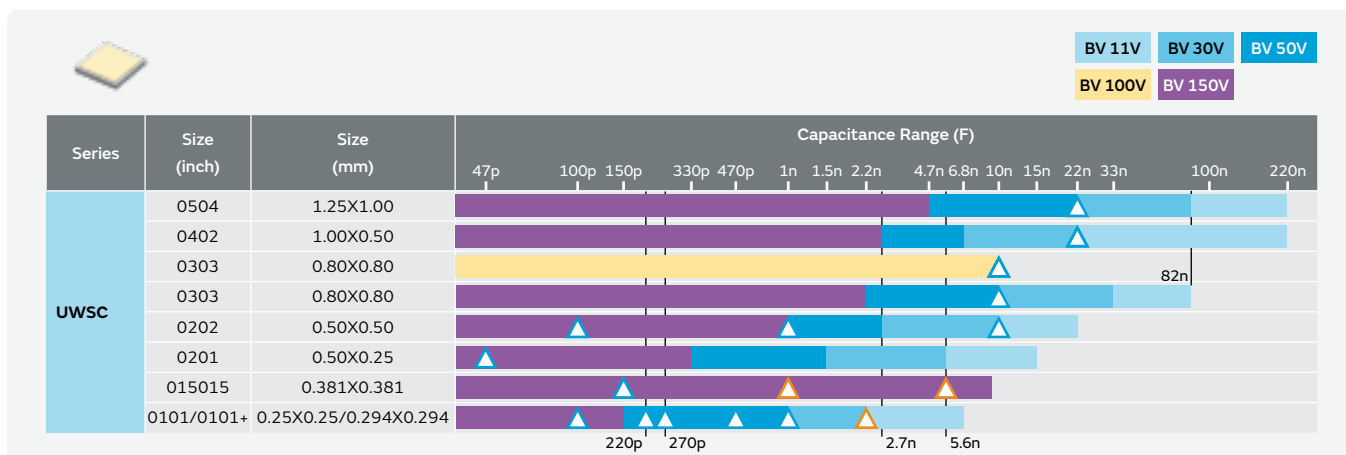
BV 30V

Series	Size (inch)	Size (mm)	Capacitance Range (F)				
			1n	5.6n	10n	33n	100n
BBEC	0404	1.07X1.07					
ULEC	0201M	0.60X0.30					

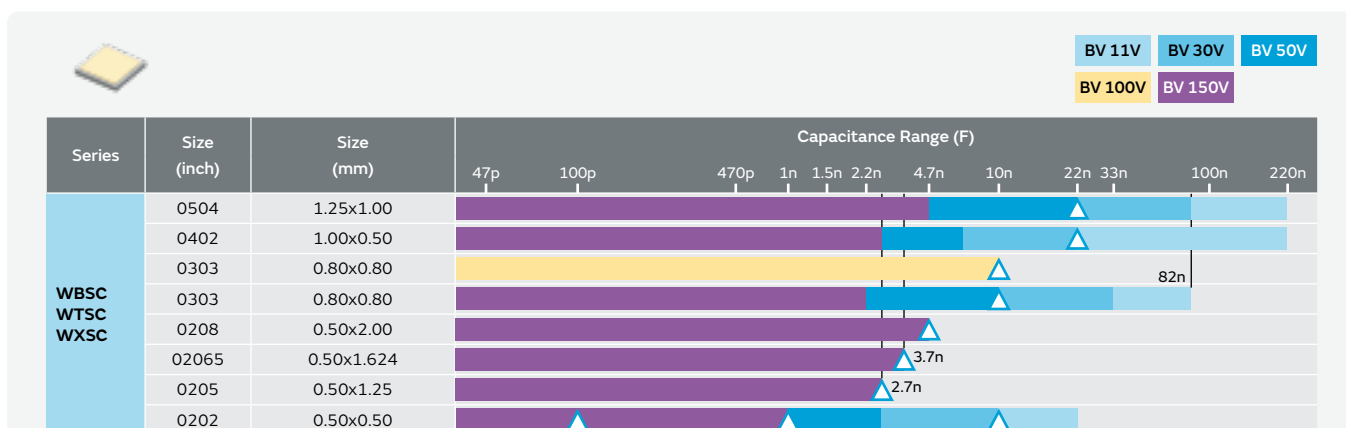
△ Available parts. For other values, contact your Murata sales representative. ▴ Under development.

Silicon Capacitors

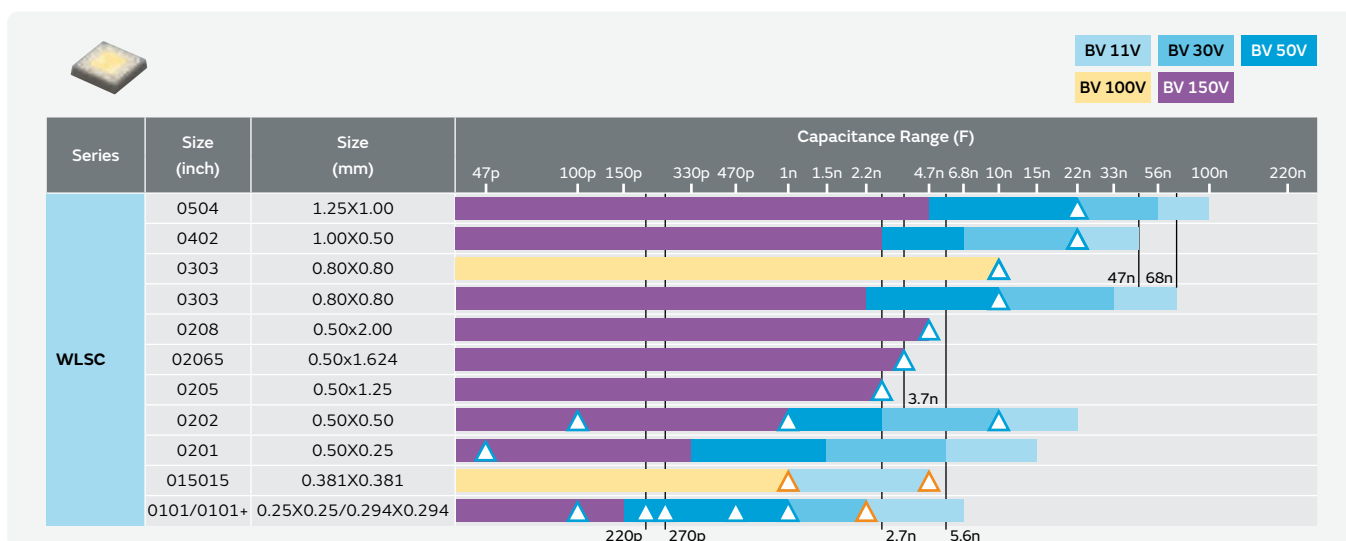
Ultra large-band wire-bondable vertical Si capacitors up to 26GHz+ (UWSC)



Wire-bondable vertical Si capacitors up to 250°C (WBSC/WTSC/WXSC)



Wire-bondable vertical low-profile Si capacitors down to 100μm (WLSC)



△ Available parts. For other values, contact your Murata sales representative. ▴ Under development.

Automotive high temperature Si capacitors up to 200°C (ATSC)



BV 30V

Series	Size (inch)	Size (mm)	Capacitance Range (F)							
			390p	470p	680p	1n	4.7n	10n	47n	100n
ATSC	1616	4.07X4.07								
	0605	1.59X1.32								
	0505	1.32X1.32								
	0202	0.63X0.63								

Medical grade Si capacitors (MGSC)



BV 30V

Series	Size (inch)	Size (mm)	Capacitance Range (F)				
			1n	10n	47n	100n	1μ
MGSC	1616	4.07X4.07					
	0605	1.59X1.32					
	0505	1.32X1.32					
	0202	0.63X0.63					

△ Available parts. For other values, contact your Murata sales representative. ▴ Under development.

Film Capacitors

Film Capacitors

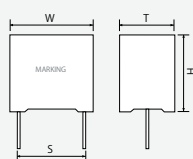
The FH series uses materials with high heat resistance. Therefore, it has a higher allowable ripple current under a higher temperature environment than conventional PP film capacitors.

This feature is more prominent in the high-frequency range. For example, when the ambient temperature is at 105°C, the PP film capacitors would be already at its limit for allowable ripple current, but because of the higher heat resistance of the FH series, the allowable ripple current can be increased drastically.

Specifications



Items	Basic Specifications
Rated Capacitance	10,15,20μF
Rated Voltage	500V
Operational Life	125°C/500V 2000h
Biased Humidity	85°C/85%RH/500V 1000h
Temperature Cycling	-40~+125°C/1000cycles



Dimensions

Part Number	Capacitance	Dimensions (mm)			
		W	H	T	S
FHA50Y206KS	20μF	33.0	37.0	18.0	30.0
FHA50Y156KS	15μF	33.0	35.5	14.5	30.0
FHA50Y106KS	10μF	33.0	35.5	14.5	30.0

Noise Suppression Products/ EMI Suppression Filters

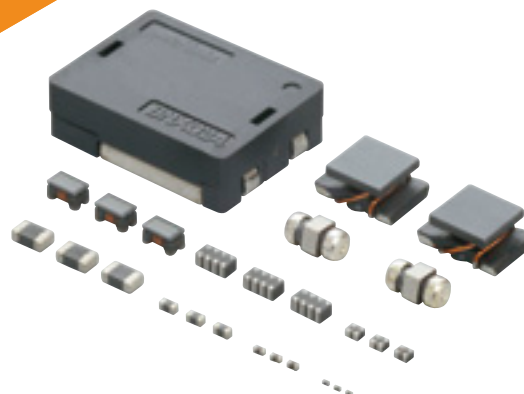
Broad lineup of Noise Suppression Products and
EMI Suppression Filters

Summary

Using Murata's ceramic processing technology and unique materials, we offer a variety of Noise Suppression Products and EMI Suppression Filters.

Lineup

- EMI (chip and lead type)
- Noise Suppression Products for Automotive
- ESD Protection Devices



<https://www.murata.com/en-global/products/emc>

Chip Ferrite Bead

			Series	Size Code inch (mm)	Max. Rated Current (mA)	Impedance at 100MHz (Rated Current)	
For General Band Noise	Universal Type [Power Lines/Signal Lines]		 BLM02AX	01005 (0402)	750	10Ω to 330Ω (0.15A to 0.75A)	
			 BLM03AX	0201 (0603)	1000	10Ω to 1000Ω (0.2A to 1A)	
			 BLM15AX	0402 (1005)	1740	10Ω to 1000Ω (0.35A to 1.74A)	
	Signal Lines Type	For General Signal Lines	 BLM03AG	0201 (0603)	-	10Ω to 1000Ω	
			 BLM15AG	0402 (1005)	-	10Ω to 1000Ω	
			 BLM18AG	0603 (1608)	-	120Ω to 1000Ω	
			 BLM18TG	0603 (1608)	-	120Ω to 1000Ω	
			 BLM21AG	0805 (2012)	-	120Ω to 1000Ω	
			 BLA2AA (4 circuits array)	0804 (2010)	-	120Ω to 1000Ω	
			 BLA31AG (4 circuits array)	1206 (3216)	-	30Ω to 1000Ω	
			For High Speed Signal Lines	 BLM02BX*	01005 (0402)	-	120Ω to 240Ω
				 BLM02BB/BC	01005 (0402)	-	10Ω to 100Ω
		 BLM03BX		0201 (0603)	-	1000Ω to 1800Ω	
		 BLM03BB/BC/BD		0201 (0603)	-	10Ω to 600Ω	
		 BLM15BA/BB/BC/BD		0402 (1005)	-	5Ω to 1800Ω	
		 BLM15BX		0402 (1005)	-	75Ω to 1800Ω	
		 BLM18BA/BB/BD		0603 (1608)	-	5Ω to 2500Ω	
		 BLM21BB/BD		0805 (2012)	-	5Ω to 2700Ω	
		 BLA2AB (4 circuits array)		0804 (2010)	-	10Ω to 1000Ω	
		 BLA31BD (4 circuits array)		1206 (3216)	-	120Ω to 1000Ω	
		For Digital Interface Lines	 BLM18RK	0603 (1608)	-	120Ω to 1000Ω	
			 BLM21RK	0805 (2012)	-	120Ω to 1000Ω	

* The derating of rated current is required for some items according to the operating temperature.

For automotive grade products, please refer to the catalog C51E, "EMI Suppression Filters (for DC)/Chip Inductors for Automotive."

Continued on the following page. ↗

Chip Ferrite Bead

		Series	Size Code inch (mm)	Max. Rated Current (mA)	Impedance at 100MHz (Rated Current)
For General Band Noise	Power Lines Type	 BLM02KX*	01005 (0402)	1500	10Ω to 18Ω (1.2A to 1.5A)
		 BLM02PX*	01005 (0402)	1100	10Ω to 60Ω (0.5A to 1.1A)
		 BLM03PX*	0201 (0603)	1800	22Ω to 120Ω (0.9A to 1.8A)
		 BLM03PG	0201 (0603)	900	22Ω to 33Ω (0.75A to 0.9A)
		 BLM15KD*	0402 (1005)	3800	20Ω to 120Ω (1.5A to 3.8A)
		 BLM15PX*	0402 (1005)	3000	33Ω to 600Ω (0.9A to 3A)
		 BLM15PD*	0402 (1005)	2200	30Ω to 120Ω (1.3A to 2.2A)
		 BLM15PG	0402 (1005)	1000	10Ω (1A)
		 BLM18SN*/SP* (Low DC Resistance Type)	0603 (1608)	8000	22Ω to 1000Ω (1.2A to 8A)
		 BLM18SG*/SD* (Low DC Resistance Type)	0603 (1608)	6000	22Ω to 330Ω (1.5A to 6A)
		 BLM18KG* (Low DC Resistance Type)	0603 (1608)	6000	26Ω to 1000Ω (1A to 6A)
		 BLM18PG*	0603 (1608)	3000	30Ω to 470Ω (1A to 3A)
		 BLM21SN*/SP* (Low DC Resistance Type)	0805 (2012)	8500	30Ω to 1000Ω (1.6A to 8.5A)
		 BLM21PG*	0805 (2012)	6000	22Ω to 330Ω (1.5A to 6A)
		 BLM31SN* (Low DC Resistance Type)	1206 (3216)	12000	50Ω (12A)
		 BLM31KN*	1206 (3216)	6000	120Ω to 1000Ω (2A to 6A)
		 BLM31PG*	1206 (3216)	6000	33Ω to 600Ω (1.5A to 6A)
		 BLM41PG*	1806 (4516)	6000	60Ω to 1000Ω (1.5A to 6A)
For GHz Band Noise	Universal Type [Power Lines/Signal Lines]	 BLM03EB*	0201 (0603)	600	25Ω to 50Ω (0.4A to 0.6A)
		 BLM15EG*	0402 (1005)	1500	120Ω to 220Ω (0.7A to 1.5A)
		 BLM15EX*	0402 (1005)	1800	120Ω to 470Ω (0.95A to 1.8A)
		 BLM18EG*	0603 (1608)	2000	100Ω to 600Ω (0.5A to 2A)
		 BLM18HE*	0603 (1608)	800	600Ω to 1500Ω (0.5A to 0.8A)
	Signal Lines Type	 BLM03HG	0201 (0603)	-	600Ω to 1200Ω
		 BLM03HD	0201 (0603)	-	330Ω to 1800Ω
		 BLM03HB	0201 (0603)	-	190Ω to 400Ω
		 BLM15HG	0402 (1005)	-	600Ω to 1000Ω
		 BLM15HD	0402 (1005)	-	600Ω to 1800Ω
		 BLM15HB	0402 (1005)	-	120Ω to 220Ω
		 BLM18HG	0603 (1608)	-	470Ω to 1000Ω
		 BLM18HD	0603 (1608)	-	470Ω to 1000Ω
		 BLM18HB	0603 (1608)	-	120Ω to 330Ω
		 BLM18HK	0603 (1608)	-	330Ω to 1000Ω
For High-GHz Band Noise	Signal Lines Type	 BLM15GG	0402 (1005)	-	220Ω to 470Ω
		 BLM15GA	0402 (1005)	-	75Ω
		 BLM18GG	0603 (1608)	-	470Ω
	Power Lines Type	 BLM18DN*	0603 (1608)	1400	150Ω to 600Ω (0.7A to 1.4A)

		Series	Size Code inch (mm)	Max. Rated Current (A)	Impedance at 100MHz (Rated Current)
For General Band Noise	Large Current Type Power Lines Type	 BLT5BPT*	2020 (5050)	11	68Ω (11A)

* The derating of rated current is required for some items according to the operating temperature.
For automotive grade products, please refer to the catalog C51E, "EMI Suppression Filters (for DC)/Chip Inductors for Automotive."

Application Specified Noise Filter

	Series	Size Code inch (mm)	Max. Rated Current (mA)	Impedance at 900MHz	Impedance at 1.7GHz
For Audio Lines	 NFZ03SG_10	0201 (0603)	305	330Ω to 1600Ω	400Ω to 1200Ω
	 NFZ15SG_10	0402 (1005)	500	770Ω to 4600Ω	900Ω to 1800Ω
	 NFZ15SG_11	0402 (1005)	1100	100Ω to 330Ω	160Ω to 540Ω

	Series	Size Code inch (mm)	Max. Rated Current (mA)	Impedance at 100MHz	Impedance at 900MHz
For Audio Lines	 NFZ15SF_10	0402 (1005)	-	1000Ω	-
	 NFZ15SR_10	0402 (1005)	-	200Ω to 500Ω	1500Ω to 3500Ω
	 NFZ18SM_10*	0603 (1608)	-	120Ω to 700Ω	-
	 NFZ2MSM_10	0806 (2016)	-	100Ω to 600Ω	-
	 NFZ32SW_10	1210 (3225)	-	300Ω to 900Ω	-

	Series	Size Code inch (mm)	Max. Rated Current (mA)	Impedance at 10MHz
For Audio Lines	 NFZ2MSD_10*	0806 (2016)	-	15Ω to 130Ω

	Series	Size Code inch (mm)	Max. Rated Current (mA)	Impedance at 1MHz
For LED Lighting Equipments	 NFZ5BBW_LN10*	2020 (5050)	4000	2.9Ω to 140Ω
	 NFZ2HBM_10	1008 (2520)	1200	1.5Ω to 60Ω
	 NFZ32BW_10*	1210 (3225)	2550	3.6Ω to 880Ω
	 NFZ32BW_11*	1210 (3225)	2900	3.3Ω to 150Ω

	Series	Size Code inch (mm)	Max. Rated Current (A)	Impedance at 700MHz
Frequency Specified Noise Filters	 BLF02JD*	01005 (0402)	-	360Ω to 470Ω
	 BLF02GD	01005 (0402)	-	1600Ω
	 BLF03JD*	0201 (0603)	-	420Ω

	Series	Size Code inch (mm)	Max. Rated Current (A)	Impedance at 2.4GHz
Frequency Specified Noise Filters	 BLF02RD*	01005 (0402)	-	330Ω to 470Ω

	Series	Size Code inch (mm)	Max. Rated Current (A)	Impedance at 5GHz
Frequency Specified Noise Filters	 BLF03VK*	0201 (0603)	1.2	60Ω to 220Ω

* The derating of rated current is required for some items according to the operating temperature.

For automotive grade products, please refer to the catalog C51E, "EMI Suppression Filters (for DC)/Chip Inductors for Automotive."

Continued on the following page. ↗

Application Specified Noise Filter, LC Combined Filter

		Series	Size Code inch (mm)	Max. Rated Current (mA)	Impedance at 100MHz (Rated Current)
For General Band Noise	Power Lines Type	 BLE18PS*	0603 (1608)	8000	8.5Ω (8A)
		 BLE18PK*	0603 (1608)	6000	10Ω to 16Ω (5A to 6A)
		 BLE32PN	1210 (3225)	10000	26Ω to 30Ω (10A)

LC Combined Filter

	Series	Size Code inch (mm)	Max. Rated Current (mA)	Nominal Cut-off Frequency
Signal Lines Type	 NFL18ST	0603 (1608)	-	50MHz to 500MHz
	 NFL18SP	0603 (1608)	-	150MHz to 500MHz
	 NFL21SP	0805 (2012)	-	10MHz to 500MHz
	 NFA18SL (4 circuits array)	0603 (1608)	-	50MHz to 480MHz
	 NFA18SD (4 circuits array)	0603 (1608)	-	180MHz to 200MHz
	 NFA21SL (4 circuits array)	0805 (2012)	-	50MHz to 330MHz
	 NFW31SP	1206 (3216)	-	10MHz to 500MHz

	Series	Size Code inch (mm)	Max. Rated Current (mA)	Capacitance
Universal Type [Power Lines/Signal Lines]	 NFE31PT	1206 (3216)	6000	22pF to 2200pF
	 NFE61PT	2706 (6816)	2000	33pF to 4700pF

* The derating of rated current is required for some items according to the operating temperature.
For automotive grade products, please refer to the catalog C51E, "EMI Suppression Filters (for DC)/Chip Inductors for Automotive."

Common Mode Choke Coil/Common Mode Noise Filter

		Series	Size Code inch (mm)	Max. Rated Current (mA)	Common Mode Impedance at 100MHz		
Signal Lines Type	For Audio Lines	 DLM11GN	0504 (1210)	-	600Ω		
	For Ultra-High-Speed Signal Lines	 NFGONCN (3 Lines)	03025 (0806)	-	25Ω		
		 NFGOQHB	025020 (0605)	-	(5Ω) to (15Ω)		
		 DLMOQSN	025020 (0605)	-	50Ω to 90Ω		
		 DLMOQSB	025020 (0605)	-	12Ω to 35Ω		
		 DLMONSN	03025 (0806)	-	50Ω to 90Ω		
		 DLMONSM	03025 (0806)	-	90Ω		
		 DLMONSB	03025 (0806)	-	12Ω to 28Ω		
		 DLM11SN	0504 (1210)	-	45Ω to 90Ω		
		 DLP11SN	0504 (1210)	-	67Ω to 330Ω		
		 DLP11SA	0504 (1210)	-	35Ω to 90Ω		
		 DLP11RN	0504 (1210)	-	45Ω		
		 DLP11RB	0504 (1210)	-	15Ω to 40Ω		
		 DLP11TB	0504 (1210)	-	80Ω		
		 DLP31SN	1206 (3216)	-	120Ω to 550Ω		
		 DLP1NDN (2 circuits array)	05025 (1506)	-	35Ω to 90Ω		
		 DLP2ADA (2 circuits array)	0804 (2010)	-	35Ω to 90Ω		
		 DLP2ADN (2 circuits array)	0804 (2010)	-	67Ω to 280Ω		
		 DLP31DN (2 circuits array)	1206 (3216)	-	90Ω to 440Ω		
		 DLW21S	0805 (2012)	-	67Ω to 920Ω		
		 DLW21H	0805 (2012)	-	67Ω to 180Ω		
		 DLW31S	1206 (3216)	-	90Ω to 2200Ω		
		Universal Type [Power Lines/Signal Lines]		 DLW44S*	1515 (4040)	3100	(100Ω) to (2400Ω)
				 DLW5AH/DLW5BS*	2014 (5036) / 2020 (5050)	5000	(190Ω) to (4000Ω)
				 DLW5AT*/DLW5BT*	2014 (5036) / 2020 (5050)	6000	(50Ω) to (2700Ω)

	Series	Size Code inch (mm)	Max. Rated Current (A)	Common Mode Impedance at 10MHz
Large Current Type for Automotive Available	 PLT5BPH*	2020 (5050)	5.6	100Ω to 500Ω
	 PLT10HH*	-	18	45Ω to 1000Ω

	Series	Size Code inch (mm)	Max. Rated Current (mA)	Common Mode Impedance at 100MHz
Large Current Type for Automotive Available	 UCMH0907	3527 (9070)	5000	(700Ω)

* The derating of rated current is required for some items according to the operating temperature.
For automotive grade products, please refer to the catalog C51E, "EMI Suppression Filters (for DC)/Chip Inductors for Automotive."

Block Type EMIFIL

Block Type EMIFIL

		Series	Height (mm)	Rated Voltage (Vdc)	Rated Current (A)
Power Lines Type	SMD Type	 BNX022*	3.1	50	20
		 BNX023*	3.1	100	20
		 BNX024*	3.5	50	20
		 BNX025*	3.5	25	20
		 BNX026*	3.5	50	20
		 BNX027*	3.5	16	20
		 BNX028*	3.5	16	20
		 BNX029*	3.5	6.3	20
	Lead Type	 BNX002	12.5 max.	50	10
		 BNX003	12.5 max.	150	10
		 BNX005	13.0 max.	50	15
		 BNX012*	8.5 max.	50	15
		 BNX016*	8.5 max.	25	15

* The derating of rated current is required for some items according to the operating temperature.
For automotive grade products, please refer to the catalog C51E, "EMI Suppression Filters (for DC)/Chip Inductors for Automotive."

Noise Suppression Filters (Lead Type), Others

	Series		
Lead Type EMIFIL	 DSS1		
Common Mode Choke Coils	 PLT09H	 PLT10HN*	

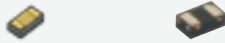
* The derating of rated current is required for some items according to the operating temperature.

ESD Protection Devices

Support ESD protection for various kinds of electronic devices.

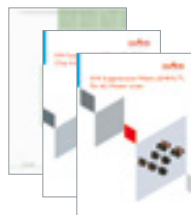
Silicon ESD Protection Devices LXES_T Series

Applying accumulated design technology for excellent ESD suppression performance.



Detailed Catalogs

For more details, please refer to our printed catalogs and the PDF catalogs on our website.



- EMI Suppression Filters (for DC)/Chip Inductors for Automotive
- Noise Suppression by EMIFIL Digital Equipment Application Manual
- Noise Suppression by EMIFIL Application Guide Application Manual
- Application Manual for Power Supply Noise Suppression and Decoupling for Digital ICs

Cat. No. C51E
Cat. No. C33E
Cat. No. C35E
Cat. No. C39E

Inductors (Coils)

Broad Lineup of Chip Inductors and Power Inductors

Summary

Murata's chip inductors are optimally designed, making full use of multiple construction techniques, such as the multilayer construction technique, film construction technique, and the wire wound construction technique according to the application. We offer an extensive lineup of inductors for power supplies to high frequency.

In addition, newly adopted metal alloy material has extended the power inductor lineup.

Lineup

- Inductors for Power Lines
- RF Inductors
- General Circuit Inductors
- Variable Inductors



Online design support tool: SimSurfing

You can view inductor characteristics and select appropriate power inductors for DC-DC converters

The screenshot displays the SimSurfing Design Support Software interface. The top section, 'Characteristics Viewer', includes buttons for various component types: Multilayer Ceramic Capacitors, Three-Terminal Capacitors, Lead Type Ceramic Capacitors, Resonant Molding SMD Type Ceramic Capacitors, Polymer Capacitors, RF Inductors, and Power Inductors. A red arrow points from the 'Power Inductors' button to the 'DC-DC Converter Design Support Tool' in the 'Selection Tool' section. The 'Selection Tool' also includes buttons for Medium voltage Capacitor Selection Tool, DC-DC Converter Design Support Tool, and Noise Filter Design Support Tool. A red arrow points from the 'DC-DC Converter Design Support Tool' to a detailed graph showing inductor characteristics. The bottom part of the screenshot shows a table of inductor specifications.

Part Number	Inductance (μH)	DC Resistance (mΩ)	Q Factor	Self-Resonant Frequency (MHz)	Application
06032210000	2.2	1.0	10	100	General
06032210001	2.2	1.0	10	100	General
06032210002	2.2	1.0	10	100	General
06032210003	2.2	1.0	10	100	General
06032210004	2.2	1.0	10	100	General
06032210005	2.2	1.0	10	100	General
06032210006	2.2	1.0	10	100	General
06032210007	2.2	1.0	10	100	General
06032210008	2.2	1.0	10	100	General
06032210009	2.2	1.0	10	100	General
06032210010	2.2	1.0	10	100	General

<https://ds.murata.co.jp/simsurfing/>

Inductors for Power Lines

Main Type:

▪ Wound Metal Alloy ▪ Multilayer Type ▪ Wound Ferrite Core

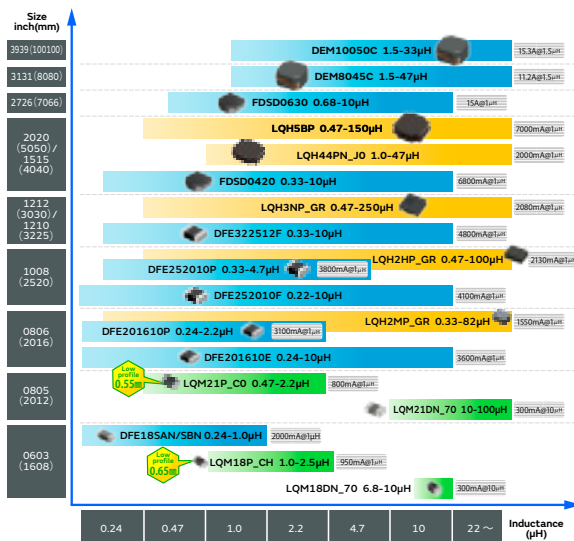
We have an extensive lineup of inductors covering a wide range of sizes from 1.6 mm x 0.8 mm to 12 mm square, which are manufactured using multiple techniques that include metal alloy wire wound construction technique and ferrite multilayer technique.

We offer the optimum inductors for a wide range of applications including wearable devices, smartphones, medical applications, industrial electronics, and on board devices.

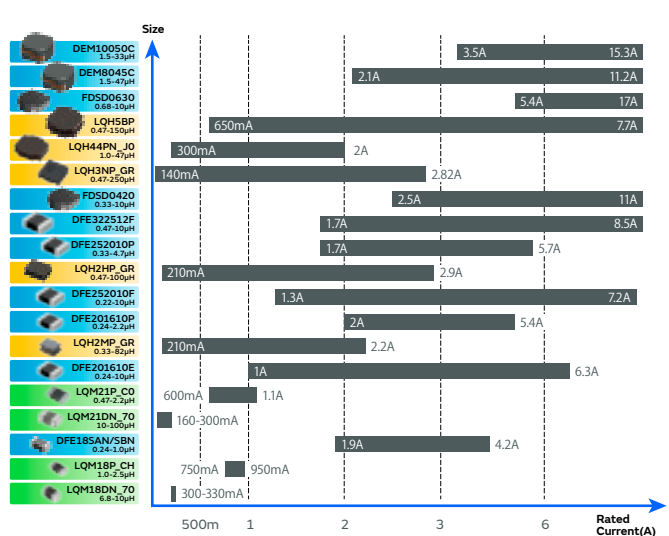
Structure	Description	Series
Wound Metal Alloy	Supports high current by using metal materials in which magnetic saturation does not occur so easily. This product can be used for a wide range of high current power circuits from smart phones to industrial electronics and automotive device applications.	DFEC/DFES series FDSD series
Multilayer Type	The features of this product is its small size and low profile. For example, 2012 or smaller footprint and 0.6mm height. This is ideal for low power circuits, including wearable devices and smartphones.	LQM series
Wound Ferrite Core	A feature of this product is the extensive lineup which supports an inductance of 100 uH or more. It is suitable for step-up power supply circuits in backlights, and choke applications.	LQH series DEM series

Recommended Lineup (General)

List of inductance values

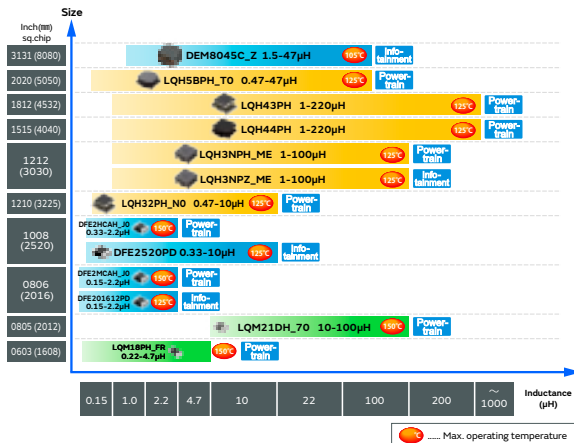


List of rated current values

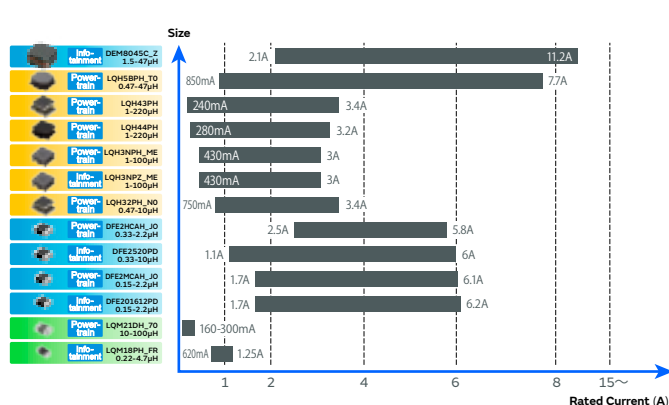


Recommended Lineup (For Automotive)

List of inductance values



List of rated current values



For Power Circuits (For General)

Structure	Size Code inch (mm)	Short Series Name/View		Series	Thickness (mm/max.)	Inductance Range	Rated Current Range
Wound Metal Alloy	0603 (1608)	DFE18SAN		DFE18SAN_E0	0.8	240nH to 1μH	2A to 4.2A
				DFE18SAN_G0	1.0	240nH to 1μH	2.1A to 4.9A
		DFE18SBN		DFE18SBN_E0	0.8	1μH	1.9A
Multilayer Type		LQM18DN		LQM18DN_70	0.95	6.8μH to 10μH	300mA to 330mA
		LQM18PN		LQM18PN_B0	0.4	1.5μH	600mA
				LQM18PN_C0	0.55	470nH to 2.2μH	700mA to 850mA
				LQM18PN_D0	0.75	2.5μH	700mA
				LQM18PN_DH	0.75	2.2μH	650mA
				LQM18PN_F0	0.95	1μH	600mA
				LQM18PN_FH	0.95	470nH to 2.2μH	700mA to 1.4A
				LQM18PN_FR	0.95	220nH to 4.7μH	620mA to 1.25A
				LQM18PN_GH	1.0	1μH to 3.3μH	1.05A
				LQM18PW_CH	0.65	1μH to 2.5μH	750mA to 950mA
Wound Metal Alloy	0805 (2012)			DFE2012		DFE201210U	1.0
Multilayer Type			LQM21PN_C0	0.55	470nH to 2.2μH	600mA to 1.1A	
			LQM21PN_CA	0.65	2.2μH	1.05A	
			LQM21PN_CH	0.55	470nH to 2.2μH	1.05A to 1.6A	
			LQM21PN_EH	0.8	240nH to 2.2μH	1.1A to 2.8A	
			LQM21PN_G0	1.0	470nH to 3.3μH	800mA to 1.3A	
			LQM21PN_GC	1.0	1μH to 2.2μH	800mA to 900mA	
			LQM21PN_GH	1.0	470nH to 4.7μH	1A to 2.4A	
			LQM21PN_GR	1.0	1μH to 4.7μH	800mA to 1.3A	
			LQM21PN_GS	1.0	2.2μH to 4.7μH	750mA to 950mA	
Wound Metal Alloy	0806 (2016)	DFE2016		DFE201610C	1.0	560nH to 2.2μH	1.5A to 2.8A
				DFE201610E	1.0	240nH to 10μH	1A to 6.3A
				DFE201610P	1.0	240nH to 2.2μH	2A to 5.4A
				DFE201612C	1.2	470nH to 2.2μH	1.6A to 3.4A
				DFE201612E	1.2	240nH to 4.7μH	1.8A to 6.6A
				DFE201612P	1.2	240nH to 2.2μH	2.1A to 6.5A
Wound Ferrite Core		LQH2MCN		LQH2MCN_02	0.95	1μH to 82μH	90mA to 485mA
		LQH2MPN		LQH2MCN_52	0.7	1μH to 22μH	130mA to 595mA
				LQH2MPN_GR	0.95	330nH to 82μH	210mA to 2.2A
Multilayer Type		LQM2MPN		LQM2MPN_DH	0.7	2.2μH	1.27A
				LQM2MPN_EH	0.8	240nH to 2.2μH	1.1A to 4.1A
				LQM2MPN_G0	1.0	470nH to 4.7μH	1.1A to 1.6A
				LQM2MPN_GH	1.0	160nH to 2.2μH	1.3A to 5A

Continued on the following page. ↗

Structure	Size Code inch (mm)	Short Series Name/View		Series	Thickness (mm/max.)	Inductance Range	Rated Current Range
Wound Metal Alloy	1008 (2520)	DFE2520		DFE252007F	0.7	470nH to 4.7μH	1.2A to 3.3A
				DFE252008C	0.8	470nH to 4.7μH	1.1A to 3A
				DFE252008U	0.8	470nH to 10μH	1A to 4.5A
				DFE252010C	1.0	470nH to 10μH	1A to 3.5A
				DFE252010F	1.0	220nH to 10μH	1.7A to 7.2A
				DFE252010P	1.0	330nH to 4.7μH	1.7A to 5.7A
				DFE252012C	1.2	470nH to 10μH	1A to 3.8A
				DFE252012F	1.2	330nH to 10μH	1.4A to 7.6A
				DFE252012P	1.2	330nH to 4.7μH	2A to 6.6A
Wound Ferrite Core		LQH2HPN		LQH2HPN_DR	0.6	470nH to 22μH	270mA to 1.67A
				LQH2HPN_GR	1.0	470nH to 100μH	210mA to 2.9A
				LQH2HPN_JR	1.2	470nH to 22μH	540mA to 3.5A
Multilayer Type		LQM2HPN		LQM2HPN_CH	0.55	240nH to 2.2μH	850mA to 2.55A
				LQM2HPN_E0	0.8	560nH	1.5A
				LQM2HPN_EH	0.8	240nH to 2.2μH	1.3A to 4.5A
				LQM2HPN_GO	1.0	470nH to 4.7μH	1.1A to 1.8A
				LQM2HPN_GC	1.0	1μH to 4.7μH	800mA to 1.5A
				LQM2HPN_GH	1.0	240nH to 2.2μH	1.5A to 5A
	LQM2HPN_GS			1.0	2.2μH to 4.7μH	1A to 1.1A	
	LQM2HPN_J0			1.2	1μH to 3.3μH	1A to 1.5A	
	LQM2HPN_JH			1.2	470nH to 2.2μH	1.5A to 3.2A	
Wound Ferrite Core	3mm square	DEM28/DEM35		DEM2812C	1.2	470nH to 12μH	760mA to 3.1A
				DEM2815C	1.5	470nH to 15μH	800mA to 3.9A
				DEM2818C	1.8	470nH to 12μH	1A to 4.7A
				DEM3512C	1.2	680nH to 22μH	530mA to 2.5A
				DEM3518C	1.8	560nH to 22μH	880mA to 3.4A
		LQH3NPN		LQH3NPN_GR	1.0	470nH to 250μH	140mA to 2.82A
				LQH3NPN_JR	1.2	680nH to 47μH	570mA to 2.86A
				LQH3NPN_ME	1.5	1μH to 100μH	430mA to 3A
Multilayer Type	1206 (3216)	LQM31PN		LQM31PN_00	0.95	470nH to 4.7μH	700mA to 1.4A
Wound Metal Alloy	DFE3225		DFE322510C	1.0	470nH to 10μH	1A to 3.8A	
			DFE322512C	1.2	470nH to 10μH	1.2A to 4.7A	
			DFE322512F	1.2	330nH to 10μH	1.7A to 8.5A	
Wound Ferrite Core	1210 (3225)	LQH32P		LQH32PB_N0	1.7	470nH to 120μH	200mA to 3.4A
				LQH32PB_NC	1.7	470nH to 22μH	650mA to 4.4A
				LQH32PN_N0	1.7	470nH to 120μH	200mA to 3.4A
				LQH32PN_NC	1.7	470nH to 22μH	650mA to 4.4A
Multilayer Type	LQM32PN		LQM32PN_G0	1.0	1μH	1.8A	
			LQM32PN_GC	1.0	1μH	2.2A	

Continued on the following page. ↗

Inductors for Power Lines

Structure	Size Code inch (mm)	Short Series Name/View		Series	Thickness (mm/max.)	Inductance Range	Rated Current Range		
Wound Metal Alloy	4mm square	FDSD04		FDSD0412	1.2	330nH to 4.7μH	2.5A to 7.5A		
				FDSD0415	1.5	220nH to 4.7μH	2.9A to 12A		
				FDSD0420	2.0	330nH to 10μH	2.5A to 11A		
				FDSD0420W	2.0	15μH to 22μH	1.5A to 1.9A		
Wound Ferrite Core		LQH44PN		LQH44PN_J0	1.2	1μH to 47μH	380mA to 2A		
				LQH44PN_P0	1.8	1μH to 22μH	800mA to 2.95A		
		LQH43P		LQH43PB_26	2.8	1μH to 220μH	240mA to 3.4A		
				LQH43PN_26	2.8	1μH to 220μH	240mA to 3.4A		
DEM4518			DEM4518C	1.8	1.2μH to 22μH	1A to 3.5A			
			Wound Ferrite Core	5mm square	LQH5BP		LQH5BPB_T0	2.2	470nH to 22μH
LQH5BPN_38		4.0					1μH to 150μH	650mA to 7A	
LQH5BPN_T0		2.2					470nH to 22μH	1.4A to 7.7A	
D52LC/D53LC		D52LC			2.0	1.2μH to 100μH	260mA to 2.44A		
		D53LC			3.0	1.1μH to 220μH	350mA to 3.87A		
Wound Metal Alloy	FDSD05				FDSD0512	1.2	1μH to 6.8μH	2.3A to 6.1A	
			FDSD0515	1.5	1μH to 4.7μH	3.2A to 7A			
			FDSD0518	1.8	680nH to 10μH	2.7A to 9A			
Wound Ferrite Core	6 to 9mm square	DG60		DG6028C	2.8	1μH to 22μH	1.7A to 5.8A		
				DG6045C	4.5	1μH to 100μH	900mA to 9.5A		
				DG6050C	5.0	1.2μH to 100μH	1.2A to 9.8A		
		D63		D63LCB	3.0	1μH to 150μH	440mA to 4.52A		
		DS75LC		DS75LC	5.0	1μH to 470μH	430mA to 9.2A		
		DEM80		DEM8030C	3.0	2.2μH to 47μH	1.3A to 6.2A		
				DEM8040C	4.0	1.5μH to 33μH	2.4A to 10A		
				DEM8045C	4.5	1.5μH to 47μH	2.1A to 11.2A		
		DG80		DG8040C	4.0	1μH to 100μH	1.3A to 10.4A		
		Wound Metal Alloy	FCUL05		FCUL0530	3.0	360nH to 470nH	16A to 18A	
FDSD06						FDSD0630	3.0	680nH to 10μH	5.4A to 17A
FCUL06						FCUL0624	2.4	220nH to 470nH	17A to 24A
						FCUL0630	3.0	120nH to 680nH	15A to 32A
Wound Ferrite Core		10mm square and over	DEM10050		DEM10050C	5.0	1.5μH to 33μH	3.5A to 15.3A	
	DEM10050C_DD				5.0	1.5μH to 33μH	3.5A to 15.3A		
	DS10/DS12			DS104C2	4.8	1.1μH to 120μH	970mA to 11.7A		
				DS106C2	6.8	1.2μH to 330μH	690mA to 12A		
				DS126C2	6.8	1.7μH to 680μH	580mA to 11.8A		
FDA10/FDA12			FDA1055	5.5	560nH to 5.6μH	8A to 27.7A			
			FDA1254	5.4	680nH to 8μH	9.1A to 29.1A			
Wound Metal Alloy	FCUL10			FCUL1040	4.0	180nH to 420nH	34A to 53A		
				FCUL1060	6.0	360nH to 560nH	34A to 41A		

For Choke Circuits (For General)

Structure	Size Code inch (mm)	Short Series Name/View	Series	Thickness (mm/max.)	Inductance Range	Rated Current Range
Wound Ferrite Core	0402 (1005)	LQW15DN 	LQW15DN_00	0.7	10μH to 15μH	100mA to 120mA
Multilayer Type	0603 (1608)	LQM18FN 	LQM18FN_00	0.9	1μH to 10μH	50mA to 150mA
	0805 (2012)	LQM21DN 	LQM21DN_00	1.05	1μH to 47μH	7mA to 60mA
			LQM21DN_70	1.45	10μH to 100μH	160mA to 300mA
		LQM21FN 	LQM21FN_00	1.45	1μH to 47μH	7mA to 220mA
			LQM21FN_80	1.45	4.7μH to 10μH	100mA to 120mA
Wound Ferrite Core	1206 (3216)	LQH31CN 	LQH31CN_03	2.0	120nH to 100μH	80mA to 970mA
	1210 (3225)	LQH32CN 	LQH32CN_23	2.2	1μH to 560μH	60mA to 800mA
			LQH32CN_33	2.2	150nH to 10μH	450mA to 1.45A
			LQH32CN_53	1.7	1μH to 100μH	100mA to 1A
		LQH32DN 	LQH32DN_23	2.2	1μH to 560μH	60mA to 800mA
			LQH32DN_53	1.7	1μH to 100μH	100mA to 1A
	4mm square	LQH43CN 	LQH43CN_03	2.8	1μH to 470μH	90mA to 1.08A
			LQH43CN_33	2.8	560nH to 3.9μH	1.6A to 2.95A
	5mm square	LQH55DN 	LQH55DN_03	5.0	120nH to 10mH	50mA to 6A
	6 to 9mm square	LQH66SN 	LQH66SN_03	5.0	270nH to 10mH	50mA to 6A

For Power Circuits (Infotainment)

Structure	Size Code inch (mm)	Short Series Name/View		Series	Thickness (mm/max.)	Inductance Range	Rated Current Range	
Multilayer Type	0603 (1608)	LQM18PZ		LQM18PZ_CH	0.6	1μH to 2.5μH	750mA to 950mA	
				LQM18PZ_DH	0.75	2.2μH	650mA	
				LQM18PZ_FH	0.95	2.2μH	700mA	
	0805 (2012)	LQM21PZ		LQM21PZ_C0	0.55	470nH to 2.2μH	600mA to 1.1A	
				LQM21PZ_G0	1.0	470nH to 3.3μH	800mA to 1.3A	
				LQM21PZ_GC	1.0	1μH to 2.2μH	800mA to 900mA	
				LQM21PZ_GR	1.0	1μH to 4.7μH	800mA to 1.3A	
Wound Metal Alloy	0806 (2016)	DFE2016		DFE201612P_D	1.2	150nH to 2.2μH	1.7A to 6.2A	
Wound Ferrite Core		LQH2MPZ		LQH2MPZ_GR	0.95	330nH to 82μH	210mA to 2.2A	
Multilayer Type		LQM2MPZ		LQM2MPZ_G0	1.0	470nH to 4.7μH	1.1A to 1.6A	
				LQM2MPZ_JH	1.2	100nH	4A	
Wound Ferrite Core	1008 (2520)	LQH2HPZ		LQH2HPZ_DR	0.6	470nH to 22μH	270mA to 1.67A	
LQH2HPZ_GR				1.0	470nH to 22μH	460mA to 2.9A		
LQH2HPZ_JR				1.2	470nH to 22μH	540mA to 3.5A		
Multilayer Type		LQM2HPZ		LQM2HPZ_E0	0.8	560nH	1.5A	
				LQM2HPZ_G0	1.0	470nH to 4.7μH	1.1A to 1.8A	
				LQM2HPZ_GC	1.0	1μH to 4.7μH	800mA to 1.5A	
				LQM2HPZ_GS	1.0	2.2μH to 4.7μH	1A to 1.1A	
				LQM2HPZ_J0	1.2	1μH to 3.3μH	1A to 1.5A	
Wound Metal Alloy		DFE2520		DFE252012P_D	1.2	330nH to 10μH	1.1A to 6A	
Wound Ferrite Core	3mm square	LQH3NPZ		LQH3NPZ_GR	1.0	470nH to 47μH	460mA to 2.82A	
LQH3NPZ_JR				1.2	680nH to 47μH	570mA to 2.86A		
LQH3NPZ_ME				1.5	1μH to 100μH	430mA to 3A		
Wound Metal Alloy	1210 (3225)	DFE3225		DFE322520F_D	2.0	1μH to 4.7μH	3.4A to 7.5A	
Wound Ferrite Core		LQH32PZ		LQH32PZ_N0	1.7	470nH to 120μH	200mA to 3.4A	
				LQH32PZ_NC	1.7	470nH to 22μH	650mA to 4.4A	
Wound Ferrite Core		4mm square	LQH43PZ		LQH43PZ_26	2.8	1μH to 220μH	240mA to 3.4A
		5mm square	LQH5BPZ		LQH5BPZ_T0	2.2	470nH to 22μH	1.4A to 7.7A
Wound Ferrite Core	6 to 9mm square	DEM80		DEM8045C_Z	4.5	1.5μH to 47μH	2.1A to 11.2A	

For Power Circuits (Powertrain)

Structure	Size Code inch (mm)	Short Series Name/View	Series	Thickness (mm/max.)	Inductance Range	Rated Current Range
Multilayer Type	0603 (1608)	LQM18PH	 LQM18PH_FR	0.95	220nH to 4.7µH	620mA to 1.25A
	0805 (2012)	LQM21PH	 LQM21PH_G0	1.0	0.47µH to 0.54µH	1.3A
			 LQM21PH_GC	1.0	1.0µH to 2.2µH	800mA to 1A
Wound Metal Alloy	0806 (2016)	DFE2MCAH	 DFE2MCAH_J0	1.2	0.15µH to 2.2µH	1.7A to 6.1A
	1008 (2520)	DFE2HCAH	 DFE2HCAH_J0	1.2	330nH to 2.2µH	2.5A to 5.8A
Wound Ferrite Core	1212 (3030)	LQH3NPH	 LQH3NPH_ME	1.5	1µH to 100µH	430mA to 3A
	1210 (3225)	LQH32PH	 LQH32PH_N0	1.7	470nH to 10µH	750mA to 3.4A
			 LQH32PH_NC	1.7	470nH to 22µH	650mA to 4.4A
	4mm square	LQH44PH	 LQH44PH_PR	1.8	1µH to 220µH	330mA to 4.3A
		LQH43PH	 LQH43PH_26	2.8	1µH to 220µH	240mA to 3.4A
	5mm square	LQH5BPH	 LQH5BPH_T0	2.2	0.47µH to 47µH	850mA to 7.7A

For Choke Circuits (Infotainment)

Structure	Size Code inch (mm)	Short Series Name/View	Series	Thickness (mm/max.)	Inductance Range	Rated Current Range
Wound Ferrite Core	1210 (3225)	LQH32D	 LQH32DZ_23	2.2	1µH to 470µH	60mA to 800mA
			 LQH32DZ_53	1.7	1µH to 100µH	100mA to 1A

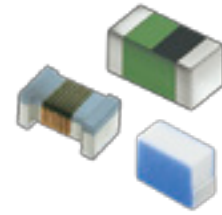
For Choke Circuits (Powertrain)

Structure	Size Code inch (mm)	Short Series Name/View	Series	Thickness (mm/max.)	Inductance Range	Rated Current Range
Multilayer Type	0805 (2012)	LQM21DH	 LQM21DH_70	1.45	10µH to 100µH	160mA to 300mA
Wound Ferrite Core	1210 (3225)	LQH32C	 LQH32CH_23	2.2	1µH to 22µH	250mA to 800mA
			 LQH32CH_33	2.2	150nH to 10µH	450mA to 1.45A
			 LQH32CH_53	1.7	1µH to 22µH	250mA to 1A
		LQW32F	 LQW32FT_0H	2.5	10µH to 47µH	500mA to 700mA

RF Inductors

Main Type:

▪ Film Type ▪ Wire Wound Type ▪ Multilayer Type



An RF inductor is used for matching applications and choke applications in the RF section which has wireless communication functions. By using three characteristic methods, you can select the optimum series for the intended application. For a smartphone or a module film type LQP series which is compact and also has high Q characteristics is optimum. For an RF inductor of size 1005 mm or more, the high Q wound type LQW series which has a large rated current value is recommended for use in a base station or STB. While the multilayer LQG series has a good balance between cost and performance, it is recommended for a wide range of automotive applications, based on our market achievements over many years. Products that are suitable for choke circuits using magnetic materials, such as the LQW_CN series, LQW_H series and other series are also available for power lines. You can select the optimum series from our lineup, based on either the intended application or the relationship between the size and Q characteristics.

General (0.8×0.4 mm or less)

Lineup list

High ↑ Q	LQP series category LQP**TN/LQP**TG series; standard type LQP** TQ series; High Q type LQP** HQ series; super High Q type				
	LQP01HQ New LQP02HQ LQP02TQ LQP02TN		LQP03HQ LQP03TN LQP03TG		LQW03AW LQW04AN
	Q value @800MHz for item around 10nH				
	High Current				
Size inch/mm	(008004/0201) 0.25 × 0.125mm	(01005/0402) 0.4 × 0.2mm	(0201/0503) 0.6 × 0.3mm	(0301/0503) 0.53 × 0.4mm	(0301/0504) 0.8 × 0.4mm

General (1.0×0.5 mm or more)

Lineup list

High ↑ Q	LQW series category LQW**00 series; standard Q type LQW** 10 series; High Q type LQW** 80 series; High Q and large current			
	 LQW15AN_80 LQW15AN_10 LQW15AN_00  LQG15HS LQG15HN	 LQW18AN_80 LQW18AN_10 LQW18AN_00  LQG18HN	 LQW2BAN LQW2BAS	 LQW2UAS
	Q value @800MHz for item around 10nH			
	Size inch/mm	(0402/1005) 1.0 × 0.5mm	(0603/1608) 1.6 × 0.8mm	(0805/2015) 2.0 × 1.5mm

For Automotive

Lineup list

High ↑ Q	For infotainment			For powertrain/safety	
	LQW series LQW18AN_8Z LQW18AN_1Z LQW18AN_0Z LQW15AN_8Z LQW15AN_1Z LQW15AN_0Z			LQG_H series LQG15WH LQG15HH LQG18HH	
	LQP series LQP03TN_ZZ			LQG_Z series LQG15WZ LQG15HZ	
	Size inch/mm	(0201/0503) 0.6 × 0.3mm	(0402/1005) 1.0 × 0.5mm	(0603/1608) 1.6 × 0.8mm	(0402/1005) 1.0 × 0.5mm

RF Circuits (0.8 x 0.4 mm or less)

Structure	Size Code inch (mm)	Short Series Name/View	Series	Thickness (mm/max.)	Inductance Range	Rated Current Range
Wound non-magnetic type	0201 (0603)	LQW03A	 LQW03AW_00	0.45	1nH to 15.5nH	230mA to 900mA
	03019 (0805)	LQW04A	 LQW04AN_00	0.45	0.8nH to 33nH	140mA to 1.8A
			LQW04AN_10	0.45	36nH to 56nH	180mA to 200mA
			LQW04AN_20	0.45	36nH to 56nH	120mA to 155mA
Film type	008004 (0201)	LQP01	 LQP01HQ	0.213	0.3nH to 2.7nH	200mA to 500mA
	01005 (0402)	LQP02	 LQP02HQ_02	0.32	0.2nH to 56nH	100mA to 1A
			LQP02TQ_02	0.22	0.2nH to 22nH	120mA to 990mA
			LQP02TN_02	0.22	0.2nH to 39nH	90mA to 320mA
	0201 (0603)	LQP03	 LQP03HQ_02	0.42	0.5nH to 470nH	50mA to 1.1A
			LQP03TN_02	0.33	0.6nH to 270nH	60mA to 850mA
			LQP03TG_02	0.33	0.1nH to 120nH	80mA to 850mA
			LQP03PN_02	0.33	2.2nH to 4.7nH	900mA to 1.4A

RF Circuits (1.0 x 0.5 mm or more)

Structure	Size Code inch (mm)	Short Series Name/View	Series	Thickness (mm/max.)	Inductance Range	Rated Current Range
Wound non-magnetic type	0402 (1005)	LQW15A	 LQW15AN_00	0.6	1.5nH to 120nH	110mA to 1A
			LQW15AN_10	0.6	1.3nH to 8.4nH	640mA to 1.2A
			LQW15AN_80	0.6	1.3nH to 75nH	320mA to 3.15A
			LQW15AW_80	0.66	51nH to 220nH	220mA to 480mA
	0603 (1608)	LQW18A	 LQW18AN_00	1.0	2.2nH to 470nH	75mA to 850mA
			LQW18AN_10	1.0	2.2nH to 33nH	550mA to 1.4A
			LQW18AN_80	1.0	2.2nH to 390nH	190mA to 3.2A
			LQW18AS_00	1.0	1.2nH to 390nH	100mA to 700mA
			LQW18AS_0C	1.0	1.6nH to 390nH	100mA to 700mA
	0806 (2016)	LQW2B	 LQW2BAN_00	1.52	3.2nH to 200nH	750mA to 3.8A
			LQW2BAS_00	1.52	2.7nH to 1μH	170mA to 910mA
			LQW2BHN_03	1.78	3.3nH to 470nH	160mA to 1.32A
			LQW2BHN_13	1.78	2.7nH to 27nH	900mA to 1.9A
	1008 (2520)	LQW2U	 LQW2UAS_00	2.03	12nH to 4.7μH	260mA to 1A
			LQW2UAS_0C	2.03	12nH to 8.2μH	170mA to 1A
	1206 (3216)	LQW31H	 LQW31HN_03	2.0	8.8nH to 100nH	230mA to 750mA
Multilayer Type	0402 (1005)	LQG15H	 LQG15HN_02	0.55	1nH to 120nH	150mA to 1A
			LQG15HS_02	0.55	1nH to 270nH	110mA to 1A
	0603 (1608)	LQG18H	 LQG18HN_00	0.95	1.2nH to 100nH	350mA to 1.1A

For Choke/Tuner Circuits (1.0 x 0.5 mm or more)

Structure	Size Code inch (mm)	Short Series Name/View		Series	Thickness (mm/max.)	Inductance Range	Rated Current Range
Wound Ferrite Core type	0402 (1005)	LQW15C		LQW15CN_00	0.6	18nH to 200nH	390mA to 1.4A
				LQW15CN_10	0.6	20nH to 3.3μH	130mA to 2.2A
	0402 (1005)	LQW15D		LQW15DN_00	0.7	10μH to 15μH	100mA to 120mA
	0603 (1608)	LQW18C		LQW18CN_00	0.95	4.9nH to 650nH	430mA to 2.6A
	0805 (2012)	LQW21H		LQW21HN_00	1.0	470nH to 2.2μH	75mA to 160mA
	1206 (3216)	LQH31H		LQH31HN_03	2.0	54nH to 880nH	180mA to 920mA

For Choke/Tuner Circuits (Infotainment)

Structure	Size Code inch (mm)	Short Series Name/View		Series	Thickness (mm/max.)	Inductance Range	Rated Current Range
Wound Ferrite Core type	0402 (1005)	LQW15C		LQW15CN_0Z	0.6	18nH to 200nH	390mA to 1.4A
				LQW15CN_1Z	0.6	20nH to 560nH	300mA to 2.2A
	0603 (1608)	LQW18C		LQW18CN_0Z	0.95	4.9nH to 650nH	430mA to 2.6A
	1206 (3216)	LQH31H		LQH31HZ_03	2.0	54nH to 880nH	180mA to 920mA

For RF Circuits (Infotainment)

Structure	Size Code inch (mm)	Short Series Name/View		Series	Thickness (mm/max.)	Inductance Range	Rated Current Range
Wound non-magnetic type	0402 (1005)	LQW15A		LQW15AN_0Z	0.6	1.5nH to 120nH	110mA to 1A
				LQW15AN_1Z	0.6	1.3nH to 8.4nH	640mA to 1.2A
				LQW15AN_8Z	0.6	1.3nH to 75nH	320mA to 3.15A
	0603 (1608)	LQW18A		LQW18AN_0Z	1.0	2.2nH to 470nH	75mA to 850mA
				LQW18AN_1Z	1.0	2.2nH to 33nH	550mA to 1.4A
				LQW18AN_8Z	1.0	2.2nH to 390nH	190mA to 3.2A
				LQW18AS_0Z	1.0	1.6nH to 390nH	100mA to 700mA
Film type	0201 (0603)	LQP03T		LQP03TN_Z2	0.33	0.6nH to 120nH	80mA to 850mA
Multilayer Type	0402 (1005)	LQG15H		LQG15HZ_02	0.55	1nH to 270nH	110mA to 1A
		LQG15W		LQG15WZ_02	0.6	0.7nH to 150nH	110mA to 1.2A

For RF Circuits (Powertrain)

Structure	Size Code inch (mm)	Short Series Name/View	Series	Thickness (mm/max.)	Inductance Range	Rated Current Range
Multilayer Type	0402 (1005)	LQG15H	 LQG15HH_02	0.55	1nH to 270nH	110mA to 1A
		LQG15W	 LQG15WH_02	0.6	0.7nH to 150nH	110mA to 1.2A
	0603 (1608)	LQG18H	 LQG18HH_00	0.95	1.2nH to 270nH	200mA to 1.1A

LC trap filter

Part number	Impedance (Ω Typ.)			Insertion Loss Characteristic (dB Typ.)			DC Resistance Max.(Ω)	Rated Current (mA)	Self Resonant Frequency (GHz Typ.)
	at 2.40GHz	at 2.44GHz	at 2.50GHz	at 2.40GHz	at 2.44GHz	at 2.50GHz			
LQZ02HQ242A02 	460	600	345	15.0	15.7	13.0	0.55	200	2.44

General Circuit Inductors

Main Type:

▪ Multilayer Type ▪ Wire-wound Type ▪ 2in1 Type



We have an extensive lineup of general purpose inductors for a variety of circuits.

You can select an inductor to match your particular application. Wire-wound type LQH_M, LQH_N series are suitable for large inductance, multilayer type LQM_M, LQM_N series are suitable for small size.

In addition, we have the 2-in-1 type HEAWS series inductors for digital audio amplifiers.

General Purpose (For General)

Structure	Size Code inch (mm)	Short Series Name/View		Series	Thickness (mm/max.)	Inductance Range	Rated Current Range
Wound Ferrite Core type	0402 (1005)	LQW15CA		LQW15CA_00	0.66	22nH to 2 μ H	130mA to 1.3A
	0603 (1608)	LQW18CA		LQW18CA_00	0.95	32nH to 580nH	450mA to 2.2A
	1206 (3216)	LQH31MN		LQH31MN_03	2.0	150nH to 100 μ H	45mA to 250mA
	1210 (3225)	LQH32MN		LQH32MN_23	2.2	1 μ H to 560 μ H	40mA to 445mA
	4mm square	LQH44NN		LQH44NN_03	4.5	510nH to 470 μ H	145mA to 4.5A
		LQH43M/N		LQH43MN_03	2.8	1 μ H to 1.5mH	40mA to 500mA
				LQH43NN_03	2.8	1 μ H to 2.4mH	25mA to 500mA
Multilayer Type	0402 (1005)	LQB15NN		LQB15NN_10	0.55	220nH to 560nH	300mA to 380mA
	0603 (1608)	LQB18NN		LQB18NN_10	0.95	220nH to 560nH	300mA to 450mA
		LQM18JN		LQM18JN_00	0.65	100nH to 160nH	550mA to 650mA
		LQM18NN		LQM18NN_00	0.95	47nH to 2.2 μ H	15mA to 50mA
	0805 (2012)	LQM21NN		LQM21NN_10	1.05	100nH to 4.7 μ H	30mA to 250mA

General Purpose (For Automotive Infotainment)

Structure	Size Code inch (mm)	Short Series Name/View		Series	Thickness (mm/max.)	Inductance Range	Rated Current Range
Wound Ferrite Core type	1210 (3225)	LQH32NZ		LQH32NZ_23	2.2	1 μ H to 470 μ H	45mA to 445mA
	4mm square	LQH43NZ		LQH43NZ_03	2.8	1 μ H to 2.4mH	25mA to 500mA
2in1 Type	10mm square and over	HEAWS		HEAWS	10.0	3.3 μ H to 10 μ H	5A to 8A

General Circuit Inductors, Variable Inductors

General Purpose (For Automotive Powertrain)

Structure	Size Code inch (mm)	Short Series Name/View	Series	Thickness (mm/max.)	Inductance Range	Rated Current Range
Wound Ferrite Core type	1210 (3225)	LQH32NH	 LQH32NH_23	2.2	1μH to 560μH	40mA to 780mA
	4mm square	LQH43NH	 LQH43NH_03	2.8	1μH to 2.2mH	30mA to 1.3A

Variable Inductors

Variable inductor products are coil products that allow the inductance to be easily varied by changing the position of the ferrite core in a threaded structure. The interior is covered by a metal case that is magnetically shielded, while a resin molded structure protects the windings with a high degree of reliability.

**5CCEG****6.5×5.9×6.0(H) mm MAX.**

Supported inductance range: 0.05 to 2.7μH

Features

- High reliability that conforms to automotive standards
- Operating temperature range: -40°C to +85°C

Applications

- Ideal for use as RF matching transformers for car tuners

**FSDVA****5.8×5.8×5.5(H) mm MAX.**

Supported inductance range:

0.1 to 52mH(1 to 7 mH for corner sensor applications)

Features

- Resistant to mechanical stress
- Operating temperature range:
Up to 20 mH (-40°C to +105°C)
20 mH or more (-40°C to +85°C)
- High reliability that conforms to automotive standards
- Lead coplanarity guaranteed within 0.1 mm

5CCEG Series

Winding Connection (Bottom View)	Part Number	Test Frequency (MHz)	Resonance Capacitor Range (pF)	Unloaded Q
	#A1313B-0029GGH=P3	100	11.4+3/-3%	72+/-20%
	#A1313B-0030GRG=P3	100	11.4+5/-2%	61+/-20%
	#A1313B-0031GRG=P3	100	11.4+2/-4%	54+/-20%
	#A1313B-0032GGH=P3	100	11.7+3/-3%	72+/-20%

FSDVA Series

Winding Connection (Bottom View)	Part Number	Test Frequency (kHz)	Inductance Range (mH)	Unloaded Q
	N1342JC-0143UG=P3	252	4.4±3%	25 min.
	N1342LE-0144BQE=P3	252	2.5±5%	25 min.

Bias-T Inductor Design Support Tool

To use this tool, go to
<https://ds.murata.co.jp/bist/?lcid=en-us>

For High-speed automotive interfaces (SerDes)
Bias-T-circuit inductor selection tool

- Simply by setting the circuit configuration, criteria and current, the tool selects the optimal combination of components needed for the Bias-T circuit.
- Automatic calculations conserve design and development resources



Noise Filter Design Support Tool

To use this tool, go to
<https://ds.murata.co.jp/nfst/>

Noise filter design support tool on SimSurfing

- You can select parts for noise filter while simulating insertion loss of filter (including ferrite beads, L, common mode, and C).
- Retained filter results and products are displayed by choosing the target frequency.
- Available online, no download required.

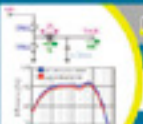


DC-DC Converter Design Support Tool

To use this tool, go to
<https://ds.murata.co.jp/mpst/>

DC-DC converter design support tool on SimSurfing

- Assist inductor/capacitor selection in terms of efficiency & ripple
- Available online, no download required



Detailed Catalogs

For more details, please refer to our printed catalogs and the PDF catalogs on our website.



- Chip Inductors (Chip Coils) Cat. No. O05E
- EMI Suppression Filters (for DC)/Chip Inductors for Automotive Cat. No. C51E

Resistors

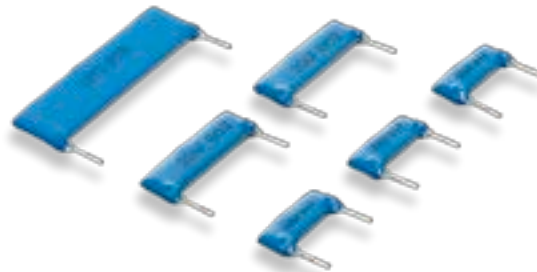
Full lineup for various applications

Summary

Using Murata's ceramic processing technology and unique materials, we offer a series of resistor products.

Lineup

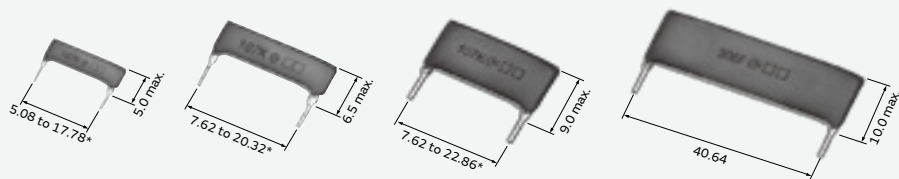
- High Voltage Resistors



<https://www.murata.com/en-global/products/resistor>

High Voltage Resistors

Featuring thick-film resistors, the Murata MHR series of high-voltage resistors is available in compact and thin SIP packages. Variants with small deviations are also available on request.



MHR03 Series

MHR04 Series

MHR06 Series

MHR0844 Series

(in mm)

*The terminal pitch is an integral multiple of 2.54mm.

Series	Resistance (min.) (MΩ)	Resistance (max.) (MΩ)	Maximum Operating Voltage (Single Use) (kV)	Maximum Operating Voltage (Molded Use) (kV)	Rated Power (W)
MHR03	1	1000 to 2000	2 to 8	3 to 14	0.3 to 1.0
MHR04	1	1000 to 2000	3.5 to 10	10 to 18	0.6 to 1.7
MHR06	1	1000 to 10000	3.5 to 10	10 to 20	0.8 to 1.6
MHR0844	1	2000	20	35	2.5

Resistance 2 element type is also available.
For resistance value and ratio, please contact us.

Timing Devices

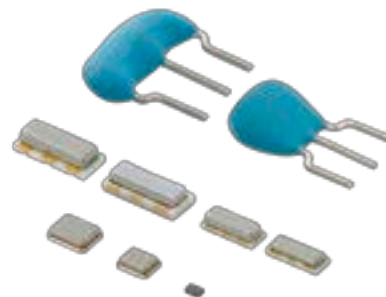
A stable timing source for microprocessors in various electronic devices

Summary

Murata's ceramic processing technology and unique piezoelectric material has led to the development of a range of small and thin ceramic timing devices that offer high oscillation frequency and remarkable oscillation tolerance.

Lineup

- MEMS Resonator ●Crystal Units
- Ceramic Resonators CERALOCK



<https://www.murata.com/en-global/products/timingdevice>

IC Part Number - Timing Devices Search

Search for Timing Devices by IC part number or search for IC part number by Timing Devices on our website. It is also possible to search by either oscillating frequency or frequency range.

Part Number	OSC. FREQ. (MHz)	FREQUENCY TOLERANCE	Q1 (dB)	Q2 (dB)
1. CERALOCK P16E	1.0	±0.01%	20	20
2. CERALOCK P17E	1.0	±0.01%	20	20
3. CERALOCK P79E	1.0	±0.01%	20	20
4. CERALOCK P16E	1.0	±0.01%	20	20
5. CERALOCK P17E	1.0	±0.01%	20	20
6. CERALOCK P79E	1.0	±0.01%	20	20
7. CERALOCK P16E	1.0	±0.01%	20	20
8. CERALOCK P17E	1.0	±0.01%	20	20
9. CERALOCK P79E	1.0	±0.01%	20	20
10. CERALOCK P16E	1.0	±0.01%	20	20
11. CERALOCK P17E	1.0	±0.01%	20	20
12. CERALOCK P79E	1.0	±0.01%	20	20
13. CERALOCK P16E	1.0	±0.01%	20	20
14. CERALOCK P17E	1.0	±0.01%	20	20
15. CERALOCK P79E	1.0	±0.01%	20	20
16. CERALOCK P16E	1.0	±0.01%	20	20
17. CERALOCK P17E	1.0	±0.01%	20	20
18. CERALOCK P79E	1.0	±0.01%	20	20
19. CERALOCK P16E	1.0	±0.01%	20	20
20. CERALOCK P17E	1.0	±0.01%	20	20

<https://ds.murata.co.jp/simsurfing/>

Detailed Catalogs

For more details, please refer to our printed catalogs and the PDF catalogs on our website.



- Ceramic Resonators (CERALOCK)
- Ceramic Resonator (CERALOCK) Application Manual
- Crystal Units

Cat. No. P16E
Cat. No. P17E
Cat. No. P79E

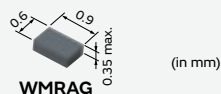
MEMS Resonator

The ultra small-sized and highly reliable resonator is realized with Murata's MEMS technology.

The small size makes the resonator suitable for a variety of applications such as miniature IoT devices, wireless modules, medical devices, and industrial equipment.

The resonator package is silicon based with low form factor which enables embedding with IC in over molded packages.

For Consumer/Industrial



(in mm)

Series	Frequency (kHz)	Frequency Tolerance (ppm)	Operating Temperature Range (°C)
WMRAG	32.768	±20	-40 to 125

Crystal Units

Crystals Unit utilize highly accurate frequency-based high-grade quartz crystal elements.

We offer a wide lineup of Crystal Units using Murata's proven package technology for small digital devices, automotive, etc.

For Consumer/Industrial



XRCGB

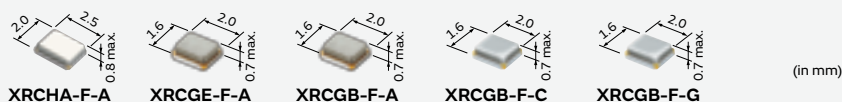


XRCHA

(in mm)

Series	Type	Seal	Frequency (MHz)	Frequency Tolerance (ppm)	Frequency Shift by Temperature (ppm max.)	Operating Temperature Range (°C)
XRCGB-F-S	HCR2016	Resin	24.0000	±8	±12	-30 to 85
			26.0000 40.0000	±10	±10	-30 to 85
XRCGB-F-P	HCR2016	Resin	16.0000 38.4000	±20	±20	-30 to 85
XRCGB-F-M	HCR2016	Resin	16.0000 32.0000	±30	±40	-30 to 85
			33.8688 50.0000	±45	±40	-30 to 85
XRCGB-F-L	HCR2016	Resin	16.0000 50.0000	±100	±50	-30 to 85
XRCHA-F-L	HCR2520	Resin	16.0000 20.0000	±100	±100	-30 to 85

For Automotive Applications



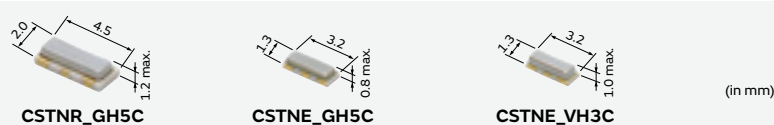
(in mm)

Series	Type	Seal	Frequency (MHz)							Frequency Tolerance (ppm)					Frequency Shift by Temperature (ppm max.)	Operating Temperature Range (°C)
			0	10	20	30	40	50	60	0	20	40	60	80		
XRCHA-F-A	HCR2520	Resin	16.0000 24.0000							±100					±100	-40 to 125
XRCGE-F-A	HCR2016	Resin	20.0000 23.9999							±30					±45	-40 to 125
			24.0000 27.6000							±15					±35	-40 to 125
			30.0000 40.0000							±30					±45	-40 to 125
XRCGB-F-A	HCR2016	Resin	24.0000 29.9999							±30					±35	-40 to 125
			30.0000 48.0000							±50					±65	-40 to 125
XRCGB-F-C	HCR2016	Resin	24.0000 27.6000							±20					±20	-30 to 85
XRCGB-F-G	HCR2016	Resin	24.0000 48.0000							±30 ±45 ±100					±50	-40 to 85

Ceramic Resonators CERALOCK

Wide product lineup of SMD and lead type versions for automotive and consumer applications.

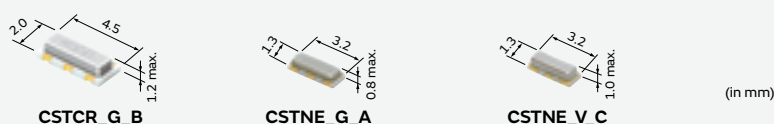
MHz Chip Type for Automotive (Tight Frequency Tolerance)



(in mm)

Series	Frequency (MHz)							Frequency Tolerance (%)		Frequency Shift by Temperature (% max.)	Operating Temperature Range (°C)
	0	10	20	30	40	50	60	0	1		
CSTNR_GH5C	4.00		7.99					±0.07		±0.13	-40 to 125
CSTNE_GH5C	8.00		13.99					±0.07		±0.13	-40 to 125
CSTNE_VH3C	14.00		20.00					±0.07		±0.13	-40 to 125

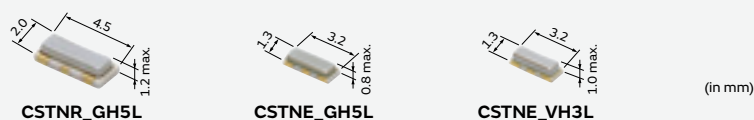
MHz Chip Type for Automotive (Standard Frequency Tolerance)



(in mm)

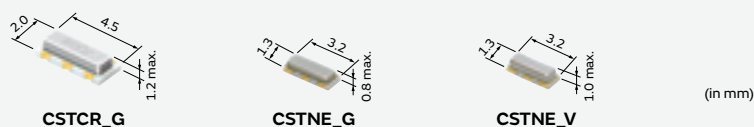
Series	Frequency (MHz)							Frequency Tolerance (%)		Frequency Shift by Temperature (% max.)	Operating Temperature Range (°C)
	0	10	20	30	40	50	60	0	1		
CSTCR_G_B	4.00		7.99					±0.5		±0.15	-40 to 125
CSTNE_G_A	8.00		13.99					±0.5		±0.20	-40 to 125
CSTNE_V_C	14.00		20.00					±0.5		±0.15	-40 to 125

MHz Chip Type for Consumer Electronics (Tight Frequency Tolerance)



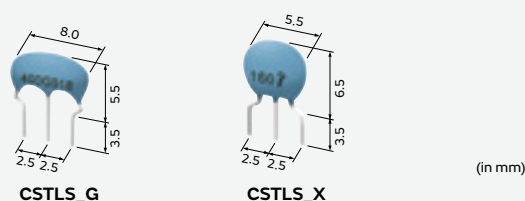
Series	Frequency (MHz)							Frequency Tolerance (%)	Frequency Shift by Temperature (% max.)	Operating Temperature Range (°C)
	0	10	20	30	40	50	60			
CSTNR_GH5L	4.00	7.99						±0.07	±0.11	-20 to 85
CSTNE_GH5L	8.00	13.99						±0.07	±0.11	-40 to 85
CSTNE_VH3L	14.00	20.00						±0.07	±0.11	-40 to 85

MHz Chip Type for Consumer Electronics (Standard Frequency Tolerance)



Series	Frequency (MHz)							Frequency Tolerance (%)	Frequency Shift by Temperature (% max.)	Operating Temperature Range (°C)
	0	10	20	30	40	50	60			
CSTCR_G	4.00	7.99						±0.5	±0.20	-20 to 80
CSTNE_G	8.00	13.99						±0.5	±0.20	-40 to 85
CSTNE_V	14.00	20.00						±0.5	±0.30	-40 to 85

MHz Lead Type for Consumer Electronics (Standard Frequency Tolerance)



Series	Frequency (MHz)							Frequency Tolerance (%)	Frequency Shift by Temperature (% max.)	Operating Temperature Range (°C)
	0	10	20	30	40	50	60			
CSTLS_G	3.40	10.00						±0.5	±0.20 (15pF) -0.40/+0.20 (47pF)	-20 to 80
CSTLS_X	16.00	70.00						±0.5	±0.20	-20 to 80

Filters

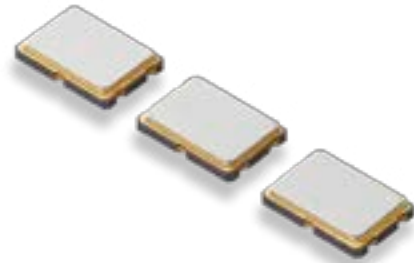
Broad lineup of Filters for video, audio, RF/Local, Duplexers, and Filters for IF

Summary

Using Murata's ceramic processing technology and unique materials, we offer miniaturized filters with excellent properties for advanced digital audio/visual systems and communication equipment.

Lineup

- Crystal Filters
- SAW Filters for Mobile Communications
- Dielectric Filters GIGAFIL
- Chip Multilayer LC Filters

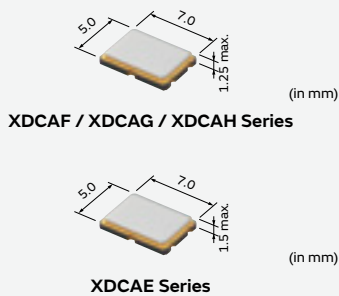


<https://www.murata.com/en-global/products/filter>

Filters

Crystal Filters

Our original wafer-thin technology has made it possible to make highly reliable filters in various applications such as radio communication worldwide.



Series	Type	Frequency Range (MHz)	Number of Poles
XDCAF	TM7050F	20 to 80 [Fundamental] 70 to 150 [3rd overtone]	2
XDCAG	TM7050G		4
XDCAH	TM7050H		4
XDCAE	TM7050E		4

*Please be sure to consult with our sales representative or engineer if you require other center frequency.

SAW Filters for Mobile Communications

SAW Duplexers

Low loss, high attenuation performance, small size, highly selective pass band, chip size package



RF Filters

Low loss, high attenuation performance, small size, highly selective pass band, chip size package

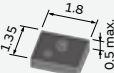
Single Filter



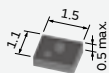
SAFFB Series

(in mm)

Dual Filter



SAWEN Series



SAWFD Series

(in mm)

SAW Filters and SAW Duplexers may be used only in the following equipment:

Mobile phones, cordless telephones (except automobile telephone), smartphones, tablet PC, PC (including laptop/netPC), game machines, cameras (except for business use and for security), STB, electronic dictionaries, and digital audio instruments. Please contact us for other usages.

Dielectric Filters GIGAFIL

This is a high frequency dielectric filter for Wi-Fi routers, accespoints, for example.

It employs a unique plate construction which enables the filter to be compact and have a low profile.



DFCT Series

	Series	Frequency Range (MHz)								Number of Resonators	Input Power Range
		100	1000	2000	3000	4000	5000	6000	7000		
RF Filter	DFCT			2000				6000		2 to 6	1W*

*Power depends upon specifications.

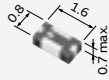
Chip Multilayer LC Filters

Ultra-small and low-profile filters based on ceramic multilayer technology.

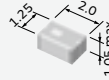
Band Pass Filters



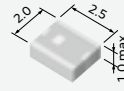
LFB15 Series



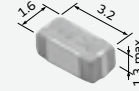
LFB18 Series



LFB21 Series



LFB2H Series



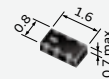
LFB31 Series

(in mm)

Low Pass Filters



LFL15 Series



LFL18 Series



LFL21 Series

(in mm)

Detailed Catalogs

For more details, please refer to our printed catalogs and the PDF catalogs on our website.



- Ceramic Filters (CERAFIL)/Crystal Filters
- Ceramic Filters (CERAFIL) Application Manual

Cat. No. P51E
Cat. No. P11E

RF Components

Broad lineup of RF Components for RF/Local circuits in communications equipment

Summary

To enhance the technical advantages of communication equipment, Murata offers miniaturized, sophisticated components to meet the demands of many applications.

Lineup

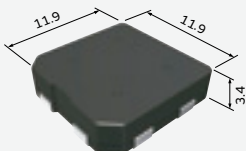
- Antennas
- Baluns (Chip Multilayer and Wire Wound/Film type)
- Couplers (Chip Multilayer) ●Chip Multilayer Hybrid Dividers
- Chip Multilayer Diplexers
- Microwave Connectors



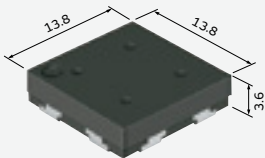
Antennas

Antenna Coils

Rx 3D-ANT



SA3D12 Series



SA3D14 Series

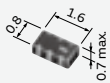
(in mm)

Series		Inductance (mH)	Q (Reference)
SA3D12	X	1.0 to 6.3	20
	Y	1.0 to 6.3	20
	Z	1.0 to 9.0	20
SA3D14	X	1.0 to 6.3	20
	Y	1.0 to 6.3	20
	Z	1.0 to 9.0	20

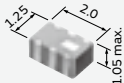
Baluns

SMD baluns constructed with a copper conductor and ceramic material. Ideal for high-frequency applications. Small-size and low-loss baluns can be customized for balance impedance of 50Ω to 200Ω.

Chip Multilayer Type



LDB18 Series



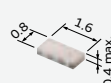
LDB21 Series



LDM0Q Series



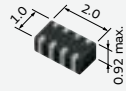
LDM15 Series



LDM18 Series

(in mm)

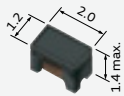
Film Type



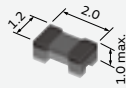
DXP2AB Series

(in mm)

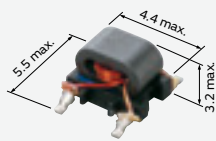
Wire Wound Type



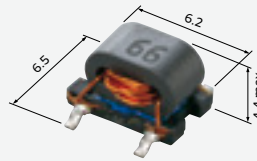
DXW21B Series



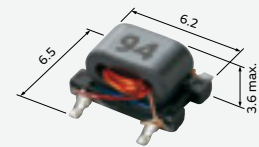
DXW21H Series



B4F Series



B5F Series



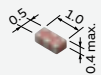
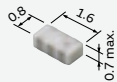
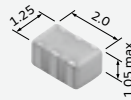
B5FL Series

(in mm)

Couplers

An ultra-small, low-profile directional coupler based on ceramic multilayer technology. This coupler achieves ultra-small size, low insertion loss, and high isolation.

Chip Multilayer Type

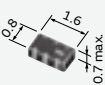
LDC15 Series
LDJ15 SeriesLDC18 Series
LDJ18 SeriesLDC21 Series
LDJ21 Series

(in mm)

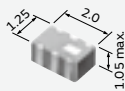
*It is available with Integrated LPF for LDC21 Series.

Chip Multilayer Hybrid Dividers

Power divider with a multilayer low pass filter in an ultra-compact package.



LDD18 Series

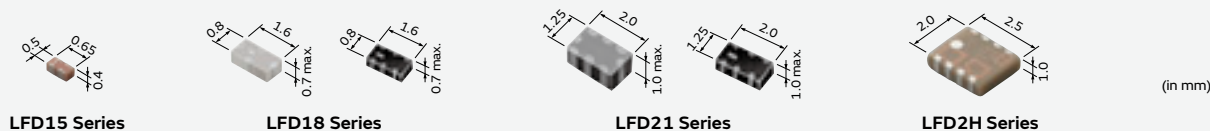


LDD21 Series

(in mm)

Chip Multilayer Diplexers

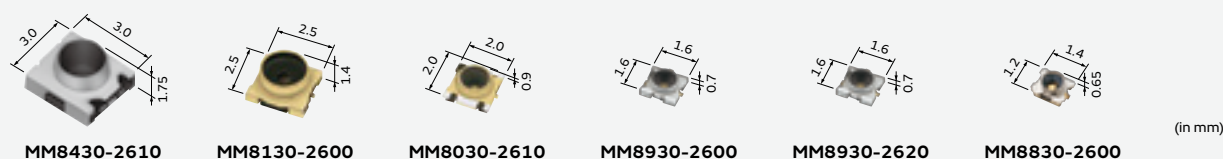
A diplexer branching low and high band.
Suitable for band-switching for dual-band system.



Microwave Connectors

Microwave Coaxial Connectors with Switch

The coaxial connector with switch is very useful for the measurement of characteristics in communication devices such as mobile terminals and microwave circuits.

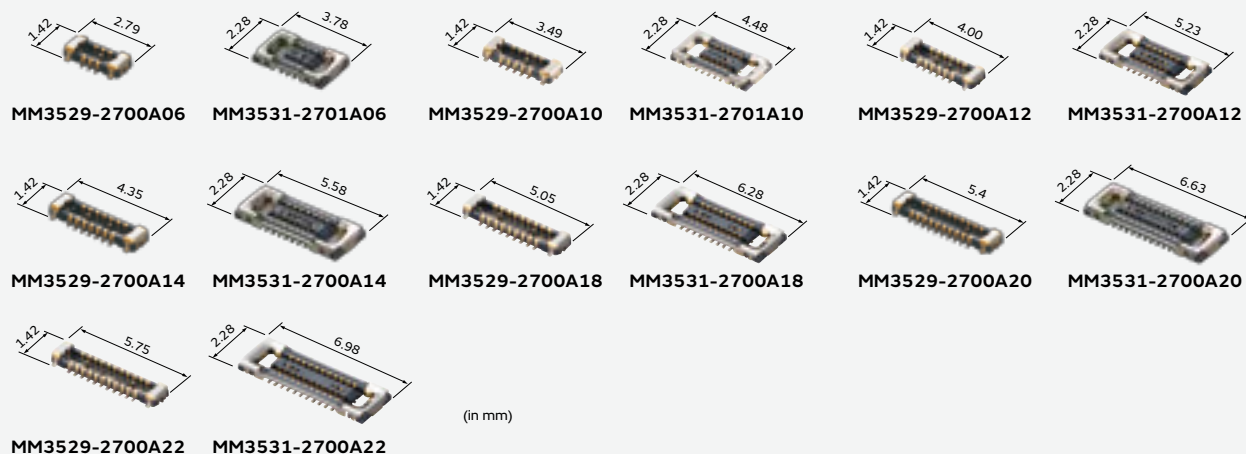


Type	Receptacle Part Number	Frequency Rating (GHz)	Voltage Standing Wave Ratio	Standard Measurement Probe Part Number
SWD	MM8430-2610	up to 6	1.2 max. (DC to 3GHz) 1.3 max. (3GHz to 6GHz)	MM126320 MXHS83QE3000
SWF	MM8130-2600	up to 6	1.2 max. (DC to 3GHz) 1.3 max. (3GHz to 6GHz)	
SWG	MM8030-2610	up to 11	1.2 max. (DC to 3GHz) 1.3 max. (3GHz to 6GHz) 1.5 max. (6GHz to 11GHz)	MM126330 MXHQ87WJ3000
SWH	MM8930-2600	up to 12	1.1 max. (DC to 3GHz) 1.2 max. (3GHz to 6GHz) 1.3 max. (6GHz to 9GHz) 1.6 max. (9GHz to 12GHz)	MM126515 MXHQ87PA3000
SWH-2Way	MM8930-2620	up to 12	1.2 max. (DC to 3GHz) 1.2 max. (3GHz to 6GHz) 1.4 max. (6GHz to 9GHz) 1.6 max. (9GHz to 12GHz)	RF: MM126526 ANT: MM126517 RF: MXHQ87PN3000 ANT: MXHQ87PP3000
SWJ	MM8830-2600	up to 9	1.2 max. (DC to 8GHz) 1.3 max. (8GHz to 9GHz)	MXFQB1PY1000 MXHQ87PK3000

Nominal Impedance: 50Ω ; Rated Voltage: 30Vrms ; Temperature Range: -40 to 85°C

Microwave Multi Line Connectors

Multi line connectors transmit signals from board to board. The connectors can transmit not only digital signals but also RF signals.



Type	Receptacle Part Number	Plug Receptacle Part Number	Mating Height (mm)	Pitch (mm)	Frequency Rating (GHz)	Voltage Standing Wave Ratio
MLF06	MM3529-2700A06	MM3531-2701A06	0.6 typ	0.35 typ	up to 20	1.2 max. (DC to 3GHz)
MLF10	MM3529-2700A10	MM3531-2701A10				1.2 max. (3GHz to 6GHz)
MLF12	MM3529-2700A12	MM3531-2700A12				1.3 max. (6GHz to 9GHz)
MLF14	MM3529-2700A14	MM3531-2700A14				1.3 max. (9GHz to 12GHz)
MLF18	MM3529-2700A18	MM3531-2700A18				1.35 max. (12GHz to 15GHz)
MLF20	MM3529-2700A20	MM3531-2700A20				1.5 max. (15GHz to 18GHz)
MLF22	MM3529-2700A22	MM3531-2700A22				1.65 max. (18GHz to 20GHz)

Nominal Impedance: 50Ω ; Rated Voltage: 30Vrms ; Temperature Range: -40 to 85°C

Detailed Catalogs

For more details, please refer to our printed catalog and the PDF catalog on our website.



• Microwave Connectors

Cat. No. O30E

Sensors

Summary

Murata pursued sensing functions making full use of MEMS and processing technology, and magnetoresistive elements including ceramic material technology in order to develop highly efficient and highly reliable devices, modules, and systems.

A lineup of various sensors respond to the sensing needs of various applications for automobile, wearable, medical care, and health care.

Lineup

- Infrared Sensors
- Ultrasonic Sensors
- AMR Sensors (Magnetic Sensors)
- TMR Sensors (Magnetic Sensors)
- Accelerometers
- Inclinometers
- Gyro Sensors
- Temperature Sensors (Thermistors)



<https://www.murata.com/en-global/products/sensor>

Sensor Guide (Select by Method/Principle)



Temperature

Thermistors: The resistance changes with the temperature.

NC_Series

PR_Series

NX Series



Infrared

Pyroelectric infrared sensors: The sensor reacts to the infrared radiation emitted from the human body to output an electric charge.



IRA Series

For more details on Thermistors, please refer to p. 80



Detailed Catalogs

For more details, please refer to our printed catalogs and the PDF catalogs on our website.



- MEMS Sensors & Sensing Elements
- NTC Thermistors
- POSISTOR for Circuit Protection
- NTC/PTC Thermistors for Automotive

Cat. No. S47E
Cat. No. R44E
Cat. No. R90E
Cat. No. R03E



Distance

Ultrasonic sensors: The sensor sends and receives ultrasonic waves in order to detect distances from the state of the reflected wave.



MA300D1-1
(for Dual Use)



MA40S4R (for Receiver)
MA40S4S (for Transmitter)



MA58MF14-7N
(for Dual Use)



MA40H1S-R
(for Dual Use)



Magnetic/ Open and Shut

Magnetic switches: This switch switches built-in ICs when the magnetoresistive element detects the magnetic proximity.



MR Series



CT Series



Inertial force

Accelerometers: This sensor detects the acceleration from the change of the capacitance that occurs in the 3DMEMS element.



SCA Series

Inclinometers: This sensor detects the gravitational acceleration of the Earth to calculate the angle of gradient.



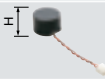
SCA Series
SCL Series

Gyro sensors: This sensor detects the angular velocity from the change in the capacitance that occurs in the 3DMEMS element.



SCC Series
SCR Series

Lineup

Detection	Murata's Sensors			Applications										
	Products	Series or Main Part Number	Dimensions (mm)	AV Equipment					Communications Devices					
				TV	Audio	DVD, CD	Digital Video Camera	Digital Camera	PC	Scanner	Multifunction Machine	Printer	FAX	Electronic Bulletin Board
Infrared	Pyroelectric Infrared Sensors	IRA Series	 $\varnothing 9.2$ H4.7	●	●	●			●	●	●	●	●	●
Ultrasonic	Open Structure Type Ultrasonic Sensors	MA40S4R (for Receiver) MA40S4S (for Transmitter)	 $\varnothing 9.9$ H7.1											●
		MA40H1S-R (SMD/for Dual Use)	 5.2X5.2X1.15	●					●		●			●
	Drip-proof Type Ultrasonic Sensors	MA58MF14-7N (for Dual Use)	 $\varnothing 14.0$ H9.0											
	High Frequency Type Ultrasonic Sensors	MA300D1-1 (for Dual Use)	 $\varnothing 9.9$ H7.3							●	●	●		
Magnetic	AMR Sensors (Magnetic Sensors)	MR Series	 MRMS201A-001: 2.8X2.9X1.1 MRMS501A-001: 1.45X1.45X0.55			●	●	●	●					
	TMR Sensors (Magnetic Sensors)	CT Series	 CT100: 1.5X1.5X0.45 CT310: 2.0X2.0X0.45											
Acceleration	Accelerometers	SCA Series	 7.6X8.6X3.3											
	Inclinometers	SCA Series SCL Series	 7.6X8.6X3.3								●			
Angle Velocity	Gyro Sensors	SCC Series SCR Series	 12.1X15.0X4.35											
Temperature	NTC Thermistors	Chip Type NC_ Series	 NCP02: 0.4X0.2X0.2 NCP03: 0.6X0.3X0.3 NC_15: 1.0X0.5X0.5 NC_18: 1.6X0.8X0.8	●	●	●	●	●	●	●	●	●	●	●
		Lead Type NX Series	 NXF: $\varnothing 1.2$ L25 to 150 NXR: $\varnothing 4.0$ L10 to 40	●	●	●	●	●	●	●	●	●	●	●
	PTC Thermistors POSISTOR	Chip Type PR_ Series	 PRF15: 1.0X0.5X0.5 PRF18: 1.6X0.8X0.8 PRF21: 2.0X1.25X0.9	●	●	●	●	●	●	●	●	●	●	●

Applications																											Wearable		
Home Electronics											Security			Car Electronics			Toy		Others										
	Refrigerator	Electric Rice-cooker	Air Conditioner	Air Purification System	Humidifier	Cleaner	Laundry Machine	Food Fan	Water Heater	Toilet Seats with a Warm-water Shower Feature	Lighting	Security Camera	Security Light	Indoor Security Sensor	Intrusion Detection Sensor	Navigation System	Climate Control	Parking Assist	Radio Control (Attitude Control)	Game Controller	Machine Tool	ATM, CD	Vending Machine	Amusement Machine	Construction Machinery	Farm Machinery		Railroad Equipment	Motor
	●	●	●	●							●	●	●	●	●							●	●	●					Pyroelectric Infrared Sensors
	●		●			●					●	●	●	●	●							●	●	●					Open Structure Type Ultrasonic Sensors
	●		●			●					●	●	●	●	●							●	●	●					Ultrasonic Sensors
																		●											Drip-proof Type Ultrasonic Sensors
																						●							High Frequency Type Ultrasonic Sensors
	●	●	●	●	●	●	●	●	●	●	●				●						●	●	●	●					AMR Sensors (Magnetic Sensors)
																											●		TMR Sensors (Magnetic Sensors)
																						●			●	●	●		Accelerometers
																						●				●			Inclinometers
																						●				●	●		Gyro Sensors
		●	●	●	●	●	●	●	●	●	●						●	●	●	●	●	●	●		●				NTC Thermistors
	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●					PTC Thermistors POSISTOR

Murata's Sensors
Products

Pyroelectric Infrared Sensors

Open Structure Type Ultrasonic Sensors

Drip-proof Type Ultrasonic Sensors

High Frequency Type Ultrasonic Sensors

AMR Sensors (Magnetic Sensors)

TMR Sensors (Magnetic Sensors)

Accelerometers

Inclinometers

Gyro Sensors

NTC Thermistors

PTC Thermistors POSISTOR

Thermistors

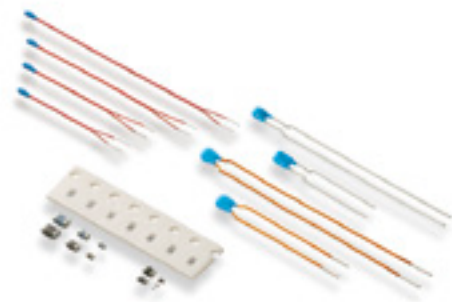
Facilitate your designs and products utilizing our thermal design and thermistor products.

Summary

Murata's semi-conductive ceramics and electrode printing technologies, such as PTC and NTC Thermistors, provide vital protection and sensing within electronic equipment. Simulation software tools are also available for your convenience.

Lineup

- NTC Thermistors for temperature sensor/compensation, and automotive
- PTC Thermistors POSISTOR for overheat sensing, overcurrent protection, and automotive



<https://www.murata.com/en-global/products/thermistor>

NTC Thermistors for Temperature Sensor/ Temperature Compensation

Chip Type

Chip NTC Thermistors have Ni barrier terminations, provide excellent solderability, and offer high stability in harsh environments due to their unique inner construction.



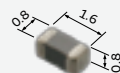
NCP02 Series



NCP03 Series



NCP15 Series
NCU15 Series



NCP18 Series
NCU18 Series

(in mm)

Series	Size Code inch (mm)	Resistance (25°C) (Ω)	B-Constant (25-50°C) (K)	Maximum Operating Current for Sensor (25°C) (mA)	Maximum Voltage (V)	Typical Dissipation Constant (25°C) (mW/°C)	Operating Temperature Range (°C)
NCP02	01005 (0402)	10k to 470k	3380 to 4250	0.015 to 0.100	5	1	-40 to 125
NCP03	0201 (0603)	1.0k to 470k	3380 to 4485	0.015 to 0.316	5	1	-40 to 125
NCP15	0402 (1005)	220 to 470k	3380 to 4500	0.015 to 0.674	5	1	-40 to 125
NCU15	0402 (1005)	10k to 470k	3380 to 4500	0.032 to 0.100	5	1	-40 to 125
NCP18	0603 (1608)	220 to 470k	3380 to 4500	0.015 to 0.674	5	1	-40 to 125
NCU18	0605 (1608)	10k to 470k	3380 to 4500	0.015 to 0.100	5	1	-40 to 125

Maximum Operating Current for Sensor raises the Thermistor's temperature by 0.1°C.
There are also items for automotive applications in the NCP/NCU Series.

Detailed Catalogs

For more details, please refer to our printed catalogs and the PDF catalogs on our website.

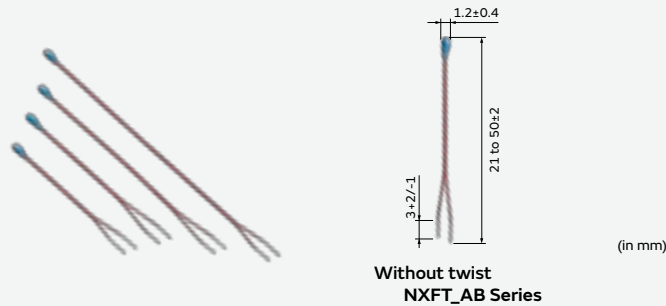


- NTC Thermistors
- POSISTOR for Circuit Protection
- NTC/PTC Thermistors for Automotive

Cat. No. R44E
Cat. No. R90E
Cat. No. R03E

Thermo String Type

Small flexible lead type NTC Thermistors with a small head and a thin lead wire.

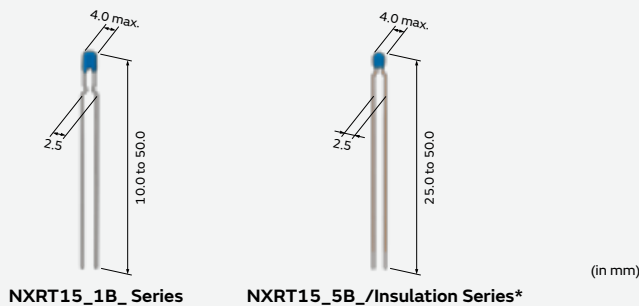


Series	Resistance (25°C) (Ω)	B-Constant (25-50°C) (K)	Maximum Operating Current for Sensor (25°C) (mA)	Thermal Time Constant (25°C) (s)	Full Length (mm)	Operating Temperature Range (°C)
NXFT15_AB_ (Nickel Cooper wire type)	3k to 100k	3380 to 4250	0.024 to 0.14	3	21 to 50	-40 to 125

Maximum Operating Current for Sensor raises the Thermistor's temperature by 0.1°C.
There are also items for automotive applications in the NXF Series.

Lead Type

This product is a thermistor for normal temperature level sensors having self-subsistence due to strong lead strength based on chip NTC.



Series	Resistance (25°C) (Ω)	B-Constant (25-50°C) (K)	Maximum Operating Current for Sensor (25°C) (mA)	Thermal Time Constant (25°C) (s)	Full Length (mm)	Operating Temperature Range (°C)
NXRT15_1B_	2k to 100k	3380 to 4250	0.04 to 0.27	4	10 to 50	-40 to 125
NXRT15_5B_ (Insulation*)	2k to 100k	3380 to 4250	0.05 to 0.36	4	25 to 50	-40 to 125

Maximum Operating Current for Sensor raises the Thermistor's temperature by 0.1°C.
There are also items for automotive applications in the NXR Series.

*Insulation: Lead wire insulation type.

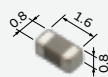
PTC Thermistors POSISTOR for Overheat Sensing

Chip Type

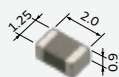
For overheat sensing for power transistors, power diodes, and power ICs in hybrid circuits.



PRF15 Series



PRF18 Series



PRF21 Series

(in mm)

Series	Sensing Temperature Range (°C)										Sensing Temperature Tolerance (°C)	Maximum Voltage (V)	Size Code inch (mm)
	60	70	80	90	100	110	120	130	140	150			
PRF15	●	●	●	●	●	●	●	●	●	●	±3/±5	32	0402 (1005)
PRF18	●	●	●	●	●	●	●	●	●	●	±3/±5	32	0603 (1608)
PRF21			●	●	●	●	●	●	●	●	±5	32	0805 (2012)

There are also items for automotive applications in the PRF Series.

PTC Thermistors POSISTOR for Overcurrent Protection

Chip Type

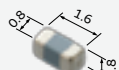
Overcurrent Protection device with resettable function suitable for current-limiting resistors.



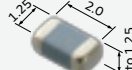
PRG03 Series



PRG15 Series



PRG18 Series



PRG21 Series

(in mm)

Series	Maximum Voltage (V)	Hold Current (60°C) (mA)	Trip Current (-20°C) (mA)	Maximum Current (mA)	Resistance (Ω)	Size Code inch (mm)
PRG03	13	8	46	93	180	0201 (0603)

Series	Maximum Voltage (V)	Hold Current (60°C) (mA)	Trip Current (-10°C) (mA)	Maximum Current (A)	Resistance (25°C) (Ω)	Size Code inch (mm)
PRG15	6 to 30	17 to 88	65 to 318	0.6 to 3.5	2.2 to 68	0402 (1005)
PRG18	6 to 30	7 to 220	25 to 850	0.06 to 7.5	1.0 to 470	0603 (1608)
PRG21	6 to 32	30 to 500	110 to 2000	0.59 to 37	0.2 to 42	0805 (2012)

Maximum Current shows typical transformer capacities that can be used.

There are also items for automotive applications in the PRG Series.

Power Devices

Eco-friendly and high-quality power devices

Summary

To meet consumer needs Murata offers power supply products and energy devices that can be used with a variety of equipment, such as video equipment, household information appliances, and communication/transfer equipment. Murata provides standard and customized products using highly reliable. Murata makes components utilizing advanced design and high-density packaging technology.

Lineup

- DC-DC Converters
- Ballast Power Supplies
- Power supplies for LED lighting



<https://www.murata.com/en-global/products/power>

DC-DC Converters

DC-DC converters are vital to the demands of electronic equipment.

Murata offers DC-DC converters that set the standard for miniaturization, low-profile, high-efficiency, power-saving and low-noise power supplies. Murata also provides standard products and customized products, ultra-low-profile products, and products for FPGAs.

Non-isolated Type



Part number	Output Current (A)	Input Voltage (V)	Output Voltage (V)	Efficiency (%)	I2C or PMBus	Package	Size (mm)		
							W	L	T
MYLSM00502ERPL	2.5	4.5 to 17	1 to 5.25	88	Not available	SMD	7.9	7.9	2.3
MYMGK1R804FRSR	4	4.5 to 8	0.7 to 1.8	93	Not available	SMD	7.5	9.0	5.0
MYMGK00504ERSR	4	8 to 15	0.7 to 5	96.1	Not available	SMD	7.5	9.0	5.0
MYMGK1R806FRSR	6	4.5 to 8	0.7 to 1.8	90.4	Not available	SMD	7.5	9.0	5.0
MYMGK00506ERSR	6	8 to 15	0.7 to 5	95.4	Not available	SMD	7.5	9.0	5.0
MYMGK1R812FRSR	12	4.5 to 8	0.7 to 1.8	92	Not available	SMD	9.0	10.5	5.6
MYMGK1R812ERSR	12	8 to 15	0.7 to 1.8	90.4	Not available	SMD	9.0	10.5	5.6
MYMGM1R816ELA5RA	16	7.5 to 15	0.7 to 1.8	91.8	PMBus	SMD	9.0	10.5	5.0

These are just a few examples of our large assortment of power products.

Continued on the following page. ↗

DC-DC Converters

Part number	Output Current (A)	Input Voltage (V)	Output Voltage (V)	Efficiency (%)	I2C or PMBus	Package	Size (mm)		
							W	L	T
MYMGK1R820FRSR	20	4.5 to 8	0.7 to 1.8	89.2	Not available	SMD	9.0	10.5	5.6
MYMGK1R820ERSR	20	8 to 15	0.7 to 1.8	87.8	Not available	SMD	9.0	10.5	5.6
MYMG1R824ELA5RA	24	7.5 to 15	0.7 to 1.8	89.2	PMBus	SMD	9.0	10.5	5.0
MYSGK1R830FRSR	30	4.5 to 15	0.7 to 1.8	89.7	Not available	SMD	14.0	11.0	8.3
MYSGK4R030ERSR	30	4.5 to 15	0.7 to 4	94.4	Not available	SMD	14.0	11.0	8.3
MYSGK02506BRSR	6	13.5 to 42	5 to 25	98	Not available	SMD	14.7	16.3	7.5
MYMGA5R04RELA5RA	4	8.0 to 16.0	3.3 to 5	94	Not available	SMD	9.0	10.5	5.5
MYMGC0R88RFLF2RV	8	3.3 to 5.5	0.85	81	I2C	SMD	11.9	15.0	2.4
MYMGC1R83BFPF2RV (Quad output)	3.2 0.5 0.5 1.5 2.5	3.3 to 5.5	0.85 0.85 1.2 1.8 1.2	81	I2C	SMD	11.9	15.0	2.4
MYMGC3R32EFPF2RV (Quad output)	1 2 1.5	4.3 to 5.5	1.8 3.3 2.5	91	I2C	SMD	11.9	15.0	2.4
OKL-T/3-W12	3	4.5 to 14	0.591 to 5.5	93	Not available	SMD	12.2	12.2	6.2
OKL-T/6-W12	6	4.5 to 14	0.591 to 5.5	93	Not available	SMD	12.2	12.2	7.2
OKL2-T/12-W12	12	4.5 to 14	0.69 to 5.5	95	Not available	SMD	20.32	11.43	8.55
OKL2-T/20-W12	20	4.5 to 14	0.69 to 5.5	94	Not available	SMD	33.02	13.46	8.7
MYSSM01206BEPL	6	17 to 40	5 to 12	95	Not available	SMD	30.2	20.9	8.3
MYSSM02406BEPL	6	30.5 to 40	12 to 24	98	Not available	SMD	30.2	20.9	8.3
MYSDM1R512EENL (Dual output)	13 1.2	10.2 to 15.8	0.9 to 1.25 0.9 to 1.5	81	Not available	SMD	30.2	20.9	7.0
MYSTM3R32EEEPL (Triple output)	1.5 1.5 2.5	10.2 to 15.8	1.8 1.23 to 1.8 3.3	84	Not available	SMD	30.2	20.9	7.0
MYUSP3R303FMP	3	3 to 5.5	0.7 to 3.3	94	Not available	SMD	11.0	8.5	5.6

These are just a few examples of our large assortment of power products.

Isolated DC-DC Converter for PoE



MYBSP0055AABFT
MYBSP0122BABFT



MYBSP0055AABF
MYBSP0122BABF



MYBSP00502ABF
MYBSP01201ABF



MYBTA00512ABT



MYBSC0128CAZT



MYBSS054R6EBF

Part number	Output Power (W)	Input Voltage (V)	Output Voltage (V)	Efficiency (%)	PoE controller	Package	Size (mm)		
							W	L	T
MYBSP00502ABF	10	37 to 57	5	80	Available	SMD	26.0	14.8	6.2
MYBSP01201ABF	12	37 to 57	12	84	Available	SMD	26.0	14.8	6.2
MYBSP0055AABF	25.5	42.5 to 57	5	90.5	Available	SMD	35.5	22.4	10.55
MYBSP0122BABF	25.5	42.5 to 57	12	92.5	Available	SMD	35.5	22.4	10.55
MYBSP0055AABFT	25.5	37 to 57	5	90.5	Available	SMD	35.5	22.4	10.55
MYBSP0122BABFT	25.5	37 to 57	12	92.5	Available	SMD	35.5	22.4	10.55

Continued on the following page. ↗

DC-DC Converters, Ballast Power Supplies, Power supplies for LED lighting

Part number	Output Power (W)	Input Voltage (V)	Output Voltage (V)	Efficiency (%)	PoE controller	Package	Size (mm)		
							W	L	T
MYBTA00512ABT	60	36 to 75	5	92	Not available	SMD	23.36	19.05	12.7
MYBSC0128CAZT	100	36 to 75	12	92.5	Not available	Insert	33.0	23.2	9.32
MYBSS054R6EBF	30	10.8 to 27	54	90	Not available	SMD	35.5	22.4	8.9

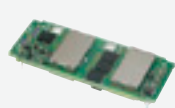
Isolated Type



MYBEA01212AZT



MYBEA01212AZTB
MYBEA01210CZTB



MYBEA01210CZT



MYBEB01212AZTB



MYBSC0128CAZT

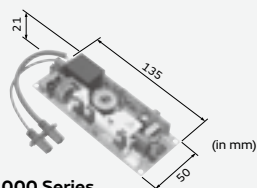


MYBTA00512ABT

Part number	Output Power (W)	Input Voltage (V)	Output Voltage (V)	Efficiency (%)	Footprint (Brick)	Package	Size (mm)		
							W	L	T
MYBEA01212AZT	140	36 to 75	12	92.5	1/8	Insert	58.4	22.8	8.46
MYBEA01212AZTB	140	36 to 75	12	92.5	1/8	Insert	58.4	22.8	11.3
MYBEA01210CZT	120	18 to 36	12	93	1/8	Insert	58.4	22.8	8.46
MYBEA01210CZTB	120	18 to 36	12	93	1/8	Insert	58.4	22.8	11.3
MYBEB01212AZTB	100	36 to 75	12	91.5	1/8	Insert	58	22.8	12.2
MYBTA00512ABT	60	36 to 75	5	92	1/32	SMD	23.36	19.05	12.7
MYBSC0128CAZT	100	36 to 75	12	92.5	1/16	Insert	33.0	23.2	9.32

These are just a few examples of our large assortment of power products.

Ballast Power Supplies



MPL3000 Series

Series	Applications	Input Voltage Vin	Output Power	Other Specification
MPL3000	Projector	320 to 420V DC	550W	For extra-high pressure mercury lamp

For more details on our products, please contact us.

Power supplies for LED lighting



LED Lighting

Type	Input Voltage	Output Voltage	Output Current (Max)	Number of Outputs	Safety Standard	Dimming
MPA1948	90 to 267V AC	30 to 50V	300 to 720mA	1ch	PSE, EN61347-1, EN61347-2-13	DALI, PWM
MPA1954	90 to 267V AC	30 to 56V	270 to 600mA	1ch	PSE, EN61347-1, EN61347-2-13	-
MPA1960	90 to 267V AC	30 to 60V	1000 to 1400mA	1ch	PSE	DALI, PWM
MPA1968	90 to 267V AC	30 to 50V	750 to 1050mA	1ch	PSE	DALI, PWM
MPL0039	45.6 to 50.4V DC	8 to 40V	450 to 900mA	2ch	-	Radio control
MPL0076DD	90 to 267V AC	10 to 50V	350 to 720mA	1ch	PSE	DALI

For more details on our products, please contact us.

For Ionizer Modules, please refer to p. 102.

Batteries

Battery solutions for energy storage systems and various small devices

Summary

Murata offers battery solutions for a wide range of applications from IoT & wearable devices to energy storage systems for enterprise and household use.

Lineup

- Laminated Type Lithium Ion Secondary Batteries
- Cylindrical Type Lithium Ion Secondary Batteries
- Small Lithium ion secondary batteries
- FORTELION 24V Battery Module
- FORTELION Battery System
- Micro Batteries



Laminated Type Lithium Ion Secondary Batteries

Laminated type lithium ion secondary battery has laminate film for packaging. These batteries are known for their excellent safety, thinner form factors, and size flexibility.



Standard Long Life

Model Name	Nominal Voltage (V)	Minimum Capacity (mAh)	Thickness (mm)	Width (mm)	Height (mm)	Weight (g)	Charging Voltage (V)	Chemical System (LCO, NCM, NCA)
US253450A10S	3.7	425	2.53	34	50.5	8.7	4.2	LCO
US373651A10S	3.7	765	3.63	36	51.2	14.2	4.2	LCO
US394549A10S	3.7	1,045	3.87	44.1	48.2	18.9	4.2	LCO
US634038A10S	3.7	1,110	6.3	39.32	37.85	19.6	4.2	LCO
US354775A10S	3.7	1,420	3.5	47	75	27	4.2	LCO
US454261A8TS	3.7	1,530	4.6	42	61.5	26.8	4.2	LCO
US525354A10S	3.7	1,830	5.25	53.15	54.3	33.8	4.2	LCO
US505456A10S	3.7	1,880	5.05	53.5	56.4	34.5	4.2	LCO
US374981K6S	3.7	1,950	3.65	49	81	33.9	4.2	LCO
US673864K6S	3.7	2,010	6.65	38	64	36.5	4.2	LCO
US2764A0K6S	3.7	2,040	2.65	64.1	99.5	37.9	4.2	LCO
US595676K5S	3.7	3,020	5.85	55.9	75.5	55.5	4.2	LCO
US486588K5S	3.7	3,360	4.8	65	88	62	4.2	LCO
US616484K6S	3.7	4,040	6.1	64	84	74.4	4.2	LCO
US31A0B8A10S	3.7	4,750	3.03	99.5	118	91.5	4.2	LCO
US666588K6S	3.7	4,800	6.55	65	88	88.4	4.2	LCO

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High Voltage High Capacity

Model Name	Nominal Voltage (V)	Minimum Capacity (mAh)	Thickness (mm)	Width (mm)	Height (mm)	Weight (g)	Charging Voltage (V)	Chemical System (LCO, NCM, NCA)
US476483BH9	3.83	4,010	4.63	63.9	82.45	58.3	4.4	LCO
US426487CH9P	3.85	3,920	4.12	63.48	86.2	51.9	4.43	LCO
US525775CH9P	3.85	3,720	5.1	56.53	74.3	48.5	4.43	LCO
US2980F9H2	3.8	4,670	2.81	79.8	159	87	4.35	LCO
US275361H5	3.8	1,040	2.65	53	60.5	18.1	4.35	LCO
US4032B3BH5	3.8	1,900	3.92	31.9	113	33	4.35	LCO
US325991H5	3.8	2,410	3.18	58.7	90.5	40.4	4.35	LCO
US456067H5	3.8	2,590	4.45	59.73	66.92	42.8	4.35	LCO
US395189BH7	3.8	2,630	3.83	50.78	88.45	40.9	4.35	LCO
US414499BH7	3.8	2,630	4.02	43.08	98.95	41	4.35	LCO
US415085BH7	3.8	2,690	4.1	49.78	84.64	41.7	4.35	LCO
US455676H5	3.8	2,710	4.41	55.3	76	43.4	4.35	LCO
US395292H5	3.8	2,790	3.89	52	91.5	43.8	4.35	LCO
US515569H5	3.8	2,790	5.09	54.16	68.7	44.4	4.35	LCO
US495473BH7	3.8	2,980	4.9	53.78	72.6	46.9	4.35	LCO
US445977H5	3.8	3,000	4.31	58.3	76.8	46.9	4.35	LCO
US416775H5	3.8	3,010	4.08	66.5	74.2	48.5	4.35	LCO
US436177H5	3.8	3,020	4.21	60.9	76.7	46.3	4.35	LCO
US525077BH7P	3.8	3,120	5.17	49.28	76.45	48	4.35	LCO
US396479H5	3.8	3,050	3.9	63	78.7	46.7	4.35	LCO
US504588H5	3.8	3,050	4.91	43.8	88	46.1	4.35	LCO
US366685BH7	3.8	3,090	3.57	65.2	84.9	47.2	4.35	LCO
US495577BH7	3.8	3,130	4.81	54.78	76.35	49.1	4.35	LCO
US446770H7	3.8	3,170	4.4	66.55	69.1	52.8	4.35	LCO
US396283BH7	3.8	3,160	3.84	61.8	82.8	47.2	4.35	LCO
US416189H2	3.8	3,200	4.12	60.9	89	52.4	4.35	LCO
US269099H5	3.8	3,310	2.57	89.9	99	55.3	4.35	LCO
US526367BH7	3.8	3,325	5.17	62.68	66.65	55.4	4.35	LCO
US496178H5	3.8	3,400	4.83	60.9	77.85	55.6	4.35	LCO
US386587BH7	3.8	3,485	3.75	64.95	86.96	51.5	4.35	LCO
US289490BH7	3.8	3,510	2.8	94	90	56.2	4.35	LCO
US456386H5	3.8	3,540	4.5	62.2	85.02	61	4.35	LCO
US485490H5K	3.8	3,570	4.8	54	90	56.4	4.35	LCO
US406787BH7	3.8	3,720	3.98	66.4	86.5	55	4.35	LCO
US446484BH7	3.8	3,720	4.32	63.6	83.4	56.7	4.35	LCO
US486588H3K	3.8	3,760	4.8	65	88	63	4.35	LCO
US508168H5K	3.8	4,110	5	81	67.6	66.9	4.35	LCO
US3978A4H5K	3.8	4,720	3.9	77.4	103.5	78	4.35	LCO
US25A2F2H3	3.8	5,180	2.5	102.15	151.8	86.2	4.35	LCO

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Laminated Type Lithium Ion Secondary Batteries

Small Cell Wearable

Model Name	Nominal Voltage (V)	Minimum Capacity (mAh)	Thickness (mm)	Width (mm)	Height (mm)	Weight (g)	Charging Voltage (V)	Chemical System (LCO, NCM, NCA)
US491222A10S	3.7	81	4.9	11.8	22	2.1	4.2	LCO
US80285A10S	3.7	121	7.63	7.93	28.5	2.6	4.2	LCO
US501424A10S	3.7	126	5.05	13.8	24	3	4.2	LCO
US321741A10S	3.7	180	3.2	16.5	40.5	4.2	4.2	LCO
US302135H5	3.8	215	3	20.2	35	4.2	4.35	LCO
US322830A10S	3.7	235	3.22	28	30	5	4.2	LCO
US552131A10S	3.7	320	5.5	21.11	30.75	6.5	4.2	LCO
US97500A10S	3.7	392	9.6	9.9	50	7.8	4.2	LCO

Camera & Game

Model Name	Nominal Voltage (V)	Minimum Capacity (mAh)	Thickness (mm)	Width (mm)	Height (mm)	Weight (g)	Charging Voltage (V)	Chemical System (LCO, NCM, NCA)
US773038A12	3.7	1,030	7.62	29.3	37.7	17.5	4.2	LCO
US533144N2S	3.6	880	5.3	30.2	43.9	14.7	4.2	NCA
US783038E1S	3.65	960	7.77	29.4	37.35	17	4.2	NCM
US613143N2Y	3.6	1,080	6.1	30.9	43	17.9	4.2	NCA
US523350N2Y	3.6	1,185	5.2	33	50	19.6	4.2	NCA

Cylindrical Type Lithium Ion Secondary Batteries

Cylindrical type lithium ion batteries are packaged in metal cans. These batteries can be used at high rate and maintain high capacity.



Model	Nominal Capacity (mAh)	Positive Electrode Material	Negative Electrode Material	Nominal (Rated) Voltage (V)	Weight (g)	Diameter (mm)	Height (mm)	Continuous Max Discharge Current (A)	Features
US14500FT1 (Under development)	530	LFP	Gr	3.2	17.6	φ 14	49	5	life, safety, small
US18650VTC4	2,100	NCM	Gr	3.6	45	φ 18	65	30	power
US18650VTC4A	2,100	NCM	Gr	3.7	46.8	φ 18	65	35	power
US18650VTC5	2,600	NCA	Gr	3.6	44.3	φ 18	65	30	power
US18650VTC5A	2,600	NCA	Gr, SiO	3.6	47.1	φ 18	65	35	power
US18650VTC5D	2,800	NCA	Gr, SiO	3.6	46.7	φ 18	65	35	power
US18650VTC6	3,120	NCA	Gr, SiO	3.6	46.6	φ 18	65	30	power
US18650VC7	3,500	NCA	Gr, SiO	3.6	47.2	φ 18	65	8	runtime
US18650FTC1	1,100	LFP	Gr	3.2	38.8	φ 18	65	20	life, safety
US18650FTC2 (Under development)	1,450	LFP	Gr	3.2	40	φ 18	65	20	life, safety
US21700VTC6A	4,100	NCA	Gr, SiO	3.6	67.5	φ 21	70	40	power
US26650FTC1A	3,000	LFP	Gr	3.2	84	φ 26	66	25	life, safety

Small Lithium ion Secondary Batteries

Murata's Small Lithium ion secondary batteries (CT04120) are rechargeable batteries which can be charged-discharged at high rate, used safely.



Part Number	Nominal Voltage	Charge Voltage	Cut-off Voltage	Nominal Capacity	Max. Discharge Current	ESR@ 1kHz	Operating Temperature Range	Size
BACT04120P003V01	2.3V	2.7V	1.8V	3mAh	30mA (10C)	1000mΩ	-20°C to 70°C	φ 4mm×12mm

FORTELION 24V Battery Module

Murata's FORTELION 24V Battery Module is built with olivine-type lithium ion iron phosphate secondary batteries (FORTELION), which are known for their longevity, safety, and fast-charging capability.

Murata's FORTELION 24V Battery Module is capable of monitoring each Battery Module's Voltage, Current, Temperature & Capacity Value through CAN communication.

It is possible to customize voltage and capacity in order to meet the requirements of wide range of applications including Robot, AGV, E-Cart, Forklift, etc.



Separate type

Items	Specifications
Model Name	LIPY032WWPCSY6(Battery Module) LIA1020WWPACSY6(BMU)
System configuration	Battery Module+BMU
Nominal Voltage / Capacity (per module)	25.6V / 24Ah / 614Wh
Max Discharge Current	50A / 40A / 30A (5sec / 25sec / cont.)
Max Charge Current	24A (1C)
Module Max Configuration	2s10p
Battery Communication I/F	CAN Bus (Murata original format)
Dust and Water proof	Not supported
Safety regulation	IEC62133 CE (EMC, RoHS)
Dimension (module)	259(L) x 71(W) x 245(H) (mm)
Weight (module)	7.3kg (Module)

All-in-one type

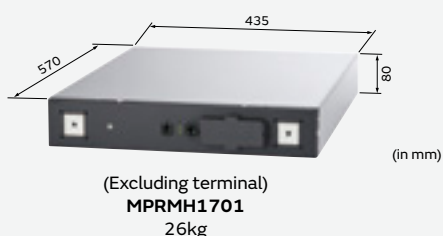
Items	Specifications
Model Name	LIPY041WWPCSY6
System configuration	All-in-one (BMU function is included)
Nominal Voltage / Capacity (one module)	25.6V / 21Ah / 537Wh
Max Discharge Current	100A / 80A / 60A (5sec / 25sec / cont.)
Max Charge Current	42A (2C)
Module Max Configuration	2s10p
Battery Communication I/F	CAN Bus, U-art (Murata original format)
Dust and Water proof	IP54 rating
Safety regulation	IEC/UL62133, IEC62619 UL2271 (Light EV battery) CE (EMC, RoHS)
Dimension	195(L) x 132(W) x 180(H) (mm)
Weight	6.5kg

FORTELION Battery System

Possible to customize capacity in order to meet wide usage

FORTELION High Output Battery Module

This energy storage module utilizes FORTELION olivine type lithium iron phosphate lithium ion secondary batteries. A high-input, high-output energy storage module capable of 200A continuous discharge (6C equivalent) and 100A continuous charge (3C equivalent), it is ideal for applications requiring high input and high output, such as countermeasures to deal with momentary voltage drops during natural disasters, backup systems, and stabilization of renewable energy sources.



Model Name	Rated Capacity	Nominal Voltage	Maximum Discharge Current	Maximum Charge Current	Operating Temperature Range	Safety Standard
MPRMH1701	1.75kWh	51.2V	200A	100A	-20 to 50°C	UL1973

FORTELION 2.1kWh Battery Module



Model Name	Nominal Capacity	Rated Capacity	Nominal Voltage	Maximum Discharge Current	Charge Voltage	Maximum Charge Current	Safety Standard
IJ1101M	2.1kWh (42.0Ah)	2.0kWh (39.5Ah)	51.2V	50A	56.0V	40A	UL 1973 FCC Part 15 Class B

Storage Temperature: -20 to 45°C (Recommended room temperature)

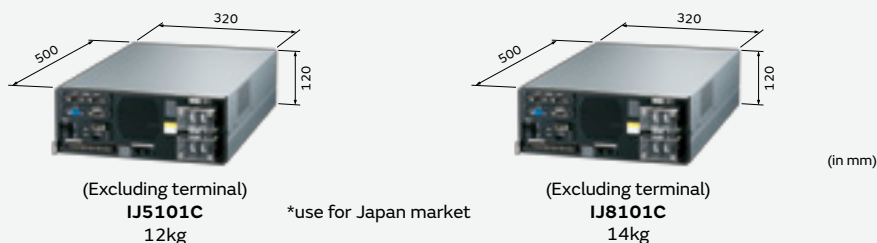
Operating Ambient Temperature: Discharge: -20 to 40°C (Discharge current $\leq 50.0A$)

40 to 50°C (Discharge current $\leq 40.0A$)

Charge: 10 to 45°C (Charge current $\leq 40.0A$)

0 to 10°C (Charge current $\leq 12.0A$)

Battery Management Unit (BMU)



Model Name	Operating Voltage	Operating Current	Communication Interface	Configuration	Safety Standard
IJ5101C	60 to 420V	0 to 100A	RS232C/RS485C	Series: to 7 series Mix Combination: to 6 series and to 2 parallels Maximum module connections: 32 modules	-
IJ8101C	300 to 1000V	0 to 100A	RS232C/RS485C	Series: to 16 series Mix Combination: to 16 series and to 2 parallels	UL 1973 FCC Part 15 Class B *It is certificated along with IJ1101M. *UL 1973 is certified for maximum of 90 A.

Storage Temperature: -20 to 65°C (Recommended room temperature)

Operating Ambient Temperature: -20 to 50°C (Recommended room temperature)

BMU-HUB



Model Name	Operating Voltage	Purpose	Configuration	Safety Standard
IJ1101K	DC12V, DC24 to 60V	Interface unit to connect IJ8101C for utility	Parallel: to 64BMU Maximum module connections: 64X32=2048 modules (maximum 4.3MWh)	EU EMC Directive FCC Part 15 Class B

Storage Temperature: -20 to 65°C (Storage and use at room temperature is recommended)

Operating Ambient Temperature: -20 to 60°C (Storage and use at room temperature is recommended)

Cable

Model Name	Type	Specification
IJT-102F	Communication Cable 20cm	RS485
IJT-103F	Communication Cable 30cm	RS485
IJT-115F	Communication Cable 150cm	RS485
IJT-130F	Communication Cable 300cm	RS485
IJD-103F/R	Thicker Power Cable 30cm (red)	AWG4
IJD-103F/B	Thicker Power Cable 30cm (black)	AWG4
IJD-110F/R	Thicker Power Cable 100cm (red)	AWG4
IJD-110F/B	Thicker Power Cable 100cm (black)	AWG4

Coin Manganese Dioxide Lithium Batteries

Coin manganese dioxide lithium batteries are small-sized primary batteries for various applications such as TPMS (Tire Pressure Monitoring System) or smart entry systems for automobile, IoT devices, and backup power source for memory.



Standard

A lineup of 11 models is offered from small size and thin models to high-capacity models.

Model	Electrical Characteristics			Dimensions			Operating Temperature Range (°C)
	Nominal Voltage (V)	Nominal Capacity (mAh)	Standard Discharge Current (mA)	Diameter (mm)	Height (mm)	Weight (g)	
CR1216	3	30	0.1	12.5	1.6	0.67	-30 to 70
CR1220	3	40	0.1	12.5	2.0	0.77	-30 to 70
CR1616	3	60	0.1	16.0	1.6	1.1	-30 to 70
CR1620	3	80	0.1	16.0	2.0	1.3	-30 to 70
CR1632	3	140	0.2	16.0	3.2	1.9	-30 to 70
CR2016	3	90	0.1	20.0	1.6	1.8	-30 to 70
CR2025	3	160	0.2	20.0	2.5	2.6	-30 to 70
CR2032	3	220	0.2	20.0	3.2	3.1	-30 to 70
CR2430	3	300	0.2	24.5	3.0	4.4	-30 to 70
CR2450	3	610	0.2	24.5	5.0	6.5	-30 to 70

Nominal capacity indicates duration until discharge voltage drops down to 2.0V when discharged at nominal discharge current at 23°C. Data is not guaranteed, and is provided for reference purposes only.

Heat-resistant

Ideal for devices used in severe operating temperature environments including automobiles and FA, etc.

Model	Electrical Characteristics			Dimensions			Operating Temperature Range (°C)
	Nominal Voltage (V)	Nominal Capacity (mAh)	Recommended Continuous Discharge Current (mA)	Diameter (mm)	Height (mm)	Weight (g)	
CR2032W	3	210	≤1	20.0	3.2	3.1	-40 to 125
CR2050W	3	345	≤1	20.0	5.0	4.2	-40 to 125
CR2450W	3	550	≤1	24.5	5.0	6.7	-40 to 125
CR2477W	3	1000	≤1	24.5	7.7	11	-40 to 125

Data is not guaranteed, and is provided for reference purposes only.

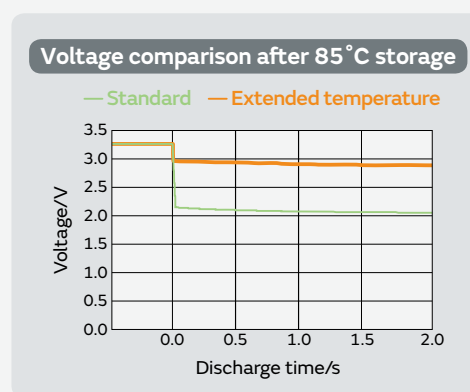
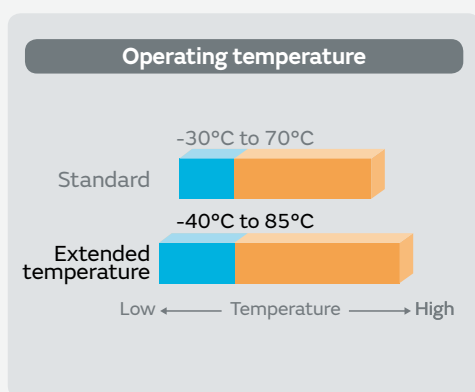
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Extended Temperature

Designed for automotive devices and outdoor IoT systems, including smart meters and FA control systems. Recommended as an alternative smaller and thinner solution to conventional cylindrical lithium batteries.

Model	Electrical Characteristics				Dimensions			Operating Temperature Range (°C)
	Nominal Voltage (V)	Nominal Capacity (mAh)	Recommended Continuous Discharge Current (mA)	Maximum pulse discharge current*1 (mA)	Diameter (mm)	Height (mm)	Weight (g)	
CR2032X	3.0	220	≤1	30	20.0	3.2	3.0	-40 to 85
CR2450X	3.0	600	≤1	30	24.5	5.0	6.2	-40 to 85
CR2477X	3.0	1000	≤1	30	24.5	7.7	9.5	-40 to 85
CR3677X	3.0	2000	≤1	80	36.5	7.7	20	-40 to 85

*1 Current for maintaining minimum 2V voltage with pulsed discharge of 3 seconds and 50% nominal capacity discharged (ambient temperature 23°C)
Data is not guaranteed, and is provided for reference purposes only.

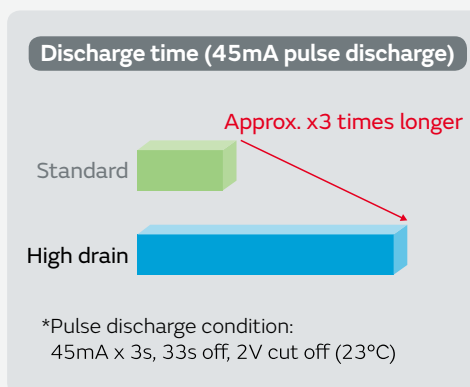
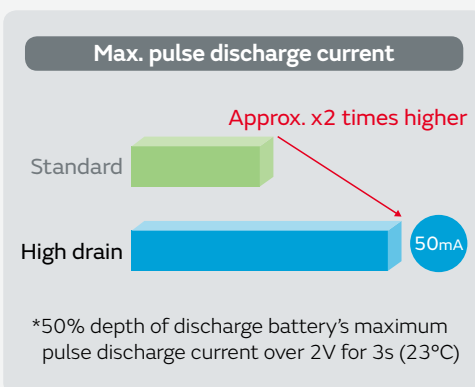


High Drain

Ideal for tracking devices for logistics and asset management by adopting Low Power Wide Area (LPWA) networks such as LoRa and SIGFOX as well as for outdoor infrastructures, FA control systems, and environment monitoring sensors.

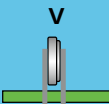
Model	Electrical Characteristics				Dimensions			Operating Temperature Range (°C)
	Nominal Voltage (V)	Nominal Capacity (mAh)	Recommended Continuous Discharge Current (mA)	Maximum pulse discharge current*1 (mA)	Diameter (mm)	Height (mm)	Weight (g)	
CR2032R	3.0	200	≤3	50	20.0	3.2	3.0	-30 to 70
CR2450R	3.0	500	≤3	50	24.5	5.0	6.2	-30 to 70

*1 Current for maintaining minimum 2V voltage with pulsed discharge of 3 seconds and 50% nominal capacity discharged (ambient temperature 23°C)
Data is not guaranteed, and is provided for reference purposes only.



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Tab-welder

Mounting Direction		H 			V 	M 
Tab Specification	Shape	E		O	E	P
	Width of Negative Tab Tip (mm)	0.75	0.75	1.8	0.75	2.0
	Width of Positive Tab Tip (mm)	0.75X2	0.75X2	2.8	0.75X2	2.0
	Pitch (mm)	17.8	20.5	20.5	N/A	N/A
Standard	CR2032	CR2032-HE8 	CR2032-HE1 	CR2032-HO6 	CR2032-VE3 	
	CR2430	CR2430-HE1 	CR2430-HE2 	CR2430-HO1 	CR2430-VE1 	
	CR2450	CR2450-HE5 	CR2450-HE6 	CR2450-HO5 	CR2450-VE6 	
Extended Temperature	CR2032X		CR2032X-HE1 	CR2032X-HO6 		
	CR2450X		CR2450X-HE6 	CR2450X-HO5 		
	CR2477X		CR2477X-HE2 	CR2477X-HO4 		
Heat-resistant	CR2032W		CR2032W-HE1 	CR2032W-HO6 		
	CR2050W					CR2050W-MP6 
	CR2450W		CR2450W-HE6 	CR2450W-HO5 		CR2450W-MP1 
	CR2477W		CR2477W-HE2 	CR2477W-HO4 		
High Drain	CR2032R		CR2032R-HE1 	CR2032R-HO6 		
	CR2450R		CR2450R-HE6 	CR2450R-HO5 		

For tab shapes or specifications not included in the above list, please consult your sales representative.

Silver Oxide Batteries & Alkaline Manganese Batteries

Standard Silver Oxide Batteries

Silver oxide batteries are small-sized primary batteries with high capacity and stable discharge characteristics. They are suitable for medical devices and precision instruments. All models are 100% made in Japan, and environmentally friendly (0% mercury).



Model	Electrical Characteristics		Dimensions			Operating Temperature Range (°C)
	Nominal Voltage (V)	Nominal Capacity (mAh)	Diameter (mm)	Height (mm)	Weight (g)	
SR621	1.55	20	6.8	2.15	0.32	-10 to 60
SR626	1.55	28	6.8	2.60	0.40	-10 to 60
SR721	1.55	29	7.9	2.10	0.42	-10 to 60
SR726	1.55	35	7.9	2.60	0.50	-10 to 60
SR41	1.55	45	7.9	3.60	0.65	-10 to 60
SR48	1.55	75	7.9	5.40	1.2	-10 to 60
SR920	1.55	40	9.5	2.05	0.59	-10 to 60
SR927	1.55	60	9.5	2.70	0.79	-10 to 60
SR936	1.55	75	9.5	3.60	1.1	-10 to 60
SR1120	1.55	60	11.6	2.05	0.92	-10 to 60
SR1130	1.55	85	11.6	3.05	1.4	-10 to 60
SR43	1.55	110	11.6	4.20	1.8	-10 to 60

Data is not guaranteed, and is provided for reference purposes only.
Please contact us for other models.

Standard Alkaline Manganese Batteries

Alkaline manganese batteries are small-sized primary batteries with high performance. They are suitable for various applications such as toys, medical devices and health appliances. All models are 100% made in Japan, and environmentally friendly (0% mercury).

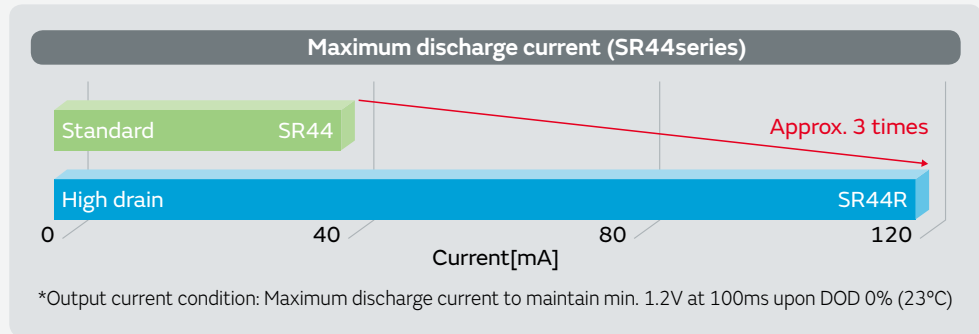


Model	Electrical Characteristics		Dimensions			Operating Temperature Range (°C)
	Nominal Voltage (V)	Nominal Capacity (mAh)	Diameter (mm)	Height (mm)	Weight (g)	
LR41	1.5	45	7.9	3.60	0.57	-10 to 60
LR1130	1.5	70	11.6	3.05	1.2	-10 to 60
LR43	1.5	110	11.6	4.20	1.6	-10 to 60
LR44	1.5	120	11.6	5.40	2.0	-10 to 60

Data is not guaranteed, and is provided for reference purposes only.
Please contact us for other models.

High Drain Silver Oxide Batteries (SR) & Alkaline Manganese Batteries (LR)

High drain SR/LR batteries are ideal for high-performance medical devices that require large current loads for communication, lighting, camera, mechanical driving, etc.



Model	Electrical Characteristics		Dimensions			Operating Temperature Range (°C)
	Nominal Voltage (V)	Nominal Capacity (mAh)	Diameter (mm)	Height (mm)	Weight (g)	
SR927R (Under development)	1.55	45	9.5	2.7	0.7	-10 to 60
SR44R	1.55	150	11.6	5.4	2.2	-10 to 60
LR44R	1.50	150	11.6	5.4	2.0	-10 to 60

Data is not guaranteed, and is provided for reference purposes only.

Sound Components (Buzzer)

Piezoelectric ceramic materials that expand and shrink by applying voltage are used in piezoelectric sound components.

Summary

Using Murata's unique ceramic material, we offer a variety of piezoelectric sound components.

Lineup

- SMD Piezoelectric Sounders
- Pin Type Piezoelectric Sounders
- Piezoelectric Buzzers
- Piezoelectric Diaphragms



<https://www.murata.com/en-global/products/sound>

SMD Piezoelectric Sounders

Low power consumption, lightweight.

Optimized for small devices such as blood glucose meters, clinical thermometers, photoflashes for cameras, and portable terminals.

Applicable for automotive usage based on our design and manufacturing technology.



Applications	Mounting Type	Drive Type	Main Part Number	Sound Pressure Level (typ.)	Measurement Condition of Sound Pressure Level
For Automotive	Surface Mounting Type	External Drive	PKMCS1818E20A0-R1	100dB	12Vo-p, 2.0kHz, square wave, 10cm
			PKLCS1212E20A0-R1	76dB	±1.5Vo-p, 2.0kHz, square wave, 10cm
			PKLCS1212E24A0-R1	80dB	±1.5Vo-p, 2.4kHz, square wave, 10cm
			PKLCS1212E40A1-R1	84dB	±1.5Vo-p, 4.0kHz, square wave, 10cm
For Consumer			PKLCS1212E2000-R1	76dB	±1.5Vo-p, 2.0kHz, square wave, 10cm
			PKLCS1212E2400-R1	80dB	±1.5Vo-p, 2.4kHz, square wave, 10cm
			PKLCS1212E4001-R1	84dB	±1.5Vo-p, 4.0kHz, square wave, 10cm
			PKMCS0909E4000-R1	72dB	±1.5Vo-p, 4.0kHz, square wave, 10cm
			PKMCS0909E48H0-R1	75dB	±2.5Vo-p, 4.8kHz, square wave, 10cm

Detailed Catalogs

For more details, please refer to our printed catalogs and the PDF catalogs on our website.



• Piezoelectric Sound Components

Cat. No. P37E

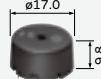
Pin Type Piezoelectric Sounders

Low power consumption, lightweight.

These products are optimized for operation confirmation sounds and warning sounds in household appliances such as air conditioners, washers, and refrigerators.



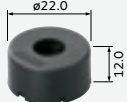
PKM13EPYH



PKM17EPP



PKM22EPPH20



PKM22EPPH40

(in mm)

Packaging	Mounting Type	Drive Type	Main Part Number	Sound Pressure Level (typ.)	Measurement Condition of Sound Pressure Level
Taping	Pin Type	External Drive	PKM13EPYH4000-A0	78dB	±1.5Vo-p, 4.0kHz, square wave, 10cm
Bulk			PKM13EPYH4002-B0	78dB	±1.5Vo-p, 4.0kHz, square wave, 10cm
			PKM17EPP-2002-B0	79dB	3.0Vo-p, 2.0kHz, square wave, 10cm
			PKM22EPPH2001-B0	79dB	±1.5Vo-p, 2.0kHz, square wave, 10cm
			PKM22EPPH4007-B0	92dB	±1.5Vo-p, 4.0kHz, square wave, 10cm

Piezoelectric Buzzers

This is a unified piezoelectric sounder connected to a built-in self-drive circuit, and it easily generates sound with only a DC power supply.

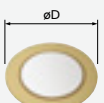
Suitable for gas detector alarms/burglar alarms/home-electronic appliances.

	(in mm)	Mounting Type	Drive Type	Main Part Number	Sound Pressure Level (min.)	Measurement Condition of Sound Pressure Level
PKB24SPCH		Pin Type	Self Drive	PKB24SPCH3601-B0	90dB	12Vdc, 10cm

Piezoelectric Diaphragms

Low power consumption, lightweight.

Suitable for clocks/calculators/digital cameras/burglar alarms, and various alarms.

	7BB-□□-□	Drive Type	Main Part Number	Plate Size (øD)
	External Drive		7BB-12-9	ø12.0mm
			7BB-15-6	ø15.0mm
			7BB-20-6	ø20.0mm
			7BB-27-4	ø27.0mm

□: Indicates Metal Plate Diameter and Resonant Frequency Type.

Wireless Communication Modules

Available for a wide range of applications such as automotive, mobile computing devices, and household appliances.

Wi-Fi Modules/ Bluetooth® · Wi-Fi Combo Modules



■ Features

Compact, highly efficient, and flexible custom-made correspondence

■ Applications

Mobile phones, automotive, tablet PC, POS, HT, electric equipment, smart grid, etc.

Bluetooth® Modules/ Bluetooth® Low Energy Modules



■ Features

Compact, highly efficient, and flexible custom-made correspondence

■ Applications

Mobile phones, automotive, PMP, POS, HT, healthcare, wireless remote control, etc.

Low Power Wide Area Network (LPWAN) Wireless Module



■ Features

LPWA Wireless Technology-Low-Power consumption, wide area coverage, enables IoT applications. Compact, high efficient, support various communication standards.

■ Applications

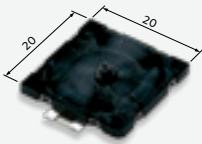
Positioning Tracking, Smart Houses, Agriculture, Healthcare/Medical, Industrial, Logistics, Utilities (Water, Gas Metering), etc.

Microblowers

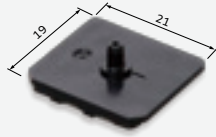
Tiny air blowers/pumps without a motor

■ Features

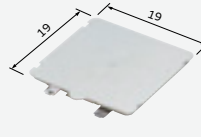
The structure is designed to operate as a blower and pump by applying the ultrasonic vibrations of the ceramic as the drive source. This is achieved in an extremely compact, thin, and silent device with a high flow rate.



MZB1001T02



MZB3004T04



MZB3005T06



MZB4001T05

(in mm)

Part Number	MZB1001T02	MZB3004T04	MZB3005T06	MZB4001T05
Size	20(W) x 20(L) x 1.85(H) (Nozzle Height 1.6)	21(W) x 19(L) x 3.4(H) (Nozzle Height 4.5)	19(W) x 19(L) x 2.3(H)	Φ 28 x 5(H) (Each Nozzle Length 6.5)
Flow rate (@0kPa)	1.2L/min (@21Vdc)	0.2L/min (@18Vdc)	0.2L/min (@18Vdc)	1.3L/min (@28Vdc)
Pressure (@0L/min)	2.5kPa (@21Vdc)	60kPa (@19.5Vdc)	60kPa (@19.5Vdc)	-20kPa (@28Vdc)
Resonance frequency	26kHz	23kHz	23kHz	21kHz
Input Voltage (*1)	11.5Vdc to 21Vdc	8Vdc to 19.5Vdc (*2)	8Vdc to 19.5Vdc (*2)	20Vdc to 28Vdc
Operating Temperature range	0°C to 70°C	0°C to 45°C (*3)(*4)	0°C to 45°C (*3)(*4)	5°C to 50°C (*3)(*5)

*The above value shows typical characteristics.

(*1) A drive circuit is required for the operation. Driving circuits are not common. The voltage is the voltage applied to them.

(*2) Only when the back pressure condition is 10kPa or more; it can be driven with a voltage of 18Vdc or more.

(*3) When operated continuously, sufficient performance may not be demonstrated due to the generation of heat.

(*4) Please use in environments where the temperature of the metal surface (marking surface) is 60°C or less.

(*5) Please use in environments where the temperature of the resin surface is 60°C or less.

- The microblower cannot be used for automobile applications (including accessories). Please refrain from use for automobile applications.
- If the microblower is used for medical applications, Murata requires a special contract to cover the use in the medical application to be agreed upon before the start of mass production.
- Please contact us for other details.

■ Application Examples

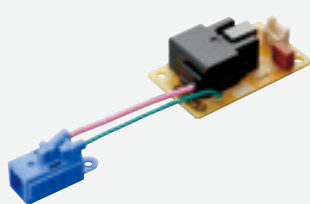
Aroma diffuser, gas/breath suction equipment, blood pressure measuring, breast pump, liquid transfer equipment by air pressure

Ionizer Modules: Ionissimo

High-concentration ion, compact design, ozone control

Ionissimo is an ionizer module with unprecedented compactness and high efficiency, capable of generating a large number of ions owing to Murata's own high-voltage technology and structural design. The ion generator is connected to the driving power supply for modularization and ease of incorporating into equipment.

MHM Series



■ Features

- A large number of ions will be created by the original structure.
- Compact equipment may be designed due to small ionizer element and driving power supply.
- Ozone amounts may be optimized for specific applications by controlling the generation of ozone without changing the number of ions.

■ Applications

Air conditioner, air purifier, static eliminator, vacuum cleaner, etc.

Items	MHM305 Type	MHM314 Type	MHM306 Type	MHM400 Type	MHM402 Type	MHM403 Type
Input Voltage (VDC)	12.0 (10.8 to 13.2)	12.0 (10.8 to 13.2)	12.0 (10.8 to 13.2)	12.0 (10.8 to 13.2)	-	-
Input Voltage (VAC)	-	-	-	-	220/240 (210 to 250)	100 (85 to 110)
Power (W typ.)	0.4	0.9	0.6	0.6	0.4	-
Ion Polarity	Negative	Negative	Negative	Positive	Negative	Positive & Negative
Initial value of Ion amount (pcs/cc typ.) (*1)	5,000,000	8,000,000	5,000,000	5,000,000	4,000,000	-
Initial value of Ozone amount (mg/H)	<0.15	<0.15	0.6 typ.	<0.15	0.4 typ.	-
Operating Temp. (°C)	-10 to 50	-10 to 50	-10 to 50	-10 to 50	-10 to 50	-10 to 50
Operating Humidity (%RH) (*2)	20 to 80	20 to 80	20 to 80	20 to 80	20 to 80	20 to 80

(*1) Measuring distance : 20cm

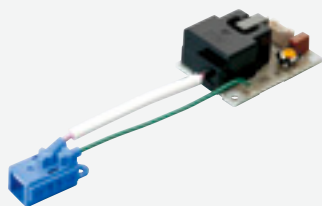
(*2) No dew deposit

View a demonstration video of Ionissimo Ionizer Modules on our website.

Ozonizer Modules: Ionissimo

By using low-temperature co-fired ceramic substrate (LTCC) for the discharger ozone will be generated stably.

MHM Series



■ Features

- Stable ozone generation.
- MHM501 type can be used under high humidity conditions.
- Small size

■ Applications

Refrigerator, vacuum cleaner, dishwasher, clothes washer, etc.

Items	MHM500 Type	MHM501 Type	MHM502 Type	MHM503 Type
Input Voltage (VDC)	12.0 (10.8 to 13.2)	12.0 (10.8 to 13.2)	12.0 (10.8 to 13.2)	12.0 (10.8 to 13.2)
Power (W) (*1)	2.0	2.4	4.6	1.5
Ozone Level (mg/H typ.) (*1)	3.5 typ.	3 typ.	45 typ.	2 typ.
Max Duty (%)	30	30	100 (*3)	10 (*4)
Operating Temp. (°C)	-10 to 50	-10 to 50	5 to 60	-10 to 50
Operating Temp (%RH) (*2) High-voltage power supply area	20 to 80	20 to 80	20 to 80	20 to 80
Operating Humidity (%RH) (*2) Ozone generator area	20 to 80	20 to 95	20 to 90	20 to 95
Ozone generator area Supports high humidity	-	○	○	○

(*1) measurement result at Duty: 100%

(*2) No dew deposit

(*3) 100% Operation Only

(*4) The duty can be up to 15%.at Ta: 45°C

View a demonstration video of Ionissimo Ozonizer Modules on our website.

RFID Devices

RFID for transferring identification data by wireless communication. The state-of-the-art technology allows IC tags to be attached to places where traditional barcode and QR code technology could suffer from aging. Murata offers a comprehensive range of items required to introduce RFID, from IC tags to high-quality antennas, reader/writers, and software applications. With the complete kits from Murata, RFID is seamlessly and reliably implemented.

HF band RFID tag

Part number	LXMS33HCNG-134	LXMS33HCNK-171
Application	Small product management	
Appearance		
RFID standard	ISO15693 NFC Forum Type5	ISO14443 TypeA NFC Forum Type2
Frequency	13.56MHz	
IC	NXP ICODE SLIX	NXP NTAG210
UID memory	64bit	
NDEF memory	896bit	384bit
Size(L x W x H)	3.2 x 3.2 x 0.7 mm	3.2 x 3.2 x 0.75 mm
Read range*	20mm	15mm

*Reference

UHF band RFID tag

Part number	LXMSJZNCMD-217	LXMSJZNCMF-210	LXMS21ACMF-218	LXMS21ACMD-220	LXTBKZMCMG-010
Application	Small product management		Electronic equipment management		Metal product management
Appearance					
RFID standard	ISO18000-63 and EPC Global Gen2v2				
Frequency	865-928MHz				865-928MHz
IC	Impinj Monza 4QT	Impinj Monza R6	Impinj Monza R6	Impinj Monza 4QT	Impinj Monza R6P
UID memory	128bit	96bit	96bit	128bit	128bit
NDEF memory	512bit	NA	NA	512bit	32bit
Size(L x W x H)	1.2 x 1.2 x 0.55 mm		2.0 x 1.2 x 0.5 mm		6 x 2.0 x 2.3mm
Read range*	10mm		9m	7m	1.5m

*Reference

Note: Monza is a registered trademark of USA-based Impinj, Inc. in the United States and/or in other countries.

Note: ICODE and NTAG are registered trademarks of USA-based NXP Semiconductors N.V. in the United States and/or in other countries.

Femtet, CAE Software

User-Friendly Simulation Software Tailored for a Wide Range of Engineering Challenges

Femtet is a Multiphysics CAE software with multiple functionalities developed by Murata Manufacturing Co, Ltd.

Features

Femtet

Femtet is simulation software based on the finite element method. Its easy operation and comprehensive functionality make stress-free analysis environment possible.

Eight Solvers and Multiphysics

Solves eight major physical phenomena and multiphysics.

Efficient Designing

Capable of batch processing and parametric analysis that are essential for tuning and optimization of design.

VBA macro function is available to realize optimum design.

Comprehensive Functionalities

Equipped with comprehensive modules needed for modeling (CAD), meshing, simulations, and results display, it supports cost-effective simulation activities.

Database Management

Manages databases of materials, boundary conditions, body attributes, and models.

The database can be shared and used among a group of users.

CAD Translator

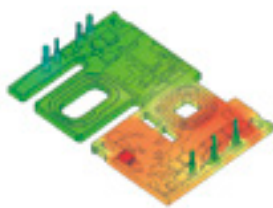
Lets you use the CAD data on hand right away by supporting various kinds of CAD formats to import and export.

Examples

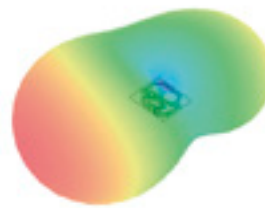
Mechanical Stress



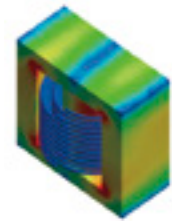
Thermal Conductivity



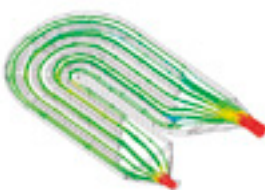
Electromagnetic Waves



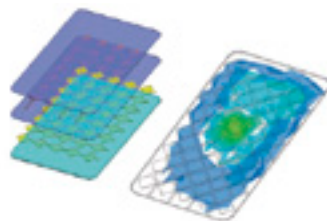
Magnetic Fields



Fluid



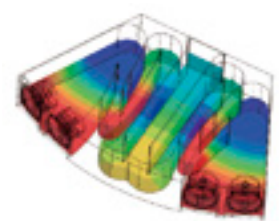
Electric Fields



Piezoelectricity



Acoustic Waves



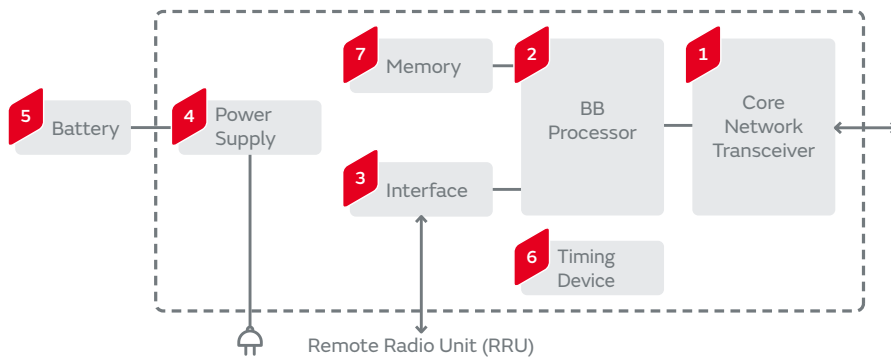
Others

Memo

Application Guides



Baseband unit (BBU) DU / CU



1 Core Network Transceiver

Wire Bonding Mount Multilayer
Microchip Capacitors for General Purpose
GMA Series



Silicon Capacitors



Wire Bonding/AuSn Soldering Mount Chip Multilayer
Ceramic Capacitors for General Purpose
GMD Series



Chip Inductors (Chip Coils)
FCUL/FDSD Series



Single-Layer
Microchip Capacitors
CLB Series



Chip Inductors (Chip Coils)
LQM/LQH/DFE Series



Thin Film Circuit Substrates (RUSUB)
RU Series



Thermistors
NCU Series



2 BB Processor

Chip Ferrite Beads
BLM Series



Chip Ferrite Beads
BLE Series



3 Terminals Low ESL Chip Multilayer
Ceramic Capacitors for General Purpose
NFM Series



Thermistors
NCU Series



3 Interface

Low ESL Chip Multilayer Ceramic
Capacitors for General Purpose
LLL/LLA/LLM Series



Silicon ESD Protection Devices
LXEST Series**



Chip Common Mode Choke Coils/
Common Mode Noise Filters
DLW/NFG/DLM Series



4 Power Supply

Isolated DC-DC Converters
MYB Series



Non-Isolated DC-DC Converters
MYMGK/MYSGK/OKL/MYLSM Series



Isolated DC-DC Converters
DSE/DAE/DCE/DSQ/DAQ/DCQ series



AC-DC Converter
1U Front End
D1U Series



Metal Terminal Type Multilayer
Ceramic Capacitors for General Purpose
KRM Series



Polymer Aluminum Electrolytic Capacitors
ECAS Series



Thermistors
PRF/NCU Series



Chip Inductors (Chip Coils)
LQM/LQH/DFE Series



Isolated DC-DC Converters for PoE+PD
MYBSP Series



Safety Standard Certified Resin Molding SMD Type
Ceramic Capacitors for General Purpose
DK1 Series



Safety Standard Certified Lead Type
Disc Ceramic Capacitors for General Purpose
DE1/DE2 Series



5 Battery

FORTELION High Output Battery Module
MPRMH1701



FORTELION 2.1kWh Battery Module System
IJ1101M/IJ8101C/IJ1101k



Cylindrical Type Lithium Ion
Secondary Batteries



6 Timing Device

Crystal Units
XRC Series



7 Memory

Chip Ferrite Beads
BLM Series



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose

High Q Chip Multilayer Ceramic Capacitors for General Purpose

Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose

3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose

Polymer Aluminum Electrolytic Capacitors

Chip Inductors (Chip Coils)

Chip Inductors (Chip Coils)

Chip Ferrite Beads

Feed Through Chip EMI Filters

Chip Common Mode Choke Coils/Common Mode Noise Filters

Piezoelectric Sounders

Coin Manganese Dioxide Lithium Batteries

GRM Series

GQM / GJM Series

GRJ Series

NFM Series

ECAS Series

LQW/LQP/LQG Series

LQM/LQH/DFE Series

BLM/NFZ Series

NFE Series

DLW/DLM Series

PKLCS/PKMCS Series

Standard Type

High Frequency Filter Circuit/Coupling/Decoupling/For Step-up

High Frequency Filter Circuit

Coupling/Decoupling/For Step-up

Noise Suppression/Decoupling

Smoothing /Transient Backup

High Frequency Circuit-Impedance Matching /Resonance

Voltage Conversion

Noise Suppression

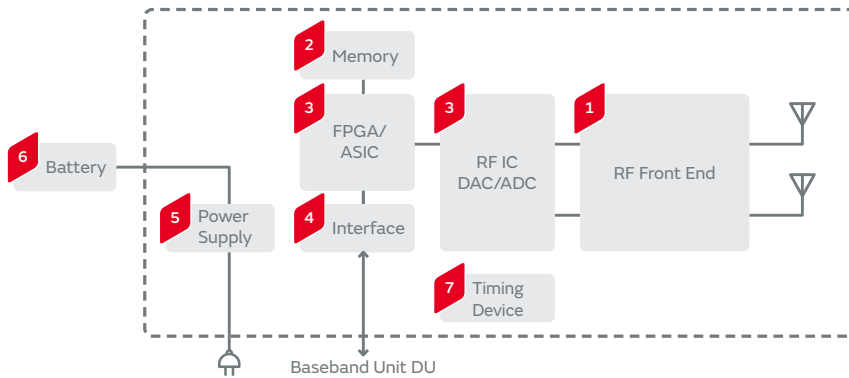
Noise Suppression

Noise Suppression

Sound Component

Battery Backup

Remote radio unit (RRU) mmWave band



1 RF Front End

Silicon ESD Protection Devices
LXES**T Series



Thermistors
NCU Series



Chip Inductors (Chip Coils)
LQW/LQP/LQG Series



Silicon Capacitors



2 Memory

Chip Ferrite Beads
BLM Series



3 RF IC/DAC/ADC, FPGA/ASIC

Chip Ferrite Beads
BLM Series



3 Terminals Low ESL Chip Multilayer
Ceramic Capacitors for General Purpose
NFM Series



Chip Ferrite Beads
BLE Series



Thermistors
NCU Series



4 Interface

Low ESL Chip Multilayer Ceramic
Capacitors for General Purpose
LLL/LLA/LLM Series



Silicon ESD Protection Devices
LXES**T Series



Chip Common Mode Choke Coils/
Common Mode Noise Filters
DLW/NFG/DLM Series



5 Power Supply

Isolated DC-DC Converters
MYB Series



Non-Isolated DC-DC Converters
MYMGK/MYSGK/OKL/MYLSM Series



Isolated DC-DC Converters
DSE/DAE/DCE/DSQ/
DAQ/DCQ series



Metal Terminal Type Multilayer
Ceramic Capacitors for General Purpose
KRM Series



Polymer Aluminum
Electrolytic Capacitors
ECAS Series



Thermistors
PRF/NCU Series



6 Battery

FORTELION High Output
Battery Module
MPRMH1701



FORTELION 2.1kWh Battery Module System
IJ1101M/IJ8101C/IJ1101k



Cylindrical Type Lithium Ion
Secondary Batteries



7 Timing Device

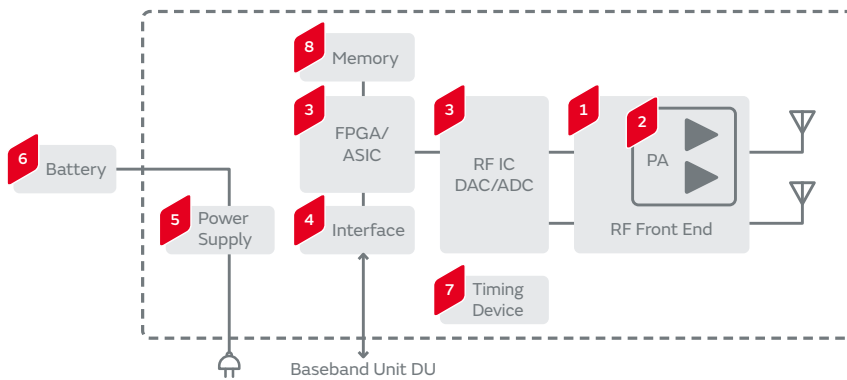
Crystal Units
XRC Series



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose	GRM Series	High Frequency Filter Circuit/Coupling/Decoupling/For Step-up
High Q Chip Multilayer Ceramic Capacitors for General Purpose	GQM / GJM Series	High Frequency Filter Circuit
Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose	GRJ Series	Coupling/Decoupling/For Step-up
3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose	NFM Series	Noise Suppression/Decoupling
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing /Transient Backup
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching /Resonance
Chip Inductors (Chip Coils)	LQM/LQH/DFE Series	Voltage Conversion
Chip Ferrite Beads	BLM/NFZ Series	Noise Suppression
Feed Through Chip EMI Filters	NFE Series	Noise Suppression
Chip Common Mode Choke Coils/Common Mode Noise Filters	DLW/DLM Series	Noise Suppression
Piezoelectric Sounders	PKLCS/PKMCS Series	Sound Component
Coin Manganese Dioxide Lithium Batteries	Standard Type	Battery Backup

Remote radio unit (RRU) less than sub-6GHz band



1 RF Front End

Chip Multilayer Diplexers
LFD Series



Chip Multilayer LC Filters
LF Series



Chip Multilayer Hybrid Baluns
LDB/LDM Series



Chip Multilayer Hybrid Couplers
LDC/LDJ Series



SAW Filters
SAF Series



SAW Duplexers
SAY Series



Chip Inductors (Chip Coils)
LQW/LQP/LQG Series



Thermistors
NCU Series



2 PA

Chip Inductors (Chip Coils)
LQW/LQP/LQG Series



Silicon Capacitors



Single-Layer
Microchip Capacitors
CLB Series



Thin Film Circuit
Substrates (RUSUB)
RU Series



High Q Chip Multilayer Ceramic Capacitors
for General Purpose
GQM/GJM Series



Thermistors
NCU Series



3 RF IC/DAC/ADC, FPGA/ASIC

Chip Ferrite Beads
BLM Series



3 Terminals Low ESL
Chip Multilayer Ceramic Capacitors
for General Purpose
NFM Series



Thermistors
NCU Series



Chip Ferrite Beads
BLE Series



4 Interface

Low ESL Chip Multilayer Ceramic Capacitors for General Purpose
LLL/LLA/LLM Series



Silicon ESD Protection Devices
LXES**T Series



Chip Common Mode Choke Coils/
Common Mode Noise Filters
DLW/NFG/DLM Series



5 Power Supply

Isolated DC-DC Converters
MYB Series



Non-Isolated DC-DC Converters
MYMGK/MYSGK/OKL/MYLSM Series



Metal Terminal Type Multilayer
Ceramic Capacitors for General Purpose
KRM Series



Polymer Aluminum
Electrolytic Capacitors
ECAS Series



Chip Inductors (Chip Coils)
FCUL/FDSD Series



Chip Inductors (Chip Coils)
LQM/LQH/DFE Series



Thermistors
PRF/NCU Series



6 Battery

FORTELION High Output Battery Module
MPRMH1701



FORTELION 2.1kWh Battery Module System
IJ1101M/IJ8101C/IJ1101k



Cylindrical Type Lithium Ion Secondary Batteries



7 Timing Device

Crystal Units
XRC Series



8 Memory

Chip Ferrite Beads
BLM Series



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose

High Q Chip Multilayer Ceramic Capacitors for General Purpose

Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose

3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose

Polymer Aluminum Electrolytic Capacitors

Chip Inductors (Chip Coils)

Chip Inductors (Chip Coils)

Chip Ferrite Beads

Feed Through Chip EMI Filters

Chip Common Mode Choke Coils/Common Mode Noise Filters

Piezoelectric Sounders

Coin Manganese Dioxide Lithium Batteries

GRM Series

GQM / GJM Series

GRJ Series

NFM Series

ECAS Series

LQW/LQP/LQG Series

LQM/LQH/DFE Series

BLM/NFZ Series

NFE Series

DLW/DLM Series

PKLCS/PKMCS Series

Standard Type

High Frequency Filter Circuit/Coupling/Decoupling/For Step-up

High Frequency Filter Circuit

Coupling/Decoupling/For Step-up

Noise Suppression/Decoupling

Smoothing /Transient Backup

High Frequency Circuit-Impedance Matching /Resonance

Voltage Conversion

Noise Suppression

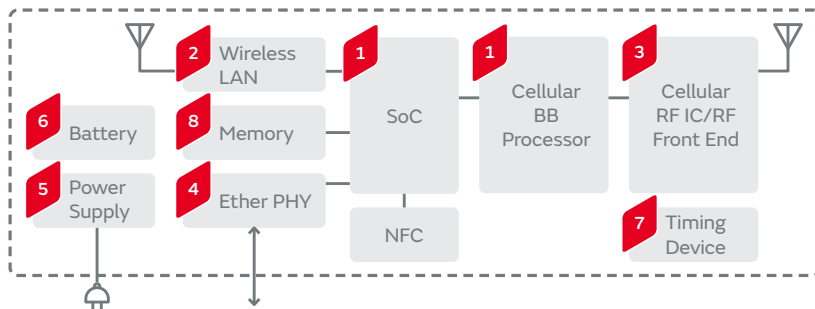
Noise Suppression

Noise Suppression

Sound Component

Battery Backup

CPE (FWA device)



1 SoC/Cellular BB Processor

Thermistors
NCP/NCU Series



2 Wireless LAN

Wi-Fi Modules



SAW Filters
SAF Series



Chip Multilayer LC Filters
LF Series



Chip Multilayer Hybrid Baluns
LDB/LDM Series



Chip Multilayer Diplexers
LFD Series



Chip Multilayer Hybrid Couplers
LDC/LDJ Series



Microwave Coaxial
Connectors with Switch



Microwave Multi Line
Connectors



3 Cellular RF IC/RF Front End

Chip Multilayer Diplexers
LFD Series



SAW Duplexers
SAY Series



SAW Filters
SAF Series



Chip Multilayer LC Filters
LF Series



Chip Multilayer Hybrid Baluns
LDB/LDM Series



Chip Multilayer Hybrid Dividers
LDD Series



Chip Multilayer Hybrid Couplers
LDC/LDJ Series



Microwave Coaxial
Connectors with Switch



Microwave Multi Line
Connectors



4 Ether PHY

Low ESL Chip Multilayer Ceramic
Capacitors for General Purpose
LLL/LLA/LLM Series



Chip Common Mode Choke Coils/
Common Mode Noise Filters
DLW/NFG/DLM Series



Silicon ESD Protection Devices
LXES**T Series



5 Power Supply

Low Acoustic Noise Chip Multilayer Ceramic Capacitors
on Interposer Board for General Purpose
ZRB Series



Metal Terminal Type Multilayer
Ceramic Capacitors for General Purpose
KRM Series



Polymer Aluminum
Electrolytic Capacitors
ECAS Series



Chip Inductors (Chip Coils)
FCUL/FDSD Series



Chip Inductors (Chip Coils)
LQM/LQH/DFE Series



Thermistors
NCP/NCU/PRF Series



Isolated DC-DC Converters for PoE+PD
MYBSP Series



6 Battery

Thermistors
NCP/NCU/PRF Series



7 Timing Device

Crystal Units
XRC Series



8 Memory

Chip Ferrite Beads
BLM Series



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose

High Q Chip Multilayer Ceramic Capacitors for General Purpose

Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose

3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose

Polymer Aluminum Electrolytic Capacitors

Chip Inductors (Chip Coils)

Chip Inductors (Chip Coils)

Chip Ferrite Beads

Feed Through Chip EMI Filters

Chip Common Mode Choke Coils/Common Mode Noise Filters

Piezoelectric Sounders

Coin Manganese Dioxide Lithium Batteries

GRM Series

GQM / GJM Series

GRJ Series

NFM Series

ECAS Series

LQW/LQP/LQG Series

LQM/LQH/DFE Series

BLM/NFZ Series

NFE Series

DLW/DLM Series

PKLCS/PKMCS Series

Standard Type

High Frequency Filter Circuit/Coupling/Decoupling/For Step-up

High Frequency Filter Circuit

Coupling/Decoupling/For Step-up

Noise Suppression/Decoupling

Smoothing /Transient Backup

High Frequency Circuit-Impedance Matching /Resonance

Voltage Conversion

Noise Suppression

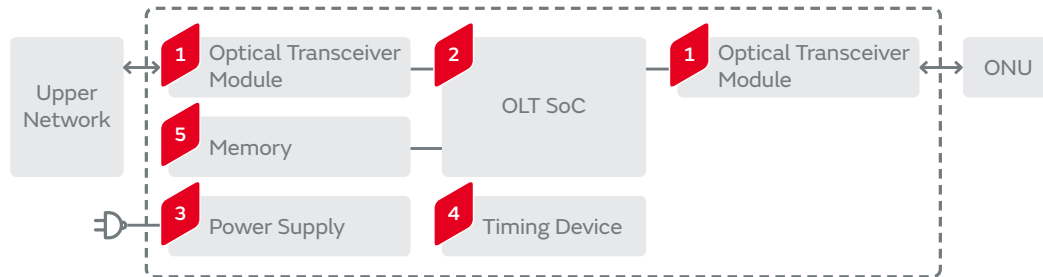
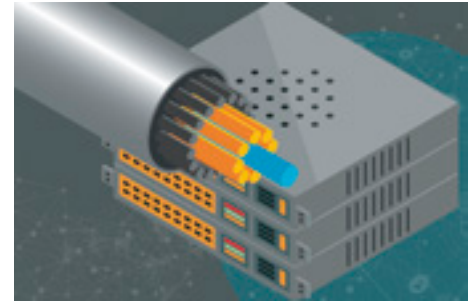
Noise Suppression

Noise Suppression

Sound Component

Battery Backup

OLT (Optical line terminal)



1 Optical Transceiver Module

Wire Bonding Mount Multilayer
Microchip Capacitors for General Purpose
GMA Series



Wire Bonding/AuSn Soldering Mount Chip Multilayer
Ceramic Capacitors for General Purpose
GMD Series



Single-Layer Microchip Capacitors
CLB Series



Thin Film Circuit Substrates (RUSUB)
RU Series



Silicon Capacitors



Chip Inductors (Chip Coils)
LQW/LQP/LQG Series



Chip Inductors (Chip Coils)
LQM/LQH/DFE Series



2 OLT SoC

Thermistors
NCP/NCU Series



Chip Ferrite Beads
BLM Series



4 Timing Device

Crystal Units
XRC Series



5 Memory

Chip Ferrite Beads
BLM Series



3 Power Supply

Isolated DC-DC Converters
MYB Series



Non-Isolated DC-DC Converters
MYMGK/MYSGK/OKL/MYLSM Series



Isolated DC-DC Converters for PoE+PD
MYBSP Series



Polymer Aluminum Electrolytic Capacitors
ECAS Series



Thermistors
NCP/NCU/PRF Series



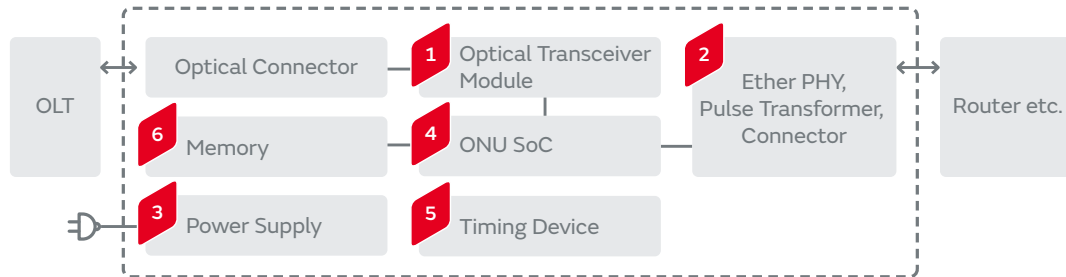
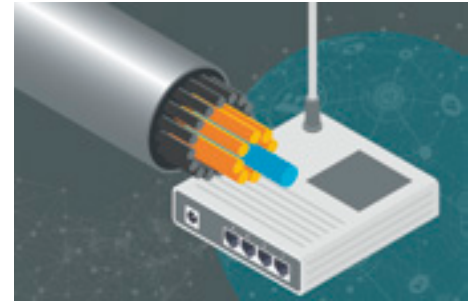
Silicon ESD Protection Devices
LXES**T Series



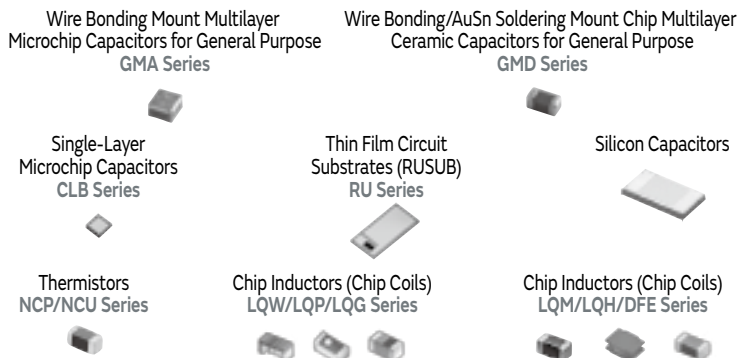
General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose	GRM Series	High Frequency Filter Circuit/Coupling/Decoupling/For Step-up
High Q Chip Multilayer Ceramic Capacitors for General Purpose	GQM / GJM Series	High Frequency Filter Circuit
Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose	GRJ Series	Coupling/Decoupling/For Step-up
3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose	NFM Series	Noise Suppression/Decoupling
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing /Transient Backup
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching /Resonance
Chip Inductors (Chip Coils)	LQM/LQH/DFE Series	Voltage Conversion
Chip Ferrite Beads	BLM/NFZ Series	Noise Suppression
Feed Through Chip EMI Filters	NFE Series	Noise Suppression
Chip Common Mode Choke Coils/Common Mode Noise Filters	DLW/DLM Series	Noise Suppression
Piezoelectric Sounders	PKLCS/PKMCS Series	Sound Component
Coin Manganese Dioxide Lithium Batteries	Standard Type	Battery Backup

ONU (Optical network units)



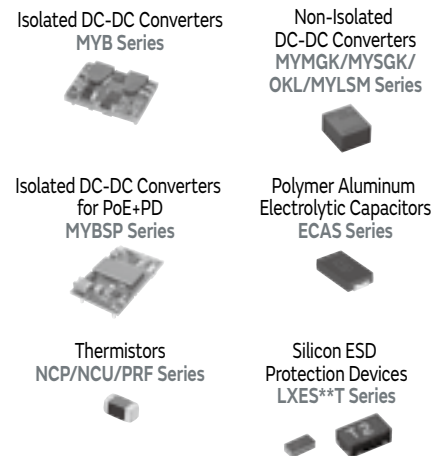
1 Optical Transceiver Module



2 Ether PHY, Pulse Transformer, Connector



3 Power Supply



4 ONU SoC



5 Timing Device



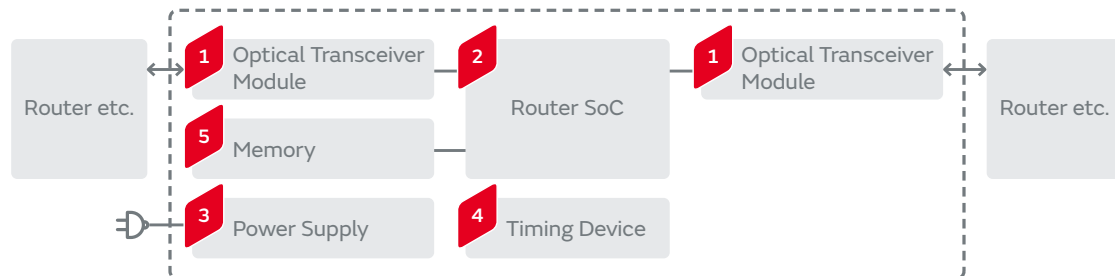
6 Memory



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose	GRM Series	High Frequency Filter Circuit/Coupling/Decoupling/For Step-up
High Q Chip Multilayer Ceramic Capacitors for General Purpose	GQM / GJM Series	High Frequency Filter Circuit
Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose	GRJ Series	Coupling/Decoupling/For Step-up
3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose	NFM Series	Noise Suppression/Decoupling
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing /Transient Backup
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching /Resonance
Chip Inductors (Chip Coils)	LQM/LQH/DFE Series	Voltage Conversion
Chip Ferrite Beads	BLM/NFZ Series	Noise Suppression
Feed Through Chip EMI Filters	NFE Series	Noise Suppression
Chip Common Mode Choke Coils/Common Mode Noise Filters	DLW/DLM Series	Noise Suppression
Piezoelectric Sounders	PKLCS/PKMCS Series	Sound Component
Coin Manganese Dioxide Lithium Batteries	Standard Type	Battery Backup

Core router



1 Optical Transceiver Module

Wire Bonding Mount Multilayer
Microchip Capacitors for General Purpose
GMA Series



Thin Film Circuit Substrates (RUSUB)
RU Series



Wire Bonding/AuSn Soldering Mount Chip Multilayer
Ceramic Capacitors for General Purpose
GMD Series



Silicon Capacitors



Chip Inductors (Chip Coils)
LQW/LQP/LQG Series



Single-Layer Microchip Capacitors
CLB Series



Chip Inductors (Chip Coils)
LQM/LQH/DFE Series



2 Router SoC

Chip Ferrite Beads
BLM Series



Thermistors
NCP/NCU Series



4 Timing Device

Crystal Units
XRC Series



5 Memory

Chip Ferrite Beads
BLM Series



3 Power Supply

Isolated DC-DC Converters
MYB Series



Polymer Aluminum Electrolytic Capacitors
ECAS Series



Non-Isolated DC-DC Converters
MYMGK/MYSGK/OKL/MYLSM Series



Thermistors
NCP/NCU/PRF Series



Isolated DC-DC Converters for PoE+PD
MYBSP Series



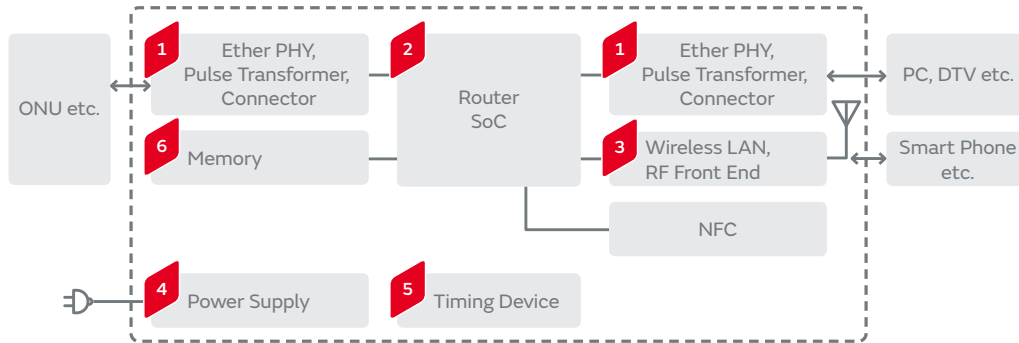
Silicon ESD Protection Devices
LXES**T Series



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose	GRM Series	High Frequency Filter Circuit/Coupling/Decoupling/For Step-up
High Q Chip Multilayer Ceramic Capacitors for General Purpose	GQM / GJM Series	High Frequency Filter Circuit
Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose	GRJ Series	Coupling/Decoupling/For Step-up
3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose	NFM Series	Noise Suppression/Decoupling
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing /Transient Backup
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching /Resonance
Chip Inductors (Chip Coils)	LQM/LQH/DFE Series	Voltage Conversion
Chip Ferrite Beads	BLM/NFZ Series	Noise Suppression
Feed Through Chip EMI Filters	NFE Series	Noise Suppression
Chip Common Mode Choke Coils/Common Mode Noise Filters	DLW/DLM Series	Noise Suppression
Piezoelectric Sounders	PKLCS/PKMCS Series	Sound Component
Coin Manganese Dioxide Lithium Batteries	Standard Type	Battery Backup

Home router



1 Ether PHY, Pulse Transformer, Connector

Low ESL Chip Multilayer Ceramic Capacitors for General Purpose LLL/LLA/LLM Series
Chip Common Mode Choke Coils/Common Mode Noise Filters DLW/NFG/DLM Series
Silicon ESD Protection Devices LXES**T Series
Silicon Capacitors

2 Router SoC

Chip Ferrite Beads BLM Series
Thermistors NCP/NCU Series

3 Wireless LAN, RF Front End

Microwave Coaxial Connectors with Switch
Chip Multilayer Diplexers LFD Series
Chip Multilayer Hybrid Couplers LDC/LDJ Series
Chip Multilayer LC Filters LF Series
Chip Multilayer Hybrid Baluns LDB/LDM Series

4 Power Supply

Isolated DC-DC Converters MYB Series
Non-Isolated DC-DC Converters MYMGK/MYSGK/OKL/MYLSM Series
Isolated DC-DC Converters for PoE+PD MYBSP Series
Polymer Aluminum Electrolytic Capacitors ECAS Series
Thermistors NCP/NCU/PRF Series
Silicon ESD Protection Devices LXES**T Series
Chip Inductors (Chip Coils) LQM/LQH/DFE Series

5 Timing Device

Crystal Units XRC Series

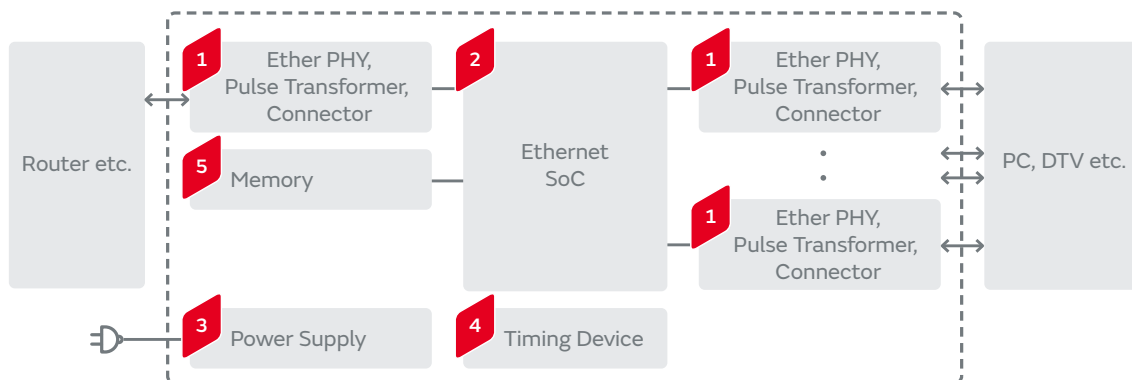
6 Memory

Chip Ferrite Beads BLM Series

General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose	GRM Series	High Frequency Filter Circuit/Coupling/Decoupling/For Step-up
High Q Chip Multilayer Ceramic Capacitors for General Purpose	GQM / GJM Series	High Frequency Filter Circuit
Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose	GRJ Series	Coupling/Decoupling/For Step-up
3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose	NFM Series	Noise Suppression/Decoupling
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing /Transient Backup
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching /Resonance
Chip Inductors (Chip Coils)	LQM/LQH/DFE Series	Voltage Conversion
Chip Ferrite Beads	BLM/NFZ Series	Noise Suppression
Feed Through Chip EMI Filters	NFE Series	Noise Suppression
Chip Common Mode Choke Coils/Common Mode Noise Filters	DLW/DLM Series	Noise Suppression
Piezoelectric Sounders	PKLCS/PKMCS Series	Sound Component
Coin Manganese Dioxide Lithium Batteries	Standard Type	Battery Backup

Switch



1 Ether PHY, Pulse Transformer, Connector

Low ESL Chip Multilayer Ceramic Capacitors for General Purpose
LLL/LLA/LLM Series



Chip Common Mode Choke Coils/
Common Mode Noise Filters
DLW/NFG/DLM Series



Silicon ESD Protection Devices
LXES**T Series



Silicon Capacitors



2 Ethernet SoC

Chip Ferrite Beads
BLM Series



Thermistors
NCP/NCU Series



3 Power Supply

Isolated DC-DC Converters
MYB Series



Isolated DC-DC Converters for PoE+PD
MYBSP Series



Polymer Aluminum Electrolytic Capacitors
ECAS Series



Thermistors
NCP/NCU/PRF Series



Silicon ESD Protection Devices
LXES**T Series



Chip Inductors (Chip Coils)
LQM/LQH/DFE Series



Non-Isolated DC-DC Converters
MYMGK Series



Non-Isolated DC-DC Converters
MYMGK Series



Non-Isolated DC-DC Converters
MYTN Series



4 Timing Device

Crystal Units
XRC Series



5 Memory

Chip Ferrite Beads
BLM Series



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose

High Q Chip Multilayer Ceramic Capacitors for General Purpose

Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose

3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose

Polymer Aluminum Electrolytic Capacitors

Chip Inductors (Chip Coils)

Chip Inductors (Chip Coils)

Chip Ferrite Beads

Feed Through Chip EMI Filters

Chip Common Mode Choke Coils/Common Mode Noise Filters

Piezoelectric Sounders

Coin Manganese Dioxide Lithium Batteries

GRM Series

GQM / GJM Series

GRJ Series

NFM Series

ECAS Series

LQW/LQP/LQG Series

LQM/LQH/DFE Series

BLM/NFZ Series

NFE Series

DLW/DLM Series

PKLCS/PKMCS Series

Standard Type

High Frequency Filter Circuit/Coupling/Decoupling/For Step-up

High Frequency Filter Circuit

Coupling/Decoupling/For Step-up

Noise Suppression/Decoupling

Smoothing /Transient Backup

High Frequency Circuit-Impedance Matching /Resonance

Voltage Conversion

Noise Suppression

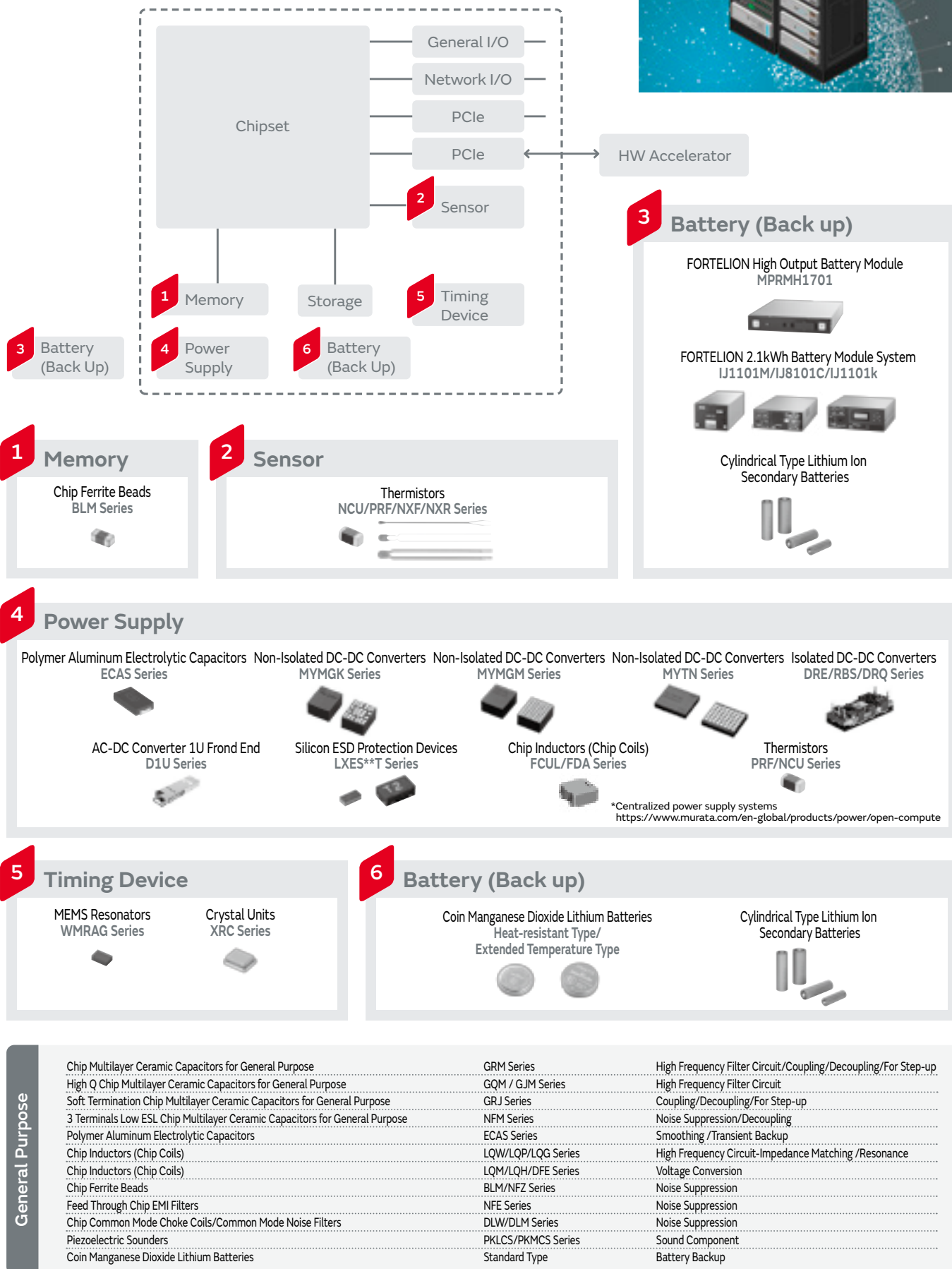
Noise Suppression

Noise Suppression

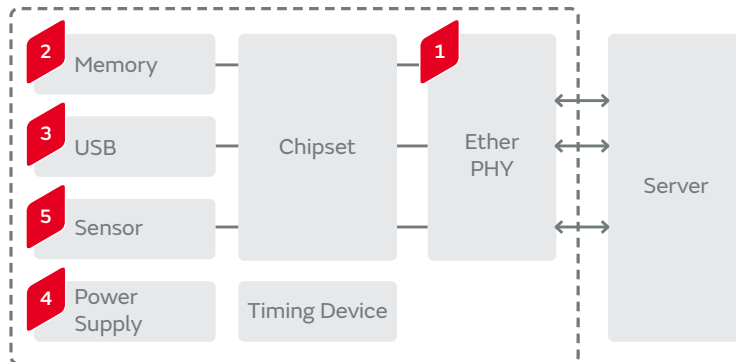
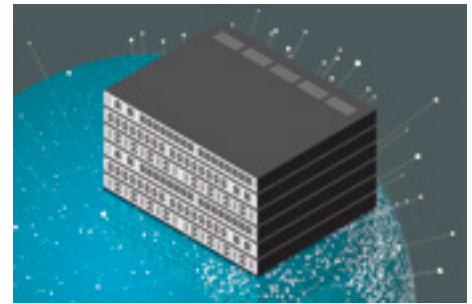
Sound Component

Battery Backup

Server



Network switch



1 Ether PHY

Low ESL Chip Multilayer Ceramic Capacitors for General Purpose
LLL/LLA/LLM Series



Chip Common Mode Choke Coils/
Common Mode Noise Filters
DLW/NFG/DLM Series



Silicon ESD Protection Devices
LXES**T Series



Silicon Capacitors



2 Memory

Chip Ferrite Beads
BLM Series



3 USB

Chip Common Mode
Choke Coils/
Common Mode Noise Filters
DLW/NFG/DLM Series



4 Power Supply

Isolated
DC-DC Converters
MYB Series



Non-Isolated DC-DC Converters
MYMGK Series



Non-Isolated DC-DC Converters
MYMG Series



Non-Isolated DC-DC Converters
MYTN Series



Isolated DC-DC Converters
DRE/RBS/DRQ Series



AC-DC Converter 1U Front End
D1U Series



Isolated DC-DC Converters for PoE+PD
MYBSP Series



5 Sensor

Thermistors
NCU/PRF/NXF/NXR Series



Polymer Aluminum Electrolytic Capacitors
ECAS Series



Thermistors
PRF/NCU Series



Silicon ESD Protection Devices
LXES**T Series



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose

High Q Chip Multilayer Ceramic Capacitors for General Purpose

Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose

3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose

Polymer Aluminum Electrolytic Capacitors

Chip Inductors (Chip Coils)

Chip Inductors (Chip Coils)

Chip Ferrite Beads

Feed Through Chip EMI Filters

Chip Common Mode Choke Coils/Common Mode Noise Filters

Piezoelectric Sounders

Coin Manganese Dioxide Lithium Batteries

GRM Series

GQM / GJM Series

GRJ Series

NFM Series

ECAS Series

LQW/LQP/LQG Series

LQM/LQH/DFE Series

BLM/NFZ Series

NFE Series

DLW/DLM Series

PKLCS/PKMCS Series

Standard Type

High Frequency Filter Circuit/Coupling/Decoupling/For Step-up

High Frequency Filter Circuit

Coupling/Decoupling/For Step-up

Noise Suppression/Decoupling

Smoothing /Transient Backup

High Frequency Circuit-Impedance Matching /Resonance

Voltage Conversion

Noise Suppression

Noise Suppression

Noise Suppression

Sound Component

Battery Backup

DCIM (Data center infrastructure management)

1

Environmental Monitoring

Air Conditioner

Security

Controller

Gateway



1

Environmental Monitoring

Wi-Fi Modules



LPWA Modules



Magnetic Sensors (TMR Sensors)
CT Series



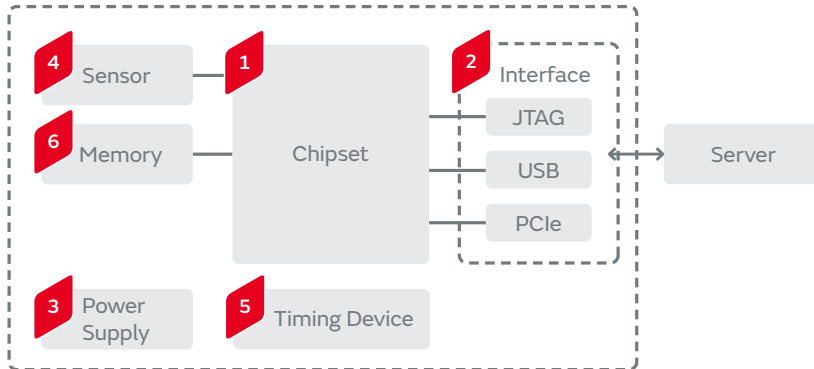
Thermistors
NCU Series



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose	GRM Series	High Frequency Filter Circuit/Coupling/Decoupling/For Step-up
High Q Chip Multilayer Ceramic Capacitors for General Purpose	GQM / GJM Series	High Frequency Filter Circuit
Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose	GRJ Series	Coupling/Decoupling/For Step-up
3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose	NFM Series	Noise Suppression/Decoupling
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing /Transient Backup
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching /Resonance
Chip Inductors (Chip Coils)	LQM/LQH/DFE Series	Voltage Conversion
Chip Ferrite Beads	BLM/NFZ Series	Noise Suppression
Feed Through Chip EMI Filters	NFE Series	Noise Suppression
Chip Common Mode Choke Coils/Common Mode Noise Filters	DLW/DLM Series	Noise Suppression
Piezoelectric Sounders	PKLCS/PKMCS Series	Sound Component
Coin Manganese Dioxide Lithium Batteries	Standard Type	Battery Backup

Hardware accelerator



1 Chipset

3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose
NFM Series



Low ESL Chip Multilayer Ceramic Capacitors for General Purpose
LLL/LLA/LLM Series



2 Interface

Chip Common Mode Choke Coils/
Common Mode Noise Filters
DLW/NFG/DLM Series



3 Power Supply

Polymer Aluminum Electrolytic Capacitors
ECAS Series



Low ESL Chip Multilayer Ceramic Capacitors for General Purpose
LLL/LLA/LLM Series



Chip Inductors (Chip Coils)
LQM/LQH/DFE Series



Large-current Common Mode Choke Coils
PLT10/PLT5B/DLW5A/DLW5B/UCMH Series



Thermistors
PRF/NCU Series



Non-Isolated DC-DC Converters
MYMGK Series



Non-Isolated DC-DC Converters
MYMGK Series



Non-Isolated DC-DC Converters
MYTN Series



4 Sensor

Thermistors
NCU/PRF/NXF/NXR Series



5 Timing Device

MEMS Resonators
WMRAG Series



Crystal Units
XRC Series



6 Memory

Chip Ferrite Beads
BLM Series



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose

High Q Chip Multilayer Ceramic Capacitors for General Purpose

Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose

3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose

Polymer Aluminum Electrolytic Capacitors

Chip Inductors (Chip Coils)

Chip Inductors (Chip Coils)

Chip Ferrite Beads

Feed Through Chip EMI Filters

Chip Common Mode Choke Coils/Common Mode Noise Filters

Piezoelectric Sounders

Coin Manganese Dioxide Lithium Batteries

GRM Series

GQM / GJM Series

GRJ Series

NFM Series

ECAS Series

LQM/LQH/LQG Series

LQM/LQH/DFE Series

BLM/NFZ Series

NFE Series

DLW/DLM Series

PKLCS/PKMCS Series

Standard Type

High Frequency Filter Circuit/Coupling/Decoupling/For Step-up

High Frequency Filter Circuit

Coupling/Decoupling/For Step-up

Noise Suppression/Decoupling

Smoothing /Transient Backup

High Frequency Circuit-Impedance Matching /Resonance

Voltage Conversion

Noise Suppression

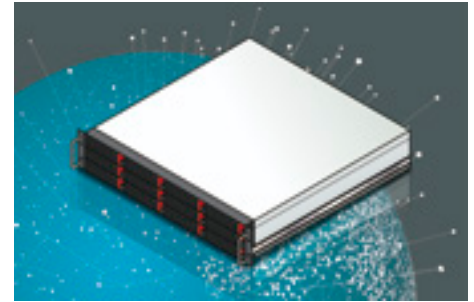
Noise Suppression

Noise Suppression

Sound Component

Battery Backup

Storage system



1 Interface

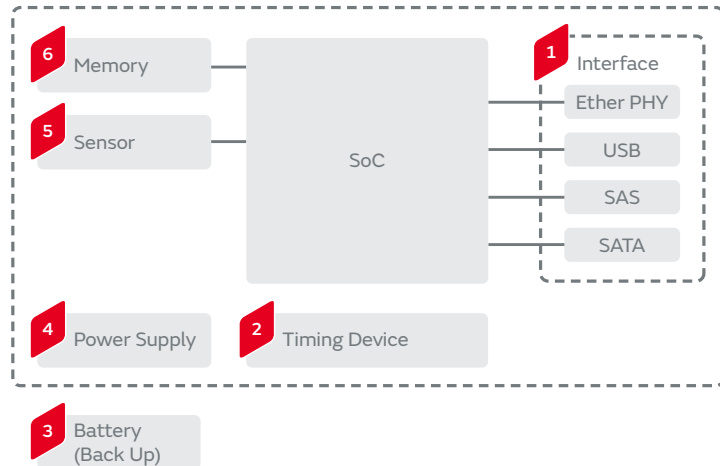
Low ESL Chip Multilayer Ceramic Capacitors for General Purpose
LLL/LLA/LLM Series



Chip Common Mode Choke Coils/
Common Mode Noise Filters
DLW/NFG/DLM Series



Silicon ESD Protection Devices
LXES**T Series



2 Timing Device

Crystal Units
XRC Series



3 Battery (Back up)

FORTELION High Output Battery Module
MPRMH1701



FORTELION 2.1kWh Battery Module System
IJ1101M/IJ8101C/IJ1101k



Cylindrical Type Lithium Ion
Secondary Batteries



4 Power Supply

Polymer Aluminum Electrolytic Capacitors
ECAS Series



Low ESL Chip Multilayer Ceramic Capacitors for General Purpose
LLL/LLA/LLM Series



Chip Inductors (Chip Coils)
LQM/LQH/DFE Series



Thermistors
PRF/NCU Series



Isolated DC-DC Converters
DRE/RBS/DRQ Series



AC-DC Converter
1U Frond End
D1U Series



Silicon ESD Protection Devices
LXES**T Series



5 Sensor

Thermistors
NCU/PRF/NXF/NXR Series



6 Memory

Chip Ferrite Beads
BLM Series



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose

High Q Chip Multilayer Ceramic Capacitors for General Purpose

Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose

3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose

Polymer Aluminum Electrolytic Capacitors

Chip Inductors (Chip Coils)

Chip Inductors (Chip Coils)

Chip Ferrite Beads

Feed Through Chip EMI Filters

Chip Common Mode Choke Coils/Common Mode Noise Filters

Piezoelectric Sounders

Coin Manganese Dioxide Lithium Batteries

GRM Series

GQM / GJM Series

GRJ Series

NFM Series

ECAS Series

LQW/LQP/LQG Series

LQM/LQH/DFE Series

BLM/NFZ Series

NFE Series

DLW/DLM Series

PKLCS/PKMCS Series

Standard Type

High Frequency Filter Circuit/Coupling/Decoupling/For Step-up

High Frequency Filter Circuit

Coupling/Decoupling/For Step-up

Noise Suppression/Decoupling

Smoothing /Transient Backup

High Frequency Circuit-Impedance Matching /Resonance

Voltage Conversion

Noise Suppression

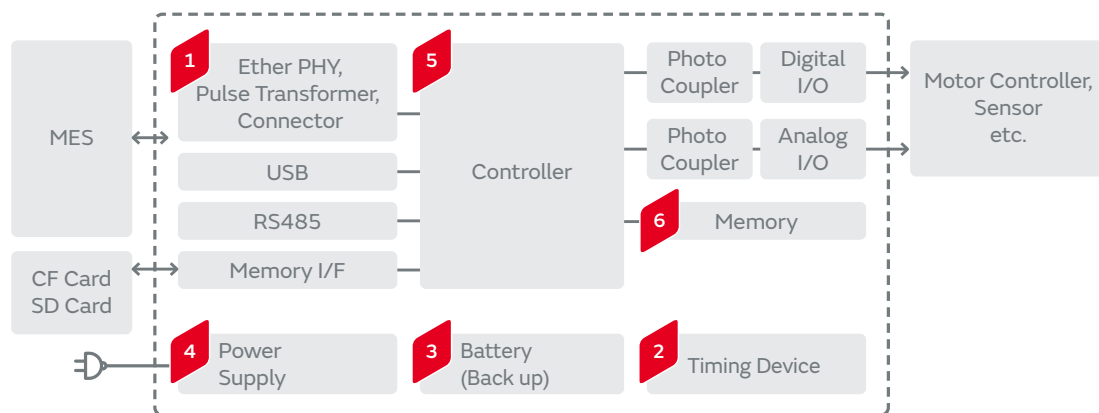
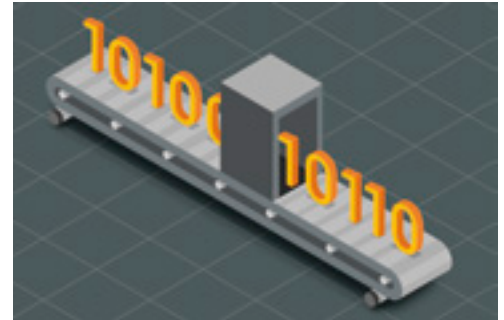
Noise Suppression

Noise Suppression

Sound Component

Battery Backup

PLC (Programmable logic controller)



1 Ether PHY, Pulse Transformer, Connector

Low ESL Chip Multilayer Ceramic Capacitors for General Purpose
LLL/LLA/LLM Series

Chip Common Mode Choke Coils/
Common Mode Noise Filters
DLW/NFG/DLM Series

Silicon ESD Protection Devices
LXES**T Series

3 Battery (Back Up)

Coin Manganese Dioxide
Lithium Batteries
Heat-resistant Type/
Extended Temperature Type

2 Timing Device

Crystal Units
XRC Series

Ceramic Resonators CERALOCK
CST Series

MEMS Resonators
WMRAG Series

4 Power Supply

Isolated DC-DC Converters
MYB Series

Non-Isolated DC-DC Converters
MYMGK/MYSGK/OKL/MYLSM Series

Isolated DC-DC Converters for PoE+PD
MYBSP Series

Polymer Aluminum
Electrolytic Capacitors
ECAS Series

Thermistors
NCP/NCU/PRF Series

Silicon ESD Protection Devices
LXES**T Series

Chip Inductors (Chip Coils)
LQM/LQH/DFE Series

5 Controller

Chip Ferrite Beads
BLM Series



Thermistors
NCP/NCU Series



6 Memory

Chip Ferrite Beads
BLM Series



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose	GRM Series	High Frequency Filter Circuit/Coupling/Decoupling/For Step-up
High Q Chip Multilayer Ceramic Capacitors for General Purpose	GQM / GJM Series	High Frequency Filter Circuit
Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose	GRJ Series	Coupling/Decoupling/For Step-up
3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose	NFM Series	Noise Suppression/Decoupling
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing /Transient Backup
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching /Resonance
Chip Inductors (Chip Coils)	LQM/LQH/DFE Series	Voltage Conversion
Chip Ferrite Beads	BLM/NFZ Series	Noise Suppression
Feed Through Chip EMI Filters	NFE Series	Noise Suppression
Chip Common Mode Choke Coils/Common Mode Noise Filters	DLW/DLM Series	Noise Suppression
Piezoelectric Sounders	PKLCS/PKMCS Series	Sound Component
Coin Manganese Dioxide Lithium Batteries	Standard Type	Battery Backup

AGV (Automatic guided vehicle)



1 Timing Device

Crystal Units
XRC Series



MEMS Resonators
WMRAG Series



2 Wireless LAN Module

Microwave Coaxial
Connectors with Switch



Chip Multilayer Diplexers
LFD Series



Chip Multilayer
Hybrid Couplers
LDC/LDJ Series



Chip Multilayer LC Filters
LF Series

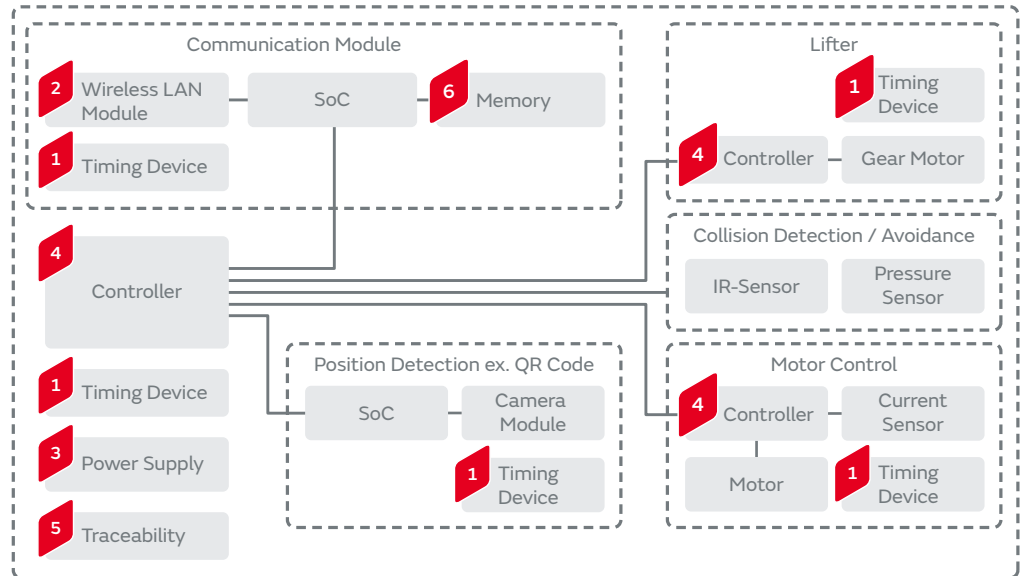


Chip Multilayer
Hybrid Baluns
LDB/LDM Series



5 Traceability

RFID Tag
LXMS/LXTB Series



3 Power Supply

Isolated DC-DC Converters
MYB Series



Non-Isolated DC-DC Converters
MYMGK/MYSGK/
OKL/MYLSM Series



Isolated DC-DC Converters
for PoE+PD
MYBSP Series



Polymer Aluminum
Electrolytic Capacitors
ECAS Series



Thermistors
NCP/NCU/PRF Series



Silicon ESD Protection Devices
LXES**T Series



Chip Inductors (Chip Coils)
LQM/LQH/DFE Series



FORTELION 24V
Battery Module



FORTELION High Output
Battery Module
MPRMH1701



FORTELION 2.1kWh Battery Module System
IJ1101M/IJ8101C/IJ1101k



Cylindrical Type Lithium Ion
Secondary Batteries



4 Controller

Chip Ferrite Beads
BLM Series



Thermistors
NCP/NCU Series



6 Memory

Chip Ferrite Beads
BLM Series



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose

High Q Chip Multilayer Ceramic Capacitors for General Purpose

Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose

3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose

Polymer Aluminum Electrolytic Capacitors

Chip Inductors (Chip Coils)

Chip Inductors (Chip Coils)

Chip Ferrite Beads

Feed Through Chip EMI Filters

Chip Common Mode Choke Coils/Common Mode Noise Filters

Piezoelectric Sounders

Coin Manganese Dioxide Lithium Batteries

GRM Series

GQM / GJM Series

GRJ Series

NFM Series

ECAS Series

LQM/LQP/LQG Series

LQM/LQH/DFE Series

BLM/NFZ Series

NFE Series

DLW/DLM Series

PKLCS/PKMCS Series

Standard Type

High Frequency Filter Circuit/Coupling/Decoupling/For Step-up

High Frequency Filter Circuit

Coupling/Decoupling/For Step-up

Noise Suppression/Decoupling

Smoothing /Transient Backup

High Frequency Circuit-Impedance Matching /Resonance

Voltage Conversion

Noise Suppression

Noise Suppression

Noise Suppression

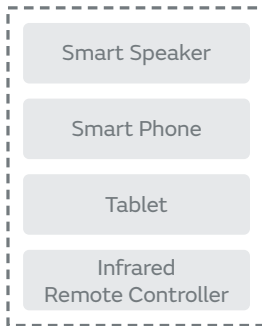
Sound Component

Battery Backup

Lighting

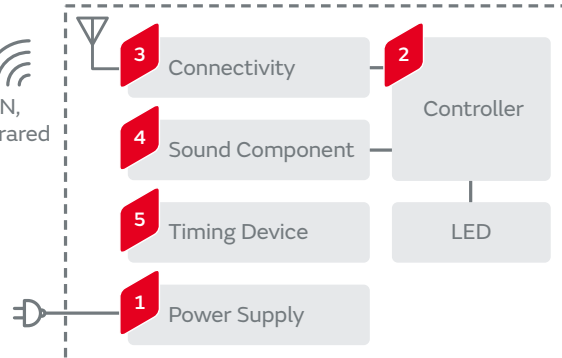


Control Device



LAN,
Infrared

Lighting Equipment



6 Traceability

1 Power Supply

Ballast for LED Lighting



2 Controller

Chip Multilayer Ceramic Capacitors for General Purpose
GR/GA Series



Safety Standard Certified Resin Molding SMD Type Ceramic Capacitors for General Purpose
DK1 Series



Safety Standard Certified Lead Type Disc Ceramic Capacitors for General Purpose
DE1/DE2 Series



Thermistors
NCP/PRF/PRG Series



3 Connectivity

Wi-Fi Modules



LPWA Modules



Microwave Coaxial Connectors with Switch



4 Sound Component

Piezoelectric Sounders
PKLCS/PKMCS Series



5 Timing Device

Crystal Units
XRC Series



MEMS Resonators
WMRAG Series



Ceramic Resonators CERALOCK
CST Series



6 Traceability

RFID Tag
LXMS/LXTB Series



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose

High Q Chip Multilayer Ceramic Capacitors for General Purpose

Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose

3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose

Polymer Aluminum Electrolytic Capacitors

Chip Inductors (Chip Coils)

Chip Inductors (Chip Coils)

Chip Ferrite Beads

Feed Through Chip EMI Filters

Chip Common Mode Choke Coils/Common Mode Noise Filters

Piezoelectric Sounders

Coin Manganese Dioxide Lithium Batteries

GRM Series

GQM / GJM Series

GRJ Series

NFM Series

ECAS Series

LQW/LQP/LQG Series

LQM/LQH/DFE Series

BLM/NFZ Series

NFE Series

DLW/DLM Series

PKLCS/PKMCS Series

Standard Type

High Frequency Filter Circuit/Coupling/Decoupling/For Step-up

High Frequency Filter Circuit

Coupling/Decoupling/For Step-up

Noise Suppression/Decoupling

Smoothing /Transient Backup

High Frequency Circuit-Impedance Matching /Resonance

Voltage Conversion

Noise Suppression

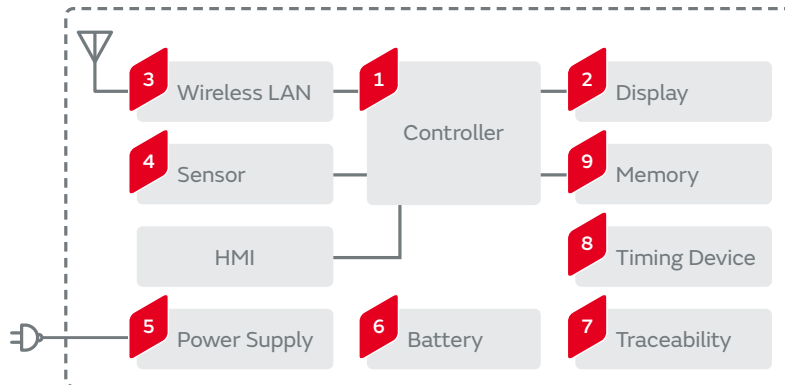
Noise Suppression

Noise Suppression

Sound Component

Battery Backup

Thermostat



1 Controller

Low ESL Chip Multilayer Ceramic Capacitors
for General Purpose
LLL/LLA/LLM Series



Thermistors
NCP/PRF Series



3 Wireless LAN

Bluetooth® Modules



LPWA Modules



Wi-Fi Modules



Chip Inductors (Chip Coils)
LQM/LQH/LQB Series



Microwave Coaxial
Connectors with Switch



2 Display

Metal Terminal Type Multilayer
Ceramic Capacitors for General Purpose
KRM Series



Polymer Aluminum
Electrolytic Capacitors
ECAS Series



Piezoelectric Sounders
PKMCS/PKLCS/PKM Series



Thermistors
NCP/PRF Series



4 Sensor

Thermistors
NCP/PRF/PRG Series



5 Power Supply

Chip Multilayer
Ceramic Capacitors
for General Purpose
GR/GA Series



Safety Standard Certified Resin Molding
SMD Type Ceramic Capacitors
for General Purpose
DK1 Series



Safety Standard Certified Lead Type
Disc Ceramic Capacitors
for General Purpose
DE1/DE2 Series



Thermistors
NCP/PRF/PRG Series



Polymer Aluminum
Electrolytic Capacitors
ECAS Series



6 Battery

Thermistors
NCP/PRF/PRG Series



Laminated Type
Lithium Ion Secondary Batteries



7 Traceability

RFID Tag
LXMS/LXTB Series



8 Timing Device

Crystal Units
XRC Series



MEMS Resonators
WMRAG Series



Ceramic Resonators CERALOCK
CST Series



9 Memory

Chip Ferrite Beads
BLM Series



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose

High Q Chip Multilayer Ceramic Capacitors for General Purpose

Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose

3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose

Polymer Aluminum Electrolytic Capacitors

Chip Inductors (Chip Coils)

Chip Inductors (Chip Coils)

Chip Ferrite Beads

Feed Through Chip EMI Filters

Chip Common Mode Choke Coils/Common Mode Noise Filters

Piezoelectric Sounders

Coin Manganese Dioxide Lithium Batteries

GRM Series

GQM / GJM Series

GRJ Series

NFM Series

ECAS Series

LQW/LQP/LQG Series

LQM/LQH/DFE Series

BLM/NFZ Series

NFE Series

DLW/DLM Series

PKLCS/PKMCS Series

Standard Type

High Frequency Filter Circuit/Coupling/Decoupling/For Step-up

High Frequency Filter Circuit

Coupling/Decoupling/For Step-up

Noise Suppression/Decoupling

Smoothing /Transient Backup

High Frequency Circuit-Impedance Matching /Resonance

Voltage Conversion

Noise Suppression

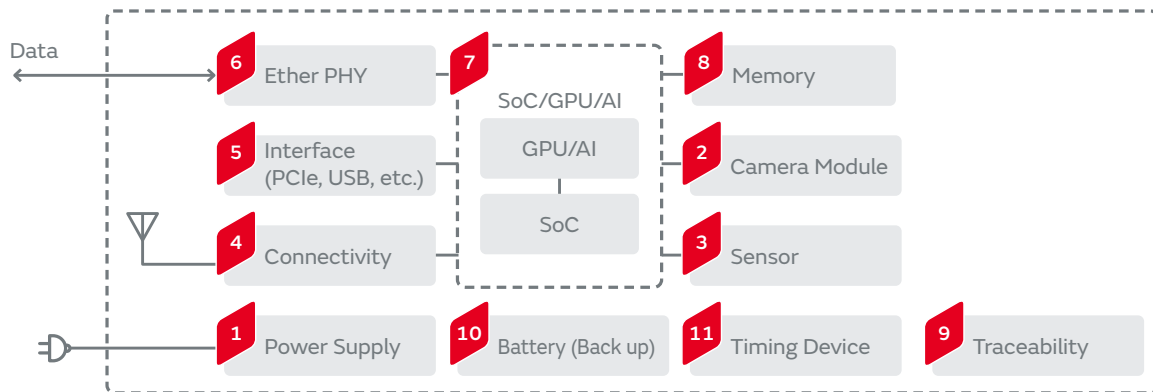
Noise Suppression

Noise Suppression

Sound Component

Battery Backup

Security camera



1 Power Supply

Metal Terminal Type Multilayer Ceramic Capacitors for General Purpose KRM Series



Polymer Aluminum Electrolytic Capacitors ECAS Series



Power Inductors LQH/DFE Series



Thermistors NCP/NCU/PRF Series



Laminated Type Lithium Ion Secondary Batteries



Isolated DC-DC Converters for PoE+PD MYBSP Series



Silicon ESD Protection Devices LXES**T Series



2 Camera Module

Chip Ferrite Beads BLM Series



Thermistors NCP/NCU Series



3 Sensor

Pyroelectric Infrared Sensors IRA-S Series



Ultrasonic Sensors MA40 Series



Low Acoustic Noise Chip Multilayer Ceramic Capacitors on Interposer Board for General Purpose ZRB Series



Thermistors NCP/NCU Series



4 Connectivity

Wi-Fi Modules



Chip Inductors (Chip Coils) LQW/LQP/LQG Series



Chip Multilayer LC Filters LF Series



Chip Multilayer Diplexers LFD Series



Chip Multilayer Hybrid Baluns LDB/LDM Series



Chip Multilayer Hybrid Couplers LDC/LDJ Series



LPWA Modules



5 Interface (PCIe, USB, etc.)

Low ESL Chip Multilayer
Ceramic Capacitors
for General Purpose
LLL/LLA/LLM Series



Silicon ESD
Protection Devices
LXES**T Series



Chip Common Mode
Choke Coils/
Common Mode Noise Filters
DLW/NFG/DLM Series



6 Ether PHY

Low ESL Chip Multilayer
Ceramic Capacitors
for General Purpose
LLL/LLA/LLM Series



Silicon ESD
Protection Devices
LXES**T Series



Chip Common Mode
Choke Coils/
Common Mode Noise Filters
DLW/NFG/DLM Series



7 SoC/GPU/AI

3 Terminals Low ESL Chip Multilayer
Ceramic Capacitors for General Purpose
NFM Series



Thermistors
NCP/NCU Series



8 Memory

Chip Ferrite Beads
BLM Series



9 Traceability

RFID Tag
LXMS/LXTB Series



10 Battery (Back Up)

Coin Manganese Dioxide Lithium Batteries
Standard Type/Heat-resistant Type



11 Timing Device

MEMS Resonators
WMRAG Series



Crystal Units
XRC Series



Ceramic Resonators CERALOCK
CST Series



Chip Multilayer Ceramic Capacitors for General Purpose

High Q Chip Multilayer Ceramic Capacitors for General Purpose

Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose

3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose

Polymer Aluminum Electrolytic Capacitors

Chip Inductors (Chip Coils)

Chip Inductors (Chip Coils)

Chip Ferrite Beads

Feed Through Chip EMI Filters

Chip Common Mode Choke Coils/Common Mode Noise Filters

Piezoelectric Sounders

Coin Manganese Dioxide Lithium Batteries

GRM Series

GQM / GJM Series

GRJ Series

NFM Series

ECAS Series

LQW/LQP/LQG Series

LQM/LQH/DFE Series

BLM/NFZ Series

NFE Series

DLW/DLM Series

PKLCS/PKMCS Series

Standard Type

High Frequency Filter Circuit/Coupling/Decoupling/For Step-up

High Frequency Filter Circuit

Coupling/Decoupling/For Step-up

Noise Suppression/Decoupling

Smoothing /Transient Backup

High Frequency Circuit-Impedance Matching /Resonance

Voltage Conversion

Noise Suppression

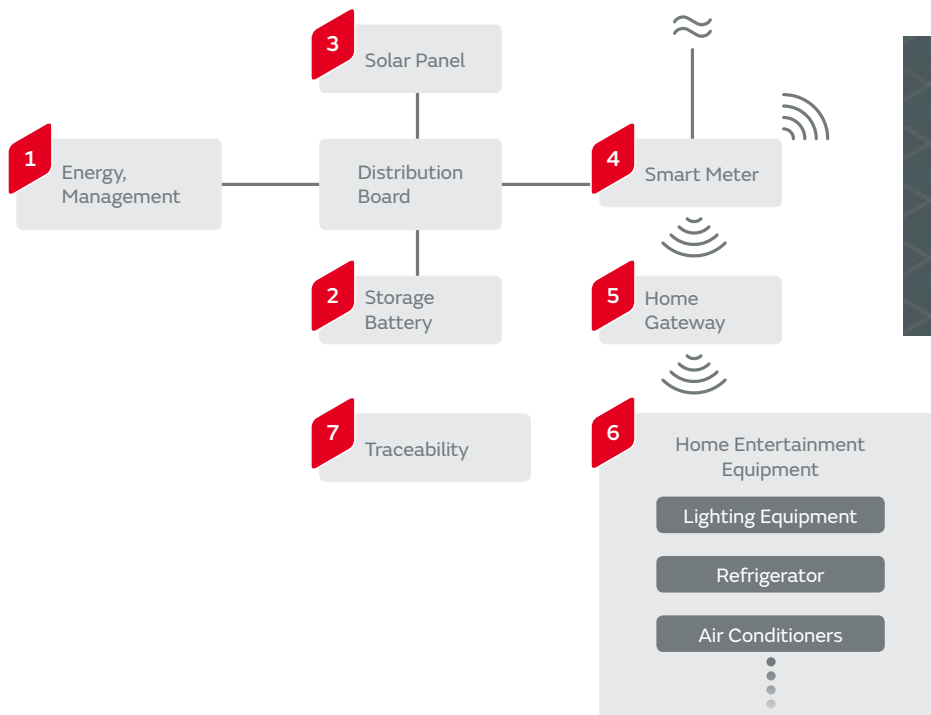
Noise Suppression

Noise Suppression

Sound Component

Battery Backup

HEMS (Home energy management system)



1 Energy, Management

Crystal Units
XRC Series



3 Solar Panel

Isolated DC-DC Converters
MYB Series



Non-Isolated DC-DC Converters
MYMGK/MYSGK/OKL/MYLSM Series



Chip Multilayer Ceramic Capacitors
for General Purpose
GR/GA Series



2 Storage Battery

Thermistors
PRF/PRG/NCU Series



Non-Isolated DC-DC Converters
MYMGK/MYSGK/OKL/MYLSM Series



Safety Standard Certified Resin Molding
SMD Type Ceramic Capacitors for General Purpose
DK1 Series



FORTELION 2.1kWh Battery Module System
IJ1101M/IJ8101C/IJ1101k



Isolated DC-DC Converters
MYB Series



Chip Multilayer Ceramic Capacitors
for General Purpose
GR/GA Series



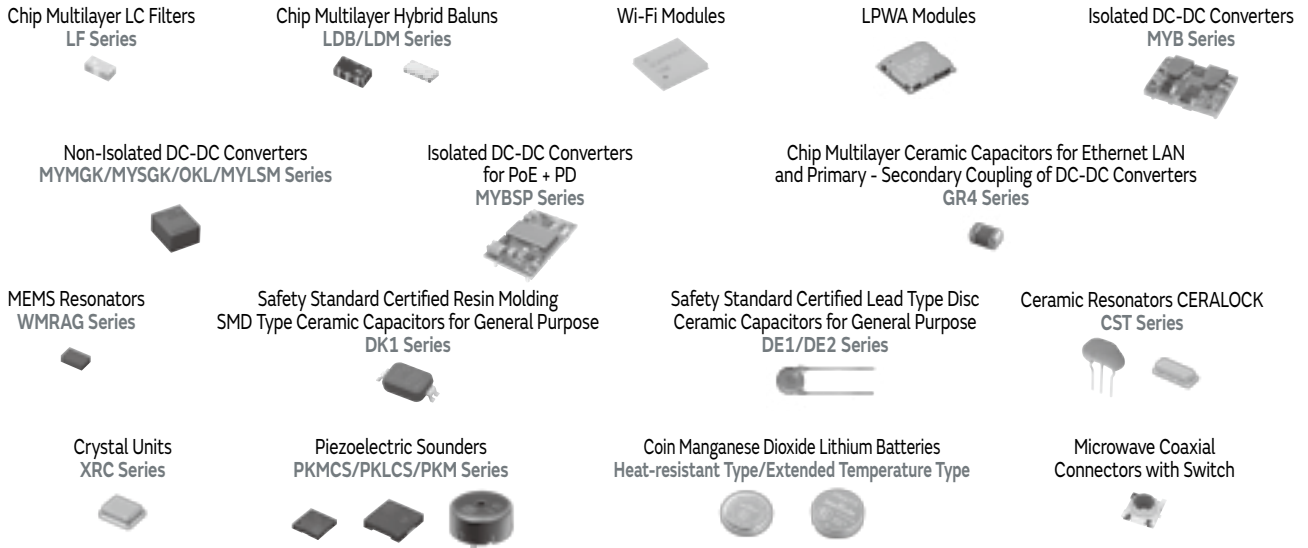
Safety Standard Certified Lead Type Disc
Ceramic Capacitors for General Purpose
DE1/DE2 Series



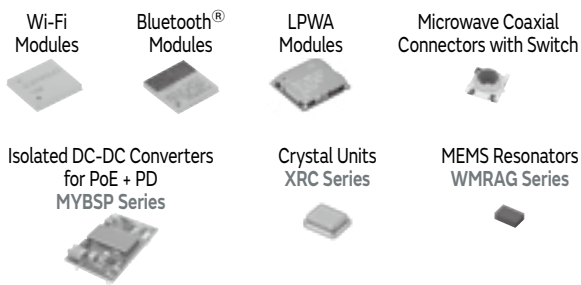
Cylindrical Type Lithium Ion
Secondary Batteries



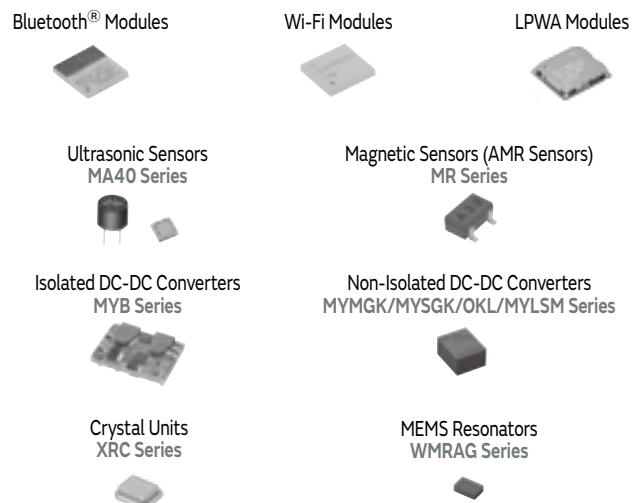
4 Smart Meter



5 Home Gateway



6 Home Entertainment Equipment

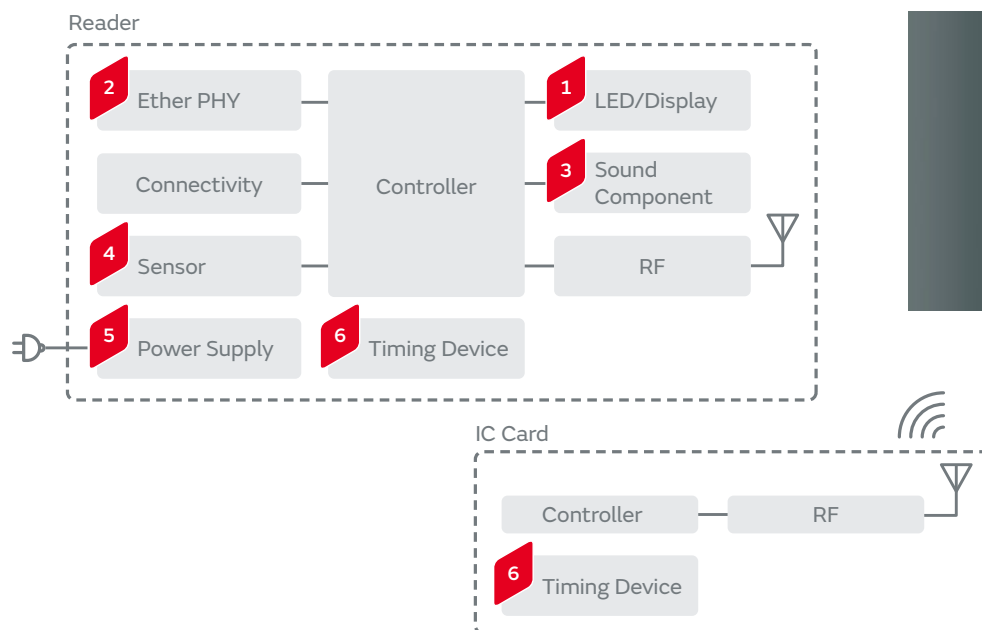


7 Traceability

RFID Tag
LXMS/LXTB Series

Chip Multilayer Ceramic Capacitors for General Purpose	GRM Series	High Frequency Filter Circuit/Coupling/Decoupling/For Step-up
High Q Chip Multilayer Ceramic Capacitors for General Purpose	GQM / GJM Series	High Frequency Filter Circuit
Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose	GRJ Series	Coupling/Decoupling/For Step-up
3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose	NFM Series	Noise Suppression/Decoupling
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing /Transient Backup
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching /Resonance
Chip Inductors (Chip Coils)	LQM/LQH/DFE Series	Voltage Conversion
Chip Ferrite Beads	BLM/NFZ Series	Noise Suppression
Feed Through Chip EMI Filters	NFE Series	Noise Suppression
Chip Common Mode Choke Coils/Common Mode Noise Filters	DLW/DLM Series	Noise Suppression
Piezoelectric Sounders	PKLCS/PKMCS Series	Sound Component
Coin Manganese Dioxide Lithium Batteries	Standard Type	Battery Backup

Entrance and exit management system



1 LED/Display

Silicon ESD Protection Devices LXES**T Series	Thermistors NCP/PRF Series
--	---------------------------------------

2 Ether PHY

Silicon ESD Protection Devices LXES**T Series	Thermistors PRG Series
--	-----------------------------------

3 Sound Component

Piezoelectric Sounders
PKMCS/PKLCS/PKM Series

4 Sensor

Ultrasonic Sensors MA40 Series	Magnetic Sensors (AMR Sensors) MR Series	Pyroelectric Infrared Sensors IRA-S Series
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5 Power Supply

Polymer Aluminum
Electrolytic Capacitors
ECAS Series



Metal Terminal Type Multilayer
Ceramic Capacitors for General Purpose
KRM Series



Non-Isolated DC-DC Converters
MYMGK/MYSGK/OKL/MYLS M Series



Isolated DC-DC Converters for PoE + PD
MYBSP Series



Thermistors
NCP/PRF Series



Chip Multilayer Ceramic Capacitors
for General Purpose
GR/GA Series



Safety Standard Certified Resin Molding
SMD Type Ceramic Capacitors
for General Purpose
DK1 Series



Safety Standard Certified Lead Type Disc
Ceramic Capacitors for General Purpose
DE1/DE2 Series



6 Timing Device

Crystal Units
XRC Series



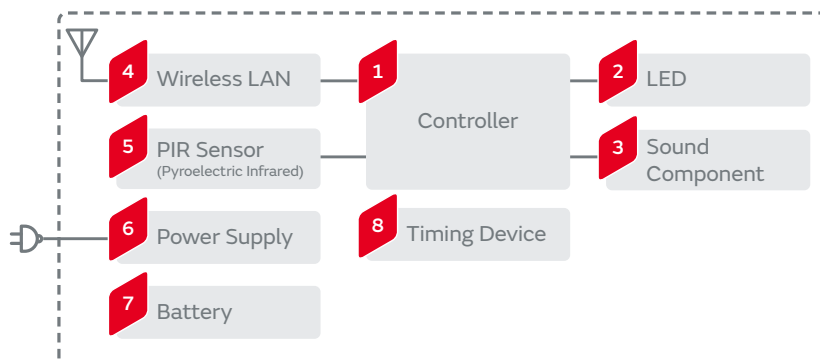
Ceramic Resonators CERALOCK
CST Series



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose	GRM Series	High Frequency Filter Circuit/Coupling/Decoupling/For Step-up
High Q Chip Multilayer Ceramic Capacitors for General Purpose	GQM / GJM Series	High Frequency Filter Circuit
Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose	GRJ Series	Coupling/Decoupling/For Step-up
3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose	NFM Series	Noise Suppression/Decoupling
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing /Transient Backup
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching /Resonance
Chip Inductors (Chip Coils)	LQM/LQH/DFE Series	Voltage Conversion
Chip Ferrite Beads	BLM/NFZ Series	Noise Suppression
Feed Through Chip EMI Filters	NFE Series	Noise Suppression
Chip Common Mode Choke Coils/Common Mode Noise Filters	DLW/DLM Series	Noise Suppression
Piezoelectric Sounders	PKLCS/PKMCS Series	Sound Component
Coin Manganese Dioxide Lithium Batteries	Standard Type	Battery Backup

Human detection



1 Controller

Low ESL Chip Multilayer
Ceramic Capacitors
for General Purpose
LLL/LLA/LLM Series



Thermistors
NCP/PRF Series



2 LED

Chip Multilayer
Ceramic Capacitors
for General Purpose
GR/GA Series



Safety Standard Certified Resin
Molding SMD Type Ceramic Capacitors
for General Purpose
DK1 Series



Safety Standard Certified Lead Type
Disc Ceramic Capacitors
for General Purpose
DE1/DE2 Series



Thermistors
NCP/PRF/PRG
Series



3 Sound Component

Piezoelectric Sounders
PKMCS/PKLCS/PKM Series



4 Wireless LAN

Wi-Fi Modules



Chip Inductors (Chip Coils)
LQW/LQP/LQG Series



5 PIR Sensor (Pyroelectric Infrared)

Pyroelectric Infrared Sensors
IRA-S Series



Ultrasonic Sensors
MA40 Series



6 Power Supply

Chip Multilayer Ceramic Capacitors
for General Purpose
GR/GA Series



Safety Standard Certified Resin Molding SMD Type
Ceramic Capacitors for General Purpose
DK1 Series



Safety Standard Certified Lead Type
Disc Ceramic Capacitors for General Purpose
DE1/DE2 Series



Chip Common Mode Choke Coils/
Common Mode Noise Filters
DLW/DLM Series



Thermistors
NCP/PRF/PRG Series



Polymer Aluminum Electrolytic Capacitors
ECAS Series



Isolated DC-DC Converters for PoE + PD
MYBSP Series



7 Battery

Coin Manganese Dioxide
Lithium Batteries
Standard Type



Thermistors
NCP/PRF/PRG Series



8 Timing Device

Crystal Units
XRC Series

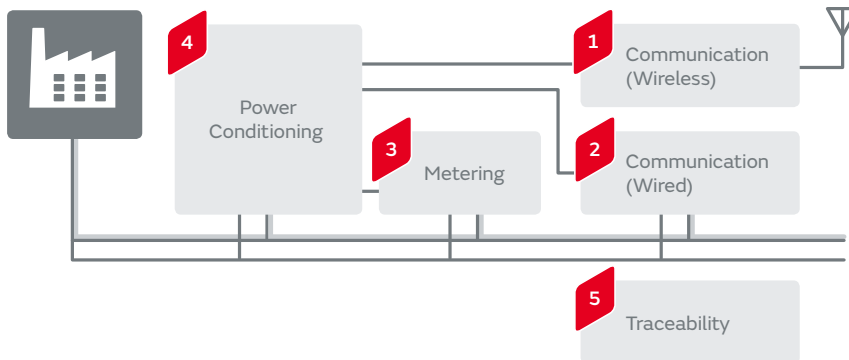


Ceramic Resonators CERALOCK
CST Series



Chip Multilayer Ceramic Capacitors for General Purpose	GRM Series	High Frequency Filter Circuit/Coupling/Decoupling/For Step-up
High Q Chip Multilayer Ceramic Capacitors for General Purpose	GQM / GJM Series	High Frequency Filter Circuit
Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose	GRJ Series	Coupling/Decoupling/For Step-up
3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose	NFM Series	Noise Suppression/Decoupling
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing /Transient Backup
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching /Resonance
Chip Inductors (Chip Coils)	LQM/LQH/DFE Series	Voltage Conversion
Chip Ferrite Beads	BLM/NFZ Series	Noise Suppression
Feed Through Chip EMI Filters	NFE Series	Noise Suppression
Chip Common Mode Choke Coils/Common Mode Noise Filters	DLW/DLM Series	Noise Suppression
Piezoelectric Sounders	PKLCS/PKMCS Series	Sound Component
Coin Manganese Dioxide Lithium Batteries	Standard Type	Battery Backup

Smart meter



1 Communication (Wireless)

Wi-Fi Modules



LPWA Modules



Chip Multilayer LC Filters
LF Series



Chip Multilayer Hybrid Baluns
LDB/LDM Series



Microwave Coaxial
Connectors with Switch



Thermistors
NCP/PRF/PRG/NCU Series



Crystal Units
XRC Series



Chip Inductors (Chip Coils)
LQW/LQP/LQG Series



MEMS Resonators
WMRAG Series



2 Communication (Wired)

Chip Multilayer Ceramic Capacitors
for General Purpose
GR/GA Series



Safety Standard Certified Resin Molding
SMD Type Ceramic Capacitors for General Purpose
DK1 Series



Safety Standard Certified Lead Type Disc
Ceramic Capacitors for General Purpose
DE1/DE2 Series



Leaded MLCC
for General Purpose
RDE Series



Thermistors
NCP/PRF/PRG/NCU Series



Ceramic Resonators CERALOCK
CST Series



Crystal Units
XRC Series



Silicon ESD Protection Devices
LXES**T Series



3 Metering

Chip Common Mode Choke Coils/
Common Mode Noise Filters
DLW/DLM Series



Thermistors
NCP/PRF/PRG/NCU Series



Ceramic Resonators CERALOCK
CST Series



Crystal Units
XRC Series



Piezoelectric Sounders
PKMCS/PKLCSS/PKM Series



Magnetic Sensors
(AMR Sensors)
MR Series



MEMS Resonators
WMRAG Series



4 Power Conditioning

Non-Isolated
DC-DC Converters
MYMGK/MYSGK/
OKL/MYSLM Series



Isolated DC-DC Converters
for PoE + PD
MYBSP Series



Chip Multilayer
Ceramic Capacitors
for General Purpose
GR/GA Series



Safety Standard Certified Resin
Molding SMD Type Ceramic
Capacitors for General Purpose
DK1 Series



Safety Standard Certified Lead Type Disc
Ceramic Capacitors for General Purpose
DE1/DE2 Series



Leaded MLCC
for General Purpose
RDE Series



Power Inductors
LQH Series



Thermistors
NCP/PRF/PRG/NCU Series



Polymer Aluminum
Electrolytic Capacitors
ECAS Series



Coin Manganese Dioxide Lithium Batteries
Heat-resistant Type/Extended Temperature Type



5 Traceability

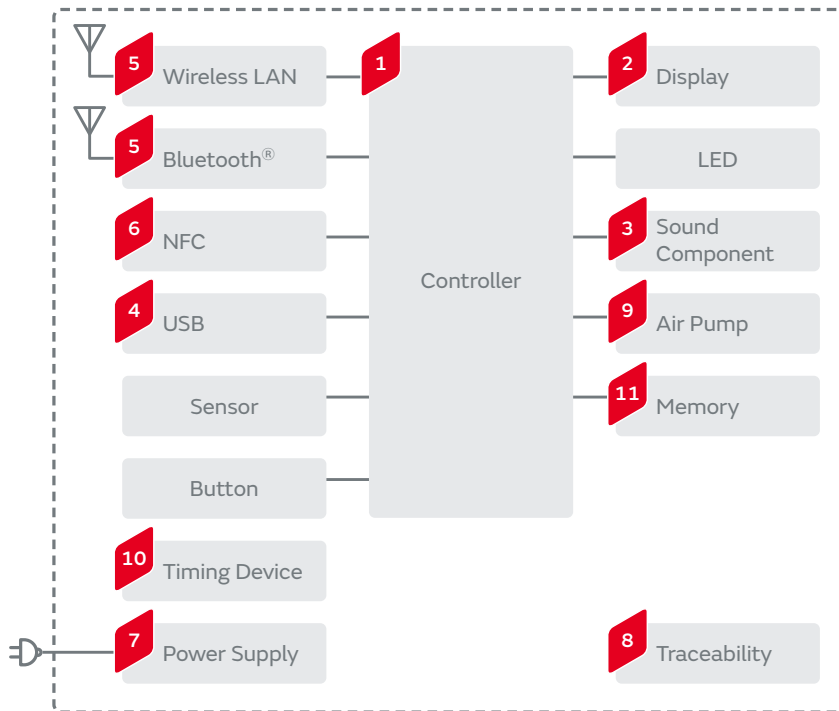
RFID Tag
LXMS/LXTB Series



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose	GRM Series	High Frequency Filter Circuit/Coupling/Decoupling/For Step-up
High Q Chip Multilayer Ceramic Capacitors for General Purpose	GQM / GJM Series	High Frequency Filter Circuit
Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose	GRJ Series	Coupling/Decoupling/For Step-up
3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose	NFM Series	Noise Suppression/Decoupling
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing /Transient Backup
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching /Resonance
Chip Inductors (Chip Coils)	LQM/LQH/DFE Series	Voltage Conversion
Chip Ferrite Beads	BLM/NFZ Series	Noise Suppression
Feed Through Chip EMI Filters	NFE Series	Noise Suppression
Chip Common Mode Choke Coils/Common Mode Noise Filters	DLW/DLM Series	Noise Suppression
Piezoelectric Sounders	PKLCS/PKMCS Series	Sound Component
Coin Manganese Dioxide Lithium Batteries	Standard Type	Battery Backup

Blood pressure monitor



1 Controller

Chip Ferrite Beads
BLM Series

Thermistors
NCP Series

Thermistors
NCP/NXR Series

2 Display

3 Terminals Low ESL Chip
Multilayer Ceramic Capacitors
for General Purpose
NFM Series

Chip Ferrite Beads
BLM Series

Thermistors
NCP Series

3 Sound Component

Piezoelectric Sounders
PKMCS/PKLCs/PKM Series

4 USB

Silicon ESD Protection Devices
LXES**T Series

Thermistors
PRG Series

6 NFC

Chip Ferrite Beads
BLM Series

Chip Inductors (Chip Coils)
LQW18C/LQM18J Series

5 Wireless LAN, Bluetooth®

Silicon ESD Protection Devices
LXES**T Series

Bluetooth® Smart Modules
LBCA/LBMA Series

Wi-Fi Modules

Thermistors
PRG Series

7 Power Supply

Thermistors
NCP Series



Thermistors
PRF/PRG Series



Coin Manganese Dioxide
Lithium Batteries
Standard Type



Polymer Aluminum
Electrolytic Capacitors
ECAS Series



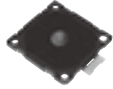
8 Traceability

RFID Tag
LXMS/LXTB Series



9 Air Pump

Microblowers



10 Timing Device

MEMS Resonators
WMRAG Series



Crystal Units
XRC Series



Ceramic Resonators
CERALOCK
CST Series



11 Memory

Chip Ferrite Beads
BLM Series



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose

High Q Chip Multilayer Ceramic Capacitors for General Purpose

Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose

3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose

Polymer Aluminum Electrolytic Capacitors

Chip Inductors (Chip Coils)

Chip Inductors (Chip Coils)

Chip Ferrite Beads

Feed Through Chip EMI Filters

Chip Common Mode Choke Coils/Common Mode Noise Filters

Piezoelectric Sounders

Coin Manganese Dioxide Lithium Batteries

GRM Series

GQM / GJM Series

GRJ Series

NFM Series

ECAS Series

LQW/LQP/LQG Series

LQM/LQH/DFE Series

BLM/NFZ Series

NFE Series

DLW/DLM Series

PKLCS/PKMCS Series

Standard Type

High Frequency Filter Circuit/Coupling/Decoupling/For Step-up

High Frequency Filter Circuit

Coupling/Decoupling/For Step-up

Noise Suppression/Decoupling

Smoothing /Transient Backup

High Frequency Circuit-Impedance Matching /Resonance

Voltage Conversion

Noise Suppression

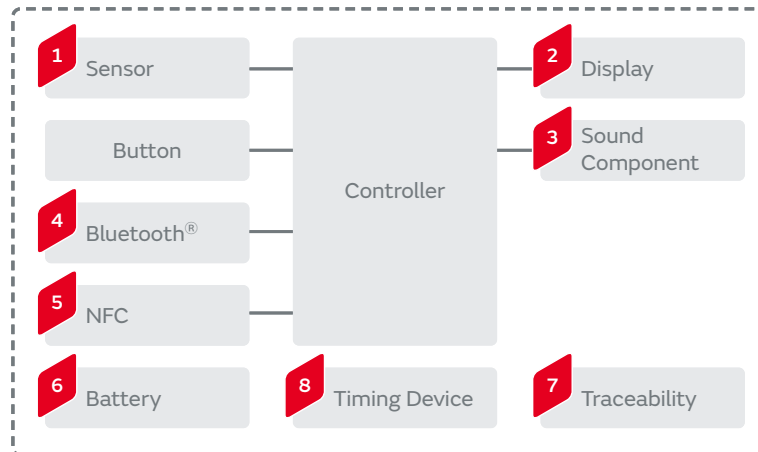
Noise Suppression

Noise Suppression

Sound Component

Battery Backup

Thermometer



1 Sensor
 Thermistors
 NXF Series

2 Display
 Thermistors
 NCP Series

3 Sound Component
 Piezoelectric Sounders
 PKLCS/PKMCS Series

4 Bluetooth®
 Bluetooth® Smart Modules
 LBCA/LBMA Series

5 NFC
 Chip Ferrite Beads
 BLM Series

 Chip Inductors (Chip Coils)
 LQW18C/LQM18J Series

6 Battery
 Coin Manganese Dioxide Lithium Batteries
 Standard Type

 Alkaline Manganese Batteries

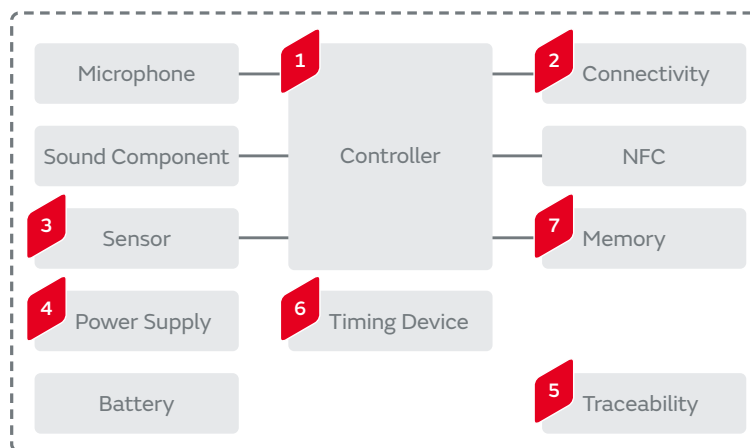
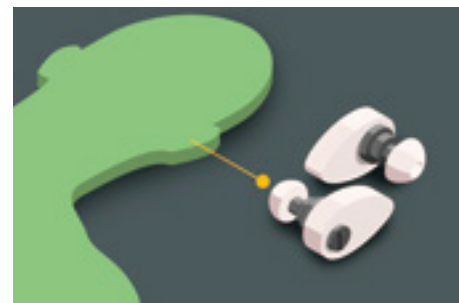
7 Traceability
 RFID Tag
 LXMS/LXTB Series

8 Timing Device
 Crystal Units
 XRC Series

 Ceramic Resonators CERALOCK
 CST Series

Chip Multilayer Ceramic Capacitors for General Purpose	GRM Series	High Frequency Filter Circuit/Coupling/Decoupling/For Step-up
High Q Chip Multilayer Ceramic Capacitors for General Purpose	GQM / GJM Series	High Frequency Filter Circuit
Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose	GRJ Series	Coupling/Decoupling/For Step-up
3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose	NFM Series	Noise Suppression/Decoupling
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing /Transient Backup
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching /Resonance
Chip Inductors (Chip Coils)	LQM/LQH/DFE Series	Voltage Conversion
Chip Ferrite Beads	BLM/NFZ Series	Noise Suppression
Feed Through Chip EMI Filters	NFE Series	Noise Suppression
Chip Common Mode Choke Coils/Common Mode Noise Filters	DLW/DLM Series	Noise Suppression
Piezoelectric Sounders	PKLCS/PKMCS Series	Sound Component
Coin Manganese Dioxide Lithium Batteries	Standard Type	Battery Backup

Hearing aid



1 Controller

Thermistors
NCP Series



2 Connectivity

Bluetooth® Modules



Wi-Fi Modules



Thermistors
NCP Series



Chip Multilayer LC Filters
LF Series



3 Sensor

Thermistors
NCP Series



4 Power Supply

Thermistors
NCP Series



5 Traceability

RFID Tag
LXMS/LXTB Series



6 Timing Device

MEMS Resonators
WMRAG Series



Crystal Units
XRC Series



7 Memory

Chip Ferrite Beads
BLM Series



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose

High Q Chip Multilayer Ceramic Capacitors for General Purpose

Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose

3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose

Polymer Aluminum Electrolytic Capacitors

Chip Inductors (Chip Coils)

Chip Inductors (Chip Coils)

Chip Ferrite Beads

Feed Through Chip EMI Filters

Chip Common Mode Choke Coils/Common Mode Noise Filters

Piezoelectric Sounders

Coin Manganese Dioxide Lithium Batteries

GRM Series

GQM / GJM Series

GRJ Series

NFM Series

ECAS Series

LQW/LQP/LQG Series

LQM/LQH/DFE Series

BLM/NFZ Series

NFE Series

DLW/DLM Series

PKLCS/PKMCS Series

Standard Type

High Frequency Filter Circuit/Coupling/Decoupling/For Step-up

High Frequency Filter Circuit

Coupling/Decoupling/For Step-up

Noise Suppression/Decoupling

Smoothing /Transient Backup

High Frequency Circuit-Impedance Matching /Resonance

Voltage Conversion

Noise Suppression

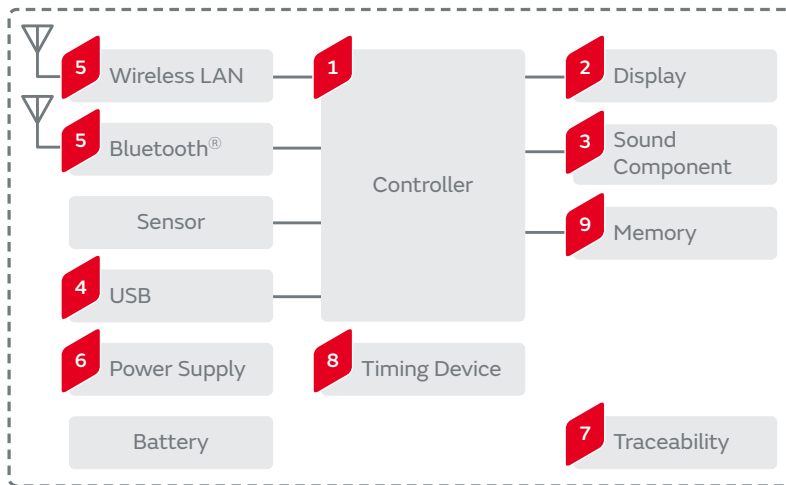
Noise Suppression

Noise Suppression

Sound Component

Battery Backup

Blood glucose meter



1 Controller

- Chip Ferrite Beads BLM Series
- Thermistors NCP Series

2 Display

- 3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose NFM Series
- Chip Ferrite Beads BLM Series

4 USB

- Thermistors PRG Series
- Silicon ESD Protection Devices LXES**T Series

5 Wireless LAN, Bluetooth®

- Bluetooth® Smart Modules LBCA/LBMA Series
- Wi-Fi Modules
- Thermistors NCP Series

6 Power Supply

- Coin Manganese Dioxide Lithium Batteries Standard Type
- Thermistors NCP Series
- Polymer Aluminum Electrolytic Capacitors ECAS Series

7 Traceability

- RFID Tag LXMS/LXTB Series

8 Timing Device

- MEMS Resonators WMRAG Series
- Crystal Units XRC Series
- Ceramic Resonators CERALOCK CST Series

9 Memory

- Chip Ferrite Beads BLM Series

General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose	GRM Series	High Frequency Filter Circuit/Coupling/Decoupling/For Step-up
High Q Chip Multilayer Ceramic Capacitors for General Purpose	GQM / GJM Series	High Frequency Filter Circuit
Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose	GRJ Series	Coupling/Decoupling/For Step-up
3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose	NFM Series	Noise Suppression/Decoupling
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing /Transient Backup
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching /Resonance
Chip Inductors (Chip Coils)	LQM/LQH/DFE Series	Voltage Conversion
Chip Ferrite Beads	BLM/NFZ Series	Noise Suppression
Feed Through Chip EMI Filters	NFE Series	Noise Suppression
Chip Common Mode Choke Coils/Common Mode Noise Filters	DLW/DLM Series	Noise Suppression
Piezoelectric Sounders	PKLCS/PKMCS Series	Sound Component
Coin Manganese Dioxide Lithium Batteries	Standard Type	Battery Backup

Insulin pump



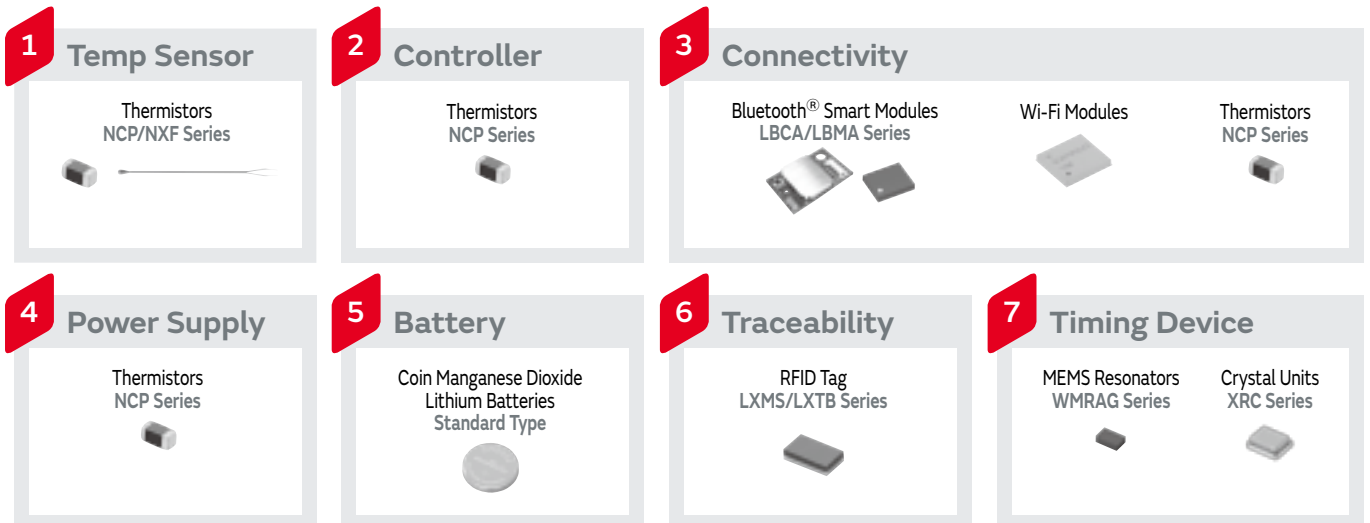
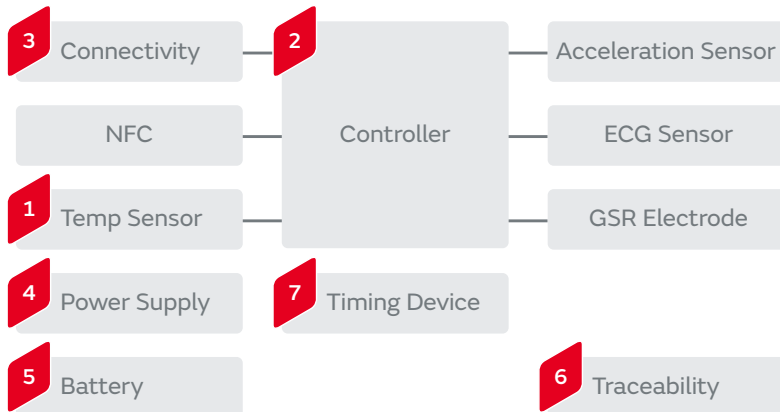
General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose
 High Q Chip Multilayer Ceramic Capacitors for General Purpose
 Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose
 3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose
 Polymer Aluminum Electrolytic Capacitors
 Chip Inductors (Chip Coils)
 Chip Inductors (Chip Coils)
 Chip Ferrite Beads
 Feed Through Chip EMI Filters
 Chip Common Mode Choke Coils/Common Mode Noise Filters
 Piezoelectric Sounders
 Coin Manganese Dioxide Lithium Batteries

GRM Series
 GQM / GJM Series
 GRJ Series
 NFM Series
 ECAS Series
 LQW/LQP/LQG Series
 LQM/LQH/DFE Series
 BLM/NFZ Series
 NFE Series
 DLW/DLM Series
 PKLCS/PKMCS Series
 Standard Type

High Frequency Filter Circuit/Coupling/Decoupling/For Step-up
 High Frequency Filter Circuit
 Coupling/Decoupling/For Step-up
 Noise Suppression/Decoupling
 Smoothing /Transient Backup
 High Frequency Circuit-Impedance Matching /Resonance
 Voltage Conversion
 Noise Suppression
 Noise Suppression
 Noise Suppression
 Sound Component
 Battery Backup

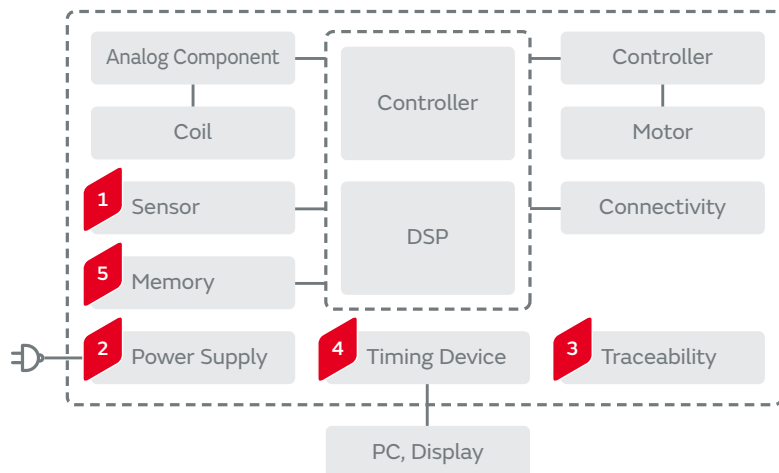
Skin patch



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose	GRM Series	High Frequency Filter Circuit/Coupling/Decoupling/For Step-up
High Q Chip Multilayer Ceramic Capacitors for General Purpose	GQM / GJM Series	High Frequency Filter Circuit
Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose	GRJ Series	Coupling/Decoupling/For Step-up
3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose	NFM Series	Noise Suppression/Decoupling
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing /Transient Backup
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching /Resonance
Chip Inductors (Chip Coils)	LQM/LQH/DFE Series	Voltage Conversion
Chip Ferrite Beads	BLM/NFZ Series	Noise Suppression
Feed Through Chip EMI Filters	NFE Series	Noise Suppression
Chip Common Mode Choke Coils/Common Mode Noise Filters	DLW/DLM Series	Noise Suppression
Piezoelectric Sounders	PKLCS/PKMCS Series	Sound Component
Coin Manganese Dioxide Lithium Batteries	Standard Type	Battery Backup

Diagnostic imaging apparatus



1 Sensor

Thermistors
NCP/PRF Series



3 Traceability

RFID Tag
LXMS/LXTB Series



4 Timing Device

Crystal Units
XRC Series



Ceramic Resonators CERALOCK
CST Series



2 Power Supply

Isolated DC-DC Converters
MYB Series



Non-Isolated DC-DC Converters
MYMGK/MYSGK/
OKL/MYLSM Series



Metal Terminal Type
Multilayer Ceramic Capacitors
for General Purpose
KRM Series



Polymer Aluminum
Electrolytic Capacitors
ECAS Series



Chip Multilayer Ceramic Capacitors
for General Purpose
GR/GA Series



Safety Standard Certified Resin Molding SMD Type Ceramic
Capacitors for General Purpose
DK1 Series



Safety Standard Certified Lead Type
Disc Ceramic Capacitors for General Purpose
DE1/DE2 Series



Thermistors
NCP/PRF Series



High Voltage Resistors
MHR Series



5 Memory

Chip Ferrite Beads
BLM Series



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose

High Q Chip Multilayer Ceramic Capacitors for General Purpose

Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose

3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose

Polymer Aluminum Electrolytic Capacitors

Chip Inductors (Chip Coils)

Chip Inductors (Chip Coils)

Chip Ferrite Beads

Feed Through Chip EMI Filters

Chip Common Mode Choke Coils/Common Mode Noise Filters

Piezoelectric Sounders

Coin Manganese Dioxide Lithium Batteries

GRM Series

GQM / GJM Series

GRJ Series

NFM Series

ECAS Series

LQW/LQP/LQG Series

LQM/LQH/DFE Series

BLM/NFZ Series

NFE Series

DLW/DLM Series

PKLCS/PKMCS Series

Standard Type

High Frequency Filter Circuit/Coupling/Decoupling/For Step-up

High Frequency Filter Circuit

Coupling/Decoupling/For Step-up

Noise Suppression/Decoupling

Smoothing /Transient Backup

High Frequency Circuit-Impedance Matching /Resonance

Voltage Conversion

Noise Suppression

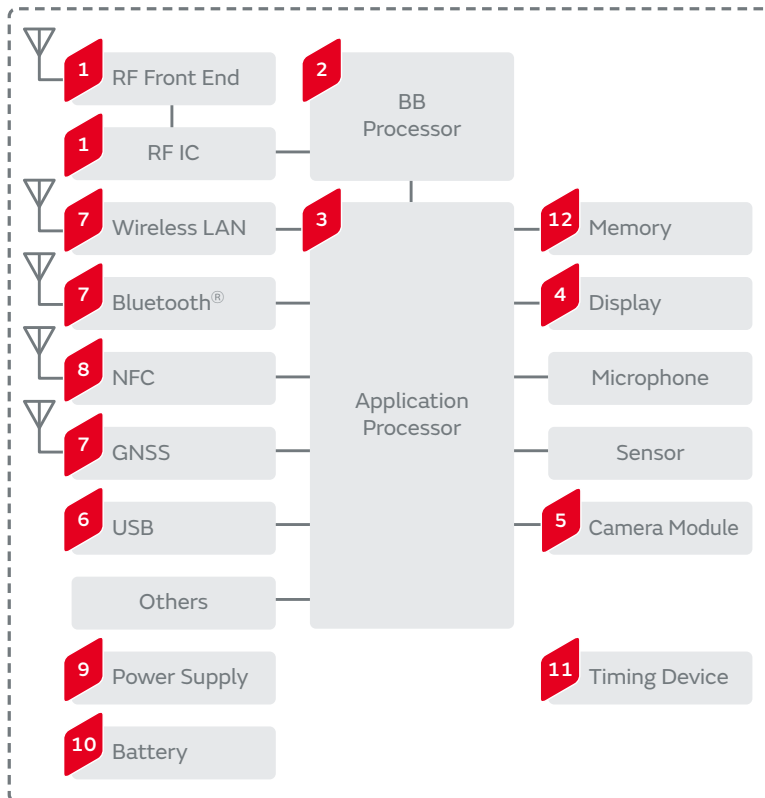
Noise Suppression

Noise Suppression

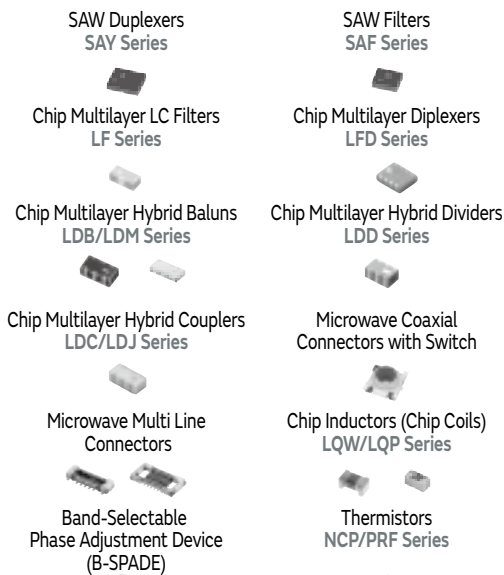
Sound Component

Battery Backup

Smart phone



1 RF Front End, RF IC



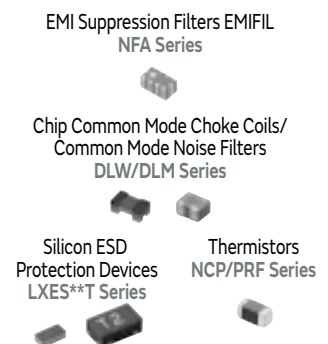
2 BB Processor



3 Application Processor



4 Display



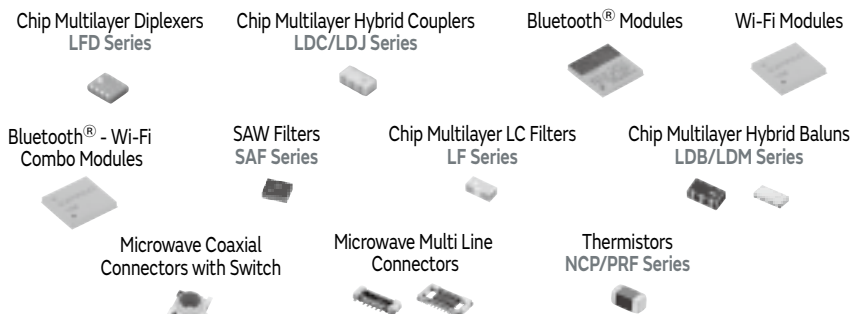
5 Camera Module



6 USB



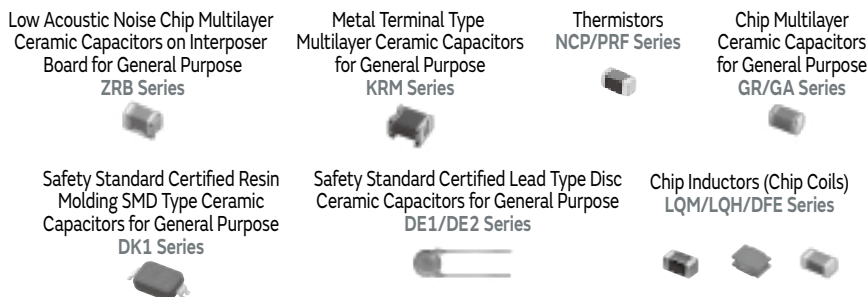
7 Wireless LAN, Bluetooth®, GNSS



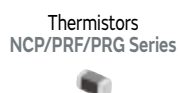
8 NFC



9 Power Supply



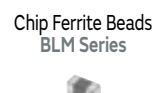
10 Battery



11 Timing Device



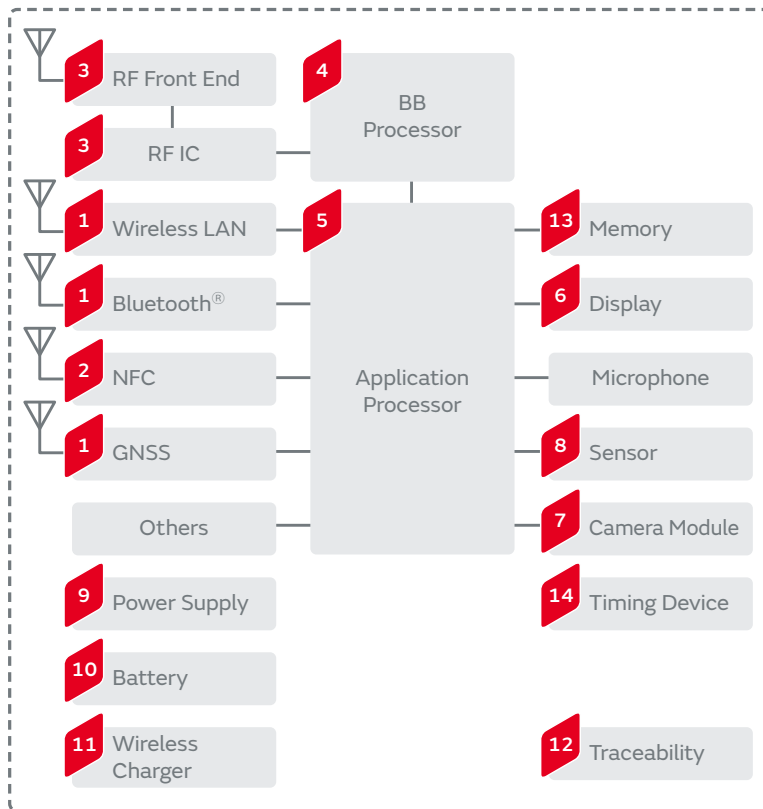
12 Memory



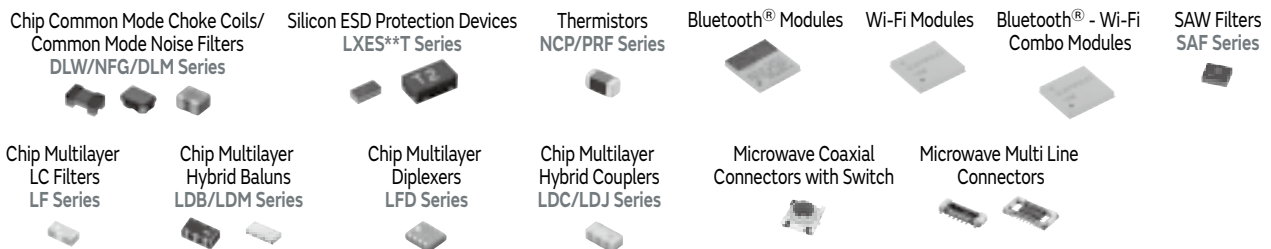
General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose	GRM Series	High Frequency Filter Circuit/Coupling/Decoupling/For Step-up
High Q Chip Multilayer Ceramic Capacitors for General Purpose	GQM / GJM Series	High Frequency Filter Circuit
Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose	GRJ Series	Coupling/Decoupling/For Step-up
3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose	NFM Series	Noise Suppression/Decoupling
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing /Transient Backup
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching /Resonance
Chip Inductors (Chip Coils)	LQM/LQH/DFE Series	Voltage Conversion
Chip Ferrite Beads	BLM/NFZ Series	Noise Suppression
Feed Through Chip EMI Filters	NFE Series	Noise Suppression
Chip Common Mode Choke Coils/Common Mode Noise Filters	DLW/DLM Series	Noise Suppression
Piezoelectric Sounders	PKLCS/PKMCS Series	Sound Component
Coin Manganese Dioxide Lithium Batteries	Standard Type	Battery Backup

Smart watch / health tracker



1 Wireless LAN, Bluetooth®, GNSS



2 NFC

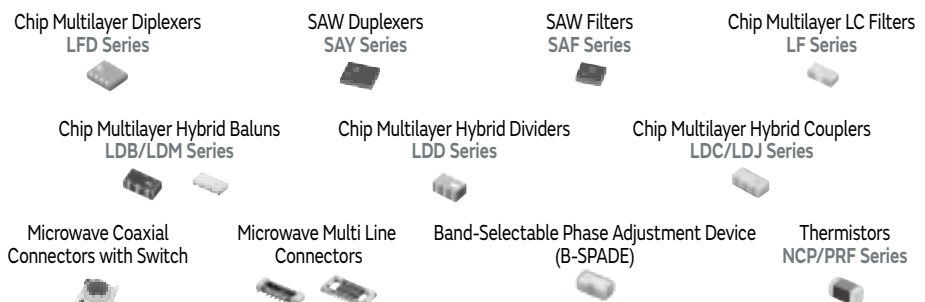
Chip Inductors (Chip Coils)
LQW18C/LQM18J Series



Variable Capacitors
LXRW Series



3 RF Front End, RF IC



4 BB Processor

Thermistors
NCP/PRF Series



5 Application Processor

Thermistors
NCP/PRF Series



6 Display

Silicon ESD Protection Devices
LXES**T Series



Thermistors
NCP/PRF Series



Piezoelectric Sounders
PKLCS/PKMCS Series



7 Camera Module

Chip Multilayer Ceramic Capacitors
for Camera Flash Circuit Only
GR7 Series



Silicon ESD Protection Devices
LXES**T Series



Thermistors
NCP/PRF Series



8 Sensor

Thermistors
NCP/PRF Series



9 Power Supply

Low Acoustic Noise
Chip Multilayer Ceramic Capacitors
on Interposer Board
for General Purpose
ZRB Series



Metal Terminal Type
Multilayer Ceramic Capacitors
for General Purpose
KRM Series



Thermistors
NCP Series



10 Battery

Coin Manganese Dioxide Lithium Batteries
Standard Type



Laminated Type
Lithium Ion Secondary Batteries



Thermistors
NCP/PRF/PRG Series



11 Wireless Charger

LW Reversed Low ESL Chip
Multilayer Ceramic Capacitors
for General Purpose
LLL Series



Thermistors
NCP/PRF Series



12 Traceability

RFID Tag
LXMS/LXTB Series



13 Memory

Chip Ferrite Beads
BLM Series



14 Timing Device

MEMS Resonators
WMRAG Series



Crystal Units
XRC Series



Ceramic Resonators CERALOCK
CST Series



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose

High Q Chip Multilayer Ceramic Capacitors for General Purpose

Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose

3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose

Polymer Aluminum Electrolytic Capacitors

Chip Inductors (Chip Coils)

Chip Inductors (Chip Coils)

Chip Ferrite Beads

Feed Through Chip EMI Filters

Chip Common Mode Choke Coils/Common Mode Noise Filters

Piezoelectric Sounders

Coin Manganese Dioxide Lithium Batteries

GRM Series

GQM / GJM Series

GRJ Series

NFM Series

ECAS Series

LQW/LQP/LQG Series

LQM/LQH/DFE Series

BLM/NFZ Series

NFE Series

DLW/DLM Series

PKLCS/PKMCS Series

Standard Type

High Frequency Filter Circuit/Coupling/Decoupling/For Step-up

High Frequency Filter Circuit

Coupling/Decoupling/For Step-up

Noise Suppression/Decoupling

Smoothing /Transient Backup

High Frequency Circuit-Impedance Matching /Resonance

Voltage Conversion

Noise Suppression

Noise Suppression

Noise Suppression

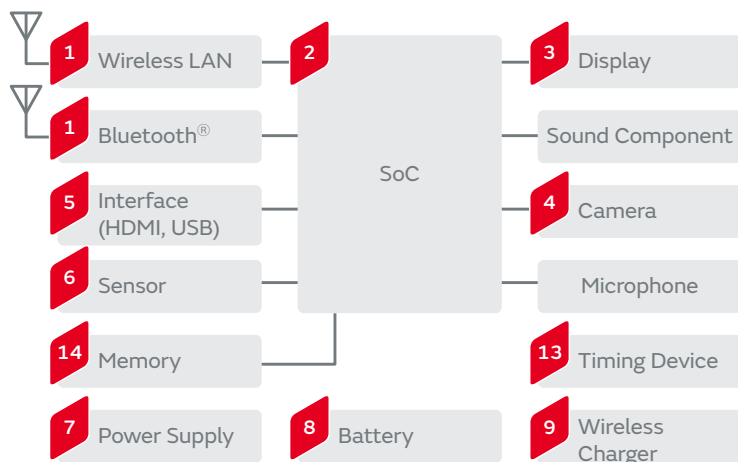
Sound Component

Battery Backup

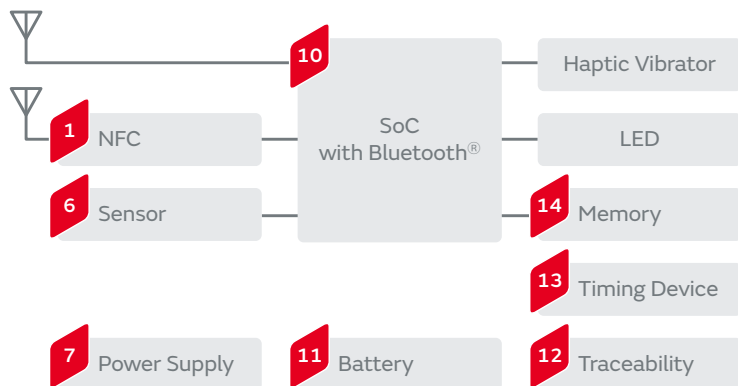
AR / VR



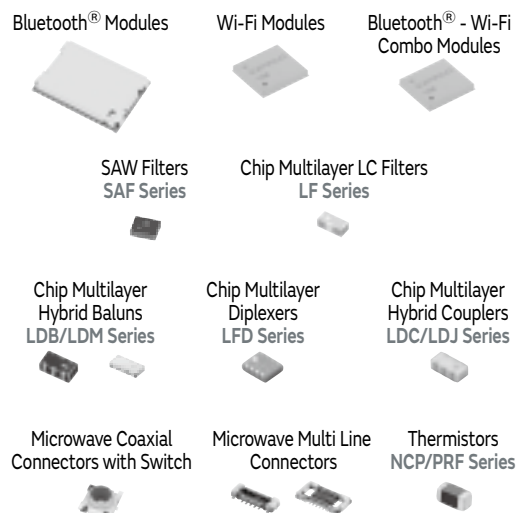
AR/VR Device



VR Controller



1 Wireless LAN, Bluetooth®, NFC



2 SoC



3 Display

Silicon ESD Protection Devices
LXES**T Series



Thermistors
NCP Series



4 Camera

Chip Multilayer Ceramic Capacitors
for Camera Flash Circuit Only
GR7 Series



Silicon ESD Protection Devices
LXES**T Series



Thermistors
NCP Series



Chip Common Mode Choke Coils/
Common Mode Noise Filters
DLW/NFG/DLM Series



5 Interface (HDMI, USB)

Chip Common Mode Choke Coils/
Common Mode Noise Filters
DLW/NFG/DLM Series



Silicon ESD Protection Devices
LXES**T Series



Thermistors
NCP Series



6 Sensor

Thermistors
NCP Series



7 Power Supply

Low Acoustic Noise Chip Multilayer
Ceramic Capacitors on Interposer
Board for General Purpose
ZRB Series



Metal Terminal Type Multilayer
Ceramic Capacitors for General Purpose
KRM Series



Polymer Aluminum
Electrolytic Capacitors
ECAS Series



Thermistors
NCP/PRF Series



8 Battery

Laminated Type Lithium Ion
Secondary Batteries



9 Wireless Charger

LW Reversed Low ESL
Chip Multilayer
Ceramic Capacitors
for General Purpose
LLL Series



Thermistors
NCP/PRF Series



10 SoC with Bluetooth®

RF Inductors
LQP02HQ/LQW15AN Series



Microwave Coaxial
Connectors with Switch



Microwave Multi Line
Connectors



Chip Multilayer LC Filters
LF Series



Chip Multilayer Hybrid Baluns
LDB/LDM Series



Chip Multilayer Diplexers
LFD Series



Chip Multilayer Hybrid Couplers
LDC/LDJ Series



Chip LC Trap Filters
LQZ02HQ Series



Frequency Specified Noise Filters
BLF02RD Series



11 Battery

Coin Manganese Dioxide
Lithium Batteries
Standard Type



Thermistors
NCP/PRF/PRG Series



12 Traceability

RFID Tag
LXMS/LXTB Series



13 Timing Device

MEMS Resonators
WMRAG Series



Crystal Units
XRC Series



Ceramic Resonators
CERALOCK
CST Series



14 Memory

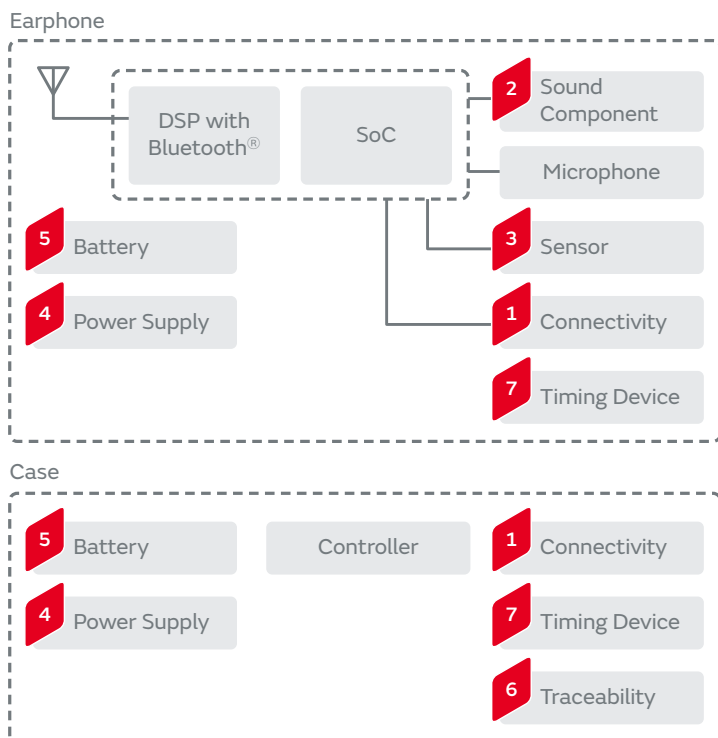
Chip Ferrite Beads
BLM Series



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose	GRM Series	High Frequency Filter Circuit/Coupling/Decoupling/For Step-up
High Q Chip Multilayer Ceramic Capacitors for General Purpose	GQM / GJM Series	High Frequency Filter Circuit
Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose	GRJ Series	Coupling/Decoupling/For Step-up
3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose	NFM Series	Noise Suppression/Decoupling
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing /Transient Backup
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching /Resonance
Chip Inductors (Chip Coils)	LQM/LQH/DFE Series	Voltage Conversion
Chip Ferrite Beads	BLM/NFZ Series	Noise Suppression
Feed Through Chip EMI Filters	NFE Series	Noise Suppression
Chip Common Mode Choke Coils/Common Mode Noise Filters	DLW/DLM Series	Noise Suppression
Piezoelectric Sounders	PKLCS/PKMCS Series	Sound Component
Coin Manganese Dioxide Lithium Batteries	Standard Type	Battery Backup

True wireless stereo (non-medical use)



1 Connectivity

RF Inductors
LQP02HQ/LQW15AN Series



Chip Multilayer Hybrid Baluns
LDB/LDM Series



Chip LC Trap Filters
LQZ02HQ Series



Microwave Coaxial
Connectors with Switch



Chip Multilayer Diplexers
LFD Series



Frequency Specified Noise Filters
BLF02RD Series



Chip Multilayer LC Filters
LF Series



Chip Multilayer Hybrid Couplers
LDC/LDJ Series



2 Sound Component

Chip LC Trap Filters
LQZ02HQ Series



Frequency Specified Noise Filters
BLF02 Series



3 Sensor

Thermistors
NCP03 Series



4 Power Supply

Power Inductors
DFE18SAN Series



5 Battery

Thermistors
NCP03 Series



6 Traceability

RFID Tag
LXMS/LXTB Series



7 Timing Device

MEMS Resonators
WMRAG Series



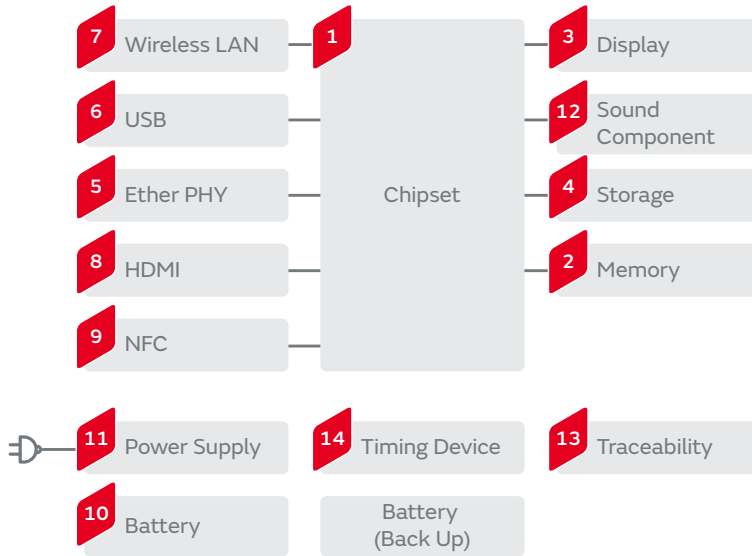
Crystal Units
XRC Series



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose	GRM Series	High Frequency Filter Circuit/Coupling/Decoupling/For Step-up
High Q Chip Multilayer Ceramic Capacitors for General Purpose	GQM / GJM Series	High Frequency Filter Circuit
Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose	GRJ Series	Coupling/Decoupling/For Step-up
3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose	NFM Series	Noise Suppression/Decoupling
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing /Transient Backup
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching /Resonance
Chip Inductors (Chip Coils)	LQM/LQH/DFE Series	Voltage Conversion
Chip Ferrite Beads	BLM/NFZ Series	Noise Suppression
Feed Through Chip EMI Filters	NFE Series	Noise Suppression
Chip Common Mode Choke Coils/Common Mode Noise Filters	DLW/DLM Series	Noise Suppression
Piezoelectric Sounders	PKLCS/PKMCS Series	Sound Component
Coin Manganese Dioxide Lithium Batteries	Standard Type	Battery Backup

PC



1 Chipset

Low ESL Chip Multilayer Ceramic Capacitors for General Purpose LLL/LLA/LLM Series



Chip Ferrite Beads BLM Series



3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose NFM Series



Thermistors NCP/PRF Series



2 Memory

Chip Ferrite Beads BLM Series



3 Display

Metal Terminal Type Multilayer Ceramic Capacitors for General Purpose KRM Series



Polymer Aluminum Electrolytic Capacitors ECAS Series



Thermistors PRF/PRG Series



Ultrasonic Sensors MA40 Series



4 Storage

Thermistors NCP Series



Polymer Aluminum Electrolytic Capacitors ECAS Series



Actuators



Thermistors NCP/PRF Series



5 Ether PHY

Silicon ESD Protection Devices LXES**T Series



Thermistors NCP/PRF Series



Chip Common Mode Choke Coils/ Common Mode Noise Filters DLW/NFG/DLM Series



6 USB

Polymer Aluminum Electrolytic Capacitors ECAS Series



Chip Ferrite Beads BLM Series



Thermistors PRG Series



Silicon ESD Protection Devices LXES**T Series



7 Wireless LAN

Bluetooth® Modules



Wi-Fi Modules



Bluetooth® - Wi-Fi Combo Modules



SAW Filters SAF Series



Chip Multilayer LC Filters LF Series



Chip Multilayer Hybrid Baluns LDB/LDM Series



Chip Multilayer Diplexers LFD Series



Chip Multilayer Hybrid Couplers LDC/LDJ Series



Microwave Coaxial Connectors with Switch



Microwave Multi Line Connectors



8 HDMI

Silicon ESD Protection Devices
LXES**T Series



Thermistors
PRG Series

**9 NFC**

Chip Ferrite Beads
BLM Series



Chip Inductors (Chip Coils)
LQW18C/LQM18J Series



Variable Capacitors
LXRW Series

**10 Battery**

Thermistors
NXR/PRF/PRG Series



Laminated Type
Lithium Ion Secondary Batteries

**11 Power Supply**

Non-Isolated DC-DC Converters
MYMGK/MYSGK/
OKL/MYLSM Series



Power Inductors
LQH Series



Chip Multilayer Ceramic Capacitors for Ethernet LAN
and Primary-secondary Coupling of DC-DC converters
GR4 Series



Metal Terminal Type Multilayer
Ceramic Capacitors
for General Purpose
KRM Series



Polymer Aluminum
Electrolytic Capacitors
ECAS Series



Low Acoustic Noise Chip Multilayer
Ceramic Capacitors on Interposer
Board for General Purpose
ZRB Series



Thermistors
NCP/PRF Series



Chip Multilayer Ceramic
Capacitors for General Purpose
GR/GA Series



Safety Standard Certified
Resin Molding SMD Type
Ceramic Capacitors for General Purpose
DK1 Series



Safety Standard Certified
Lead Type Disc Ceramic Capacitors
for General Purpose
DE1/DE2 Series

**12 Sound Component**

Silicon ESD
Protection Devices
LXES**T Series



Ultrasonic Sensors
MA40 Series

**13 Traceability**

RFID Tag
LXMS/LXTB Series

**14 Timing Device**

MEMS Resonators
WMRAG Series



Crystal Units
XRC Series

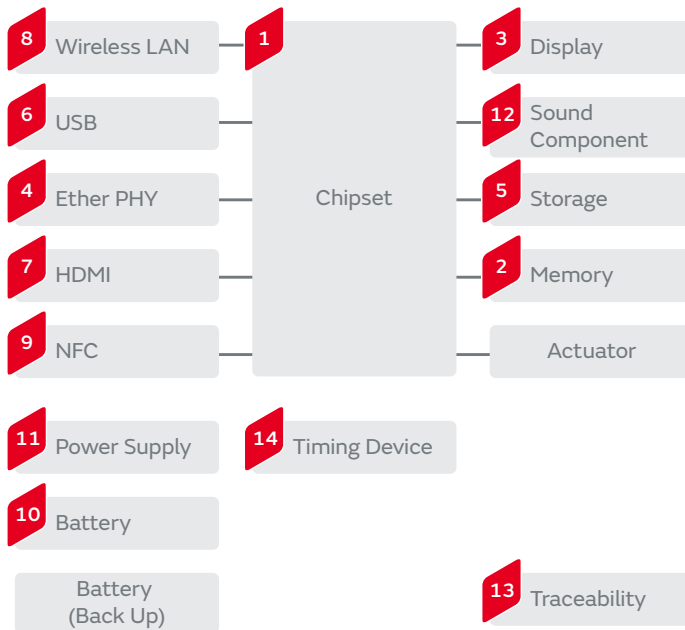


Ceramic Resonators
CERALOCK
CST Series



Chip Multilayer Ceramic Capacitors for General Purpose	GRM Series	High Frequency Filter Circuit/Coupling/Decoupling/For Step-up
High Q Chip Multilayer Ceramic Capacitors for General Purpose	GQM / GJM Series	High Frequency Filter Circuit
Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose	GRJ Series	Coupling/Decoupling/For Step-up
3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose	NFM Series	Noise Suppression/Decoupling
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing /Transient Backup
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching /Resonance
Chip Inductors (Chip Coils)	LQM/LQH/DFE Series	Voltage Conversion
Chip Ferrite Beads	BLM/NFZ Series	Noise Suppression
Feed Through Chip EMI Filters	NFE Series	Noise Suppression
Chip Common Mode Choke Coils/Common Mode Noise Filters	DLW/DLM Series	Noise Suppression
Piezoelectric Sounders	PKLCS/PKMCS Series	Sound Component
Coin Manganese Dioxide Lithium Batteries	Standard Type	Battery Backup

Tablet PC



1 Chipset

Low ESL Chip Multilayer Ceramic Capacitors for General Purpose
LLL/LLA/LLM Series



Chip Ferrite Beads
BLM Series



3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose
NFM Series



Thermistors
NCP/PRF Series



2 Memory

Chip Ferrite Beads
BLM Series



3 Display

Metal Terminal Type Multilayer Ceramic Capacitors for General Purpose
KRM Series



Polymer Aluminum Electrolytic Capacitors
ECAS Series



Power Inductors
LQH Series



Thermistors
PRF/PRG Series



4 Ether PHY

Chip Common Mode Choke Coils/
Common Mode Noise Filters
DLW/NFG/DLM Series



Silicon ESD Protection Devices
LXES**T Series



Thermistors
NCP/PRF Series



5 Storage

Polymer Aluminum Electrolytic Capacitors
ECAS Series



Actuators



Thermistors
NCP/PRF Series



6 USB

Polymer Aluminum Electrolytic Capacitors
ECAS Series



Chip Common Mode Choke Coils/
Common Mode Noise Filters
DLW/NFG/DLM Series



Chip Ferrite Beads
BLM Series



Silicon ESD Protection Devices
LXES**T Series



Thermistors
PRG Series



7 HDMI

Silicon ESD Protection Devices
LXES**T Series



Thermistors
PRG Series



8 Wireless LAN

Bluetooth® Modules



SAW Filters
SAF Series



Chip Multilayer Diplexers
LFD Series



Microwave Multi Line
Connectors



Wi-Fi Modules



Chip Multilayer LC Filters
LF Series



Chip Multilayer Hybrid Couplers
LDC/LDJ Series



Bluetooth® - Wi-Fi Combo Modules



Chip Multilayer Hybrid Baluns
LDB/LDM Series



Microwave Coaxial
Connectors with Switch



9 NFC

Chip Ferrite Beads
BLM Series



Chip Inductors (Chip Coils)
LQW18C/LQM18J Series



Variable Capacitors
LXRW Series



10 Battery

Thermistors
NXR/PRF/PRG Series



Laminated Type Lithium Ion
Secondary Batteries



11 Power Supply

Metal Terminal Type Multilayer
Ceramic Capacitors for General Purpose
KRM Series



Polymer Aluminum
Electrolytic Capacitors
ECAS Series



Low Acoustic Noise Chip Multilayer Ceramic Capacitors
on Interposer Board for General Purpose
ZRB Series



Chip Multilayer Ceramic Capacitors
for General Purpose
GR/GA Series



Safety Standard Certified Resin Molding SMD Type
Ceramic Capacitors for General Purpose
DK1 Series



Safety Standard Certified Lead Type
Disc Ceramic Capacitors for General Purpose
DE1/DE2 Series



Thermistors
NCP/PRF Series



12 Sound Component

Silicon ESD Protection Devices
LXES**T Series



13 Traceability

RFID Tag
LXMS/LXTB Series



14 Timing Device

MEMS Resonators
WMRAG Series



Crystal Units
XRC Series



Ceramic Resonators CERALOCK
CST Series



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose

High Q Chip Multilayer Ceramic Capacitors for General Purpose

Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose

3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose

Polymer Aluminum Electrolytic Capacitors

Chip Inductors (Chip Coils)

Chip Inductors (Chip Coils)

Chip Ferrite Beads

Feed Through Chip EMI Filters

Chip Common Mode Choke Coils/Common Mode Noise Filters

Piezoelectric Sounders

Coin Manganese Dioxide Lithium Batteries

GRM Series

GQM / GJM Series

GRJ Series

NFM Series

ECAS Series

LQW/LQP/LQG Series

LQM/LQH/DFE Series

BLM/NFZ Series

NFE Series

DLW/DLM Series

PKLCS/PKMCS Series

Standard Type

High Frequency Filter Circuit/Coupling/Decoupling/For Step-up

High Frequency Filter Circuit

Coupling/Decoupling/For Step-up

Noise Suppression/Decoupling

Smoothing /Transient Backup

High Frequency Circuit-Impedance Matching /Resonance

Voltage Conversion

Noise Suppression

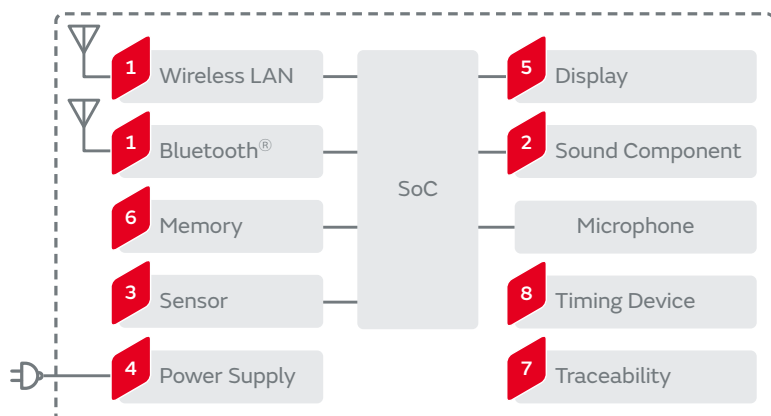
Noise Suppression

Noise Suppression

Sound Component

Battery Backup

AI speaker



1 Wireless LAN, Bluetooth®

Chip Common Mode Choke Coils
DLMON Series

Microwave Coaxial
Connectors with Switch

Chip Multilayer LC Filters
LF Series

Chip Multilayer Hybrid Baluns
LDB/LDM Series

Chip Multilayer Diplexers
LFD Series

Chip Multilayer Hybrid Couplers
LDC/LDJ Series

Wi-Fi Smart Modules
LBWA1UZ1GC-TEMP Series

Chip Inductors (Chip Coils)
LQP03HQ/LQW18AN Series

2 Sound Component

Frequency Specified
Noise Filters
BLF02 Series

Chip LC Trap Filters
LQZ02HQ Series

3 Sensor

Pyroelectric Infrared Sensors
IRA-S Series

Ultrasonic Sensors
MA40 Series

4 Power Supply

Power Inductors
DFEC/DFES/LQH3NP Series

Thermistors
NCP03/NXR Series

Chip Ferrite Beads
BLM18/21 Series

Chip Common Mode Choke Coils
DLW5AT/5BT Series

5 Display

Metal Terminal Type Multilayer
Ceramic Capacitors
for General Purpose
KRM Series

Thermistors
NCP03/NXR Series

Polymer Aluminum
Electrolytic Capacitors
ECAS Series

Ultrasonic Sensors
MA40 Series

6 Memory

Chip Ferrite Beads
BLM Series

7 Traceability

RFID Tag
LXMS/LXTB Series

8 Timing Device

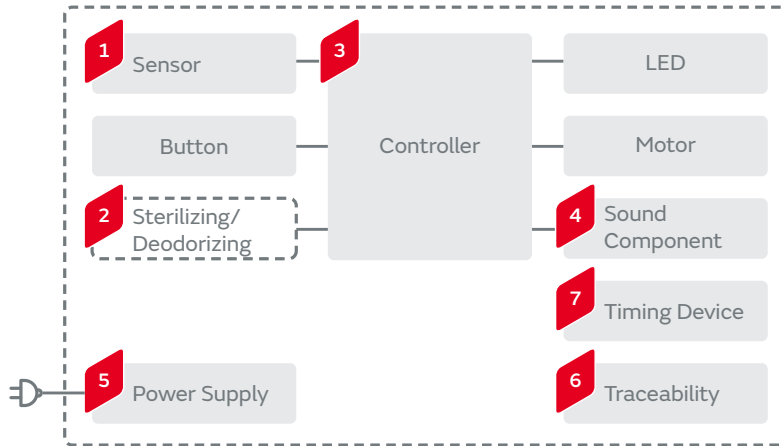
MEMS Resonators
WMRAG Series

Crystal Units
XRC Series

General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose	GRM Series	High Frequency Filter Circuit/Coupling/Decoupling/For Step-up
High Q Chip Multilayer Ceramic Capacitors for General Purpose	GQM / GJM Series	High Frequency Filter Circuit
Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose	GRJ Series	Coupling/Decoupling/For Step-up
3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose	NFM Series	Noise Suppression/Decoupling
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing /Transient Backup
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching /Resonance
Chip Inductors (Chip Coils)	LQM/LQH/DFE Series	Voltage Conversion
Chip Ferrite Beads	BLM/NFZ Series	Noise Suppression
Feed Through Chip EMI Filters	NFE Series	Noise Suppression
Chip Common Mode Choke Coils/Common Mode Noise Filters	DLW/DLM Series	Noise Suppression
Piezoelectric Sounders	PKLCS/PKMCS Series	Sound Component
Coin Manganese Dioxide Lithium Batteries	Standard Type	Battery Backup

Vacuum cleaner



1 Sensor

Ultrasonic Sensors
MA40 Series

Thermistors
NCP Series

Magnetic Sensors
(AMR Sensors)
MR Series

2 Sterilizing/Deodorizing

Ionizer Modules Ionissimo
MHM300 Series

Ozonizer Modules Ionissimo
MHM500 Series

High Voltage Resistors
MHR Series

3 Controller

Thermistors
NCP/NXP/PRF Series

5 Power Supply

Chip Multilayer
Ceramic Capacitors
for General Purpose
GR/GA Series

Safety Standard Certified
Resin Molding SMD Type
Ceramic Capacitors
for General Purpose
DK1 Series

Safety Standard Certified
Lead Type Disc
Ceramic Capacitors
for General Purpose
DE1/DE2 Series

Cylindrical Type
Lithium Ion
Secondary Batteries

Non-Isolated DC-DC Converters
MYMGK/MYSGK/
OKL/MYLSM Series

6 Traceability

RFID Tag
LXMS/LXTB Series

4 Sound Component

Piezoelectric Sounders
PKMCS/PKLCS/PKM Series

7 Timing Device

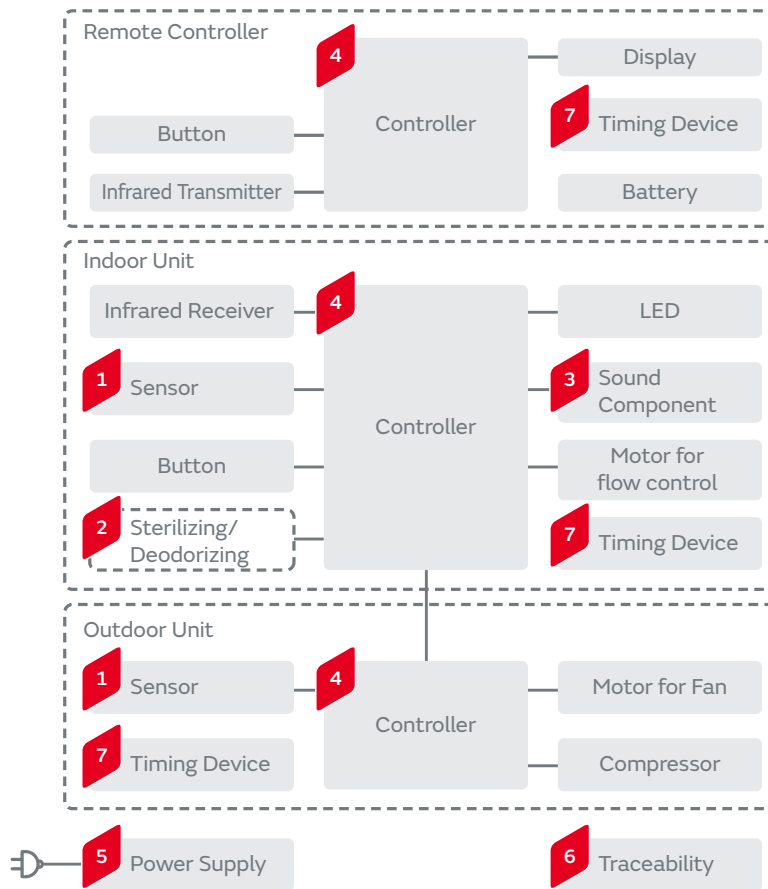
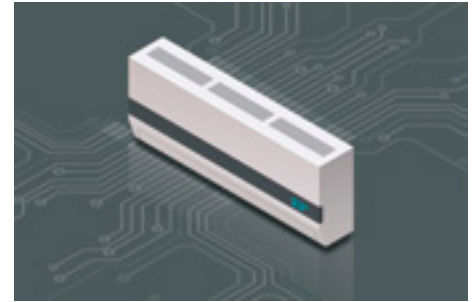
Crystal Units
XRC Series

Ceramic Resonators
CERALOCK
CST Series

General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose	GRM Series	High Frequency Filter Circuit/Coupling/Decoupling/For Step-up
High Q Chip Multilayer Ceramic Capacitors for General Purpose	GQM / GJM Series	High Frequency Filter Circuit
Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose	GRJ Series	Coupling/Decoupling/For Step-up
3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose	NFM Series	Noise Suppression/Decoupling
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing /Transient Backup
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching /Resonance
Chip Inductors (Chip Coils)	LQM/LQH/DFE Series	Voltage Conversion
Chip Ferrite Beads	BLM/NFZ Series	Noise Suppression
Feed Through Chip EMI Filters	NFE Series	Noise Suppression
Chip Common Mode Choke Coils/Common Mode Noise Filters	DLW/DLM Series	Noise Suppression
Piezoelectric Sounders	PKLCS/PKMCS Series	Sound Component
Coin Manganese Dioxide Lithium Batteries	Standard Type	Battery Backup

Air conditioner



1 Sensor

Ultrasonic Sensors
MA40 Series

Thermistors
NCP/NXR/PRF Series

Magnetic Sensors (AMR Sensors)
MR Series

Pyroelectric Infrared Sensors
IRA-S Series

2 Sterilizing/Deodorizing

Ionizer Modules Ionissimo
MHM300 Series

Ozonizer Modules Ionissimo
MHM500 Series

High Voltage Resistors
MHR Series

3 Sound Component

Piezoelectric Sounders
PKMCS/PKLCs/PKM Series

4 Controller

Thermistors
NCP/NXR/PRF Series

5 Power Supply

Chip Multilayer Ceramic Capacitors for General Purpose
GR/GA Series



Safety Standard Certified Resin Molding
SMD Type Ceramic Capacitors for General Purpose
DK1 Series



Safety Standard Certified Lead Type Disc
Ceramic Capacitors for General Purpose
DE1/DE2 Series



Non-Isolated DC-DC Converters
MYMGK/MYSGK/
OKL/MYLSM Series



6 Traceability

RFID Tag
LXMS/LXTB Series



7 Timing Device

Crystal Units
XRC Series



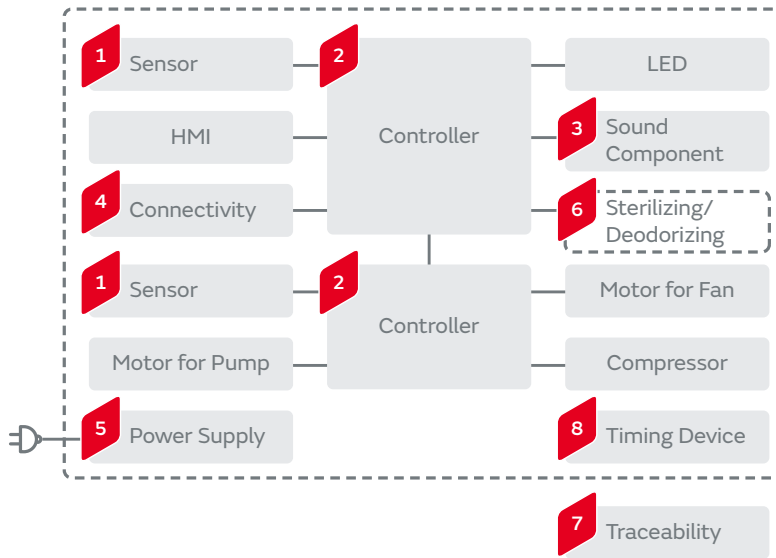
Ceramic Resonators CERALOCK
CST Series



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose	GRM Series	High Frequency Filter Circuit/Coupling/Decoupling/For Step-up
High Q Chip Multilayer Ceramic Capacitors for General Purpose	GQM / GJM Series	High Frequency Filter Circuit
Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose	GRJ Series	Coupling/Decoupling/For Step-up
3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose	NFM Series	Noise Suppression/Decoupling
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing /Transient Backup
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching /Resonance
Chip Inductors (Chip Coils)	LQM/LQH/DFE Series	Voltage Conversion
Chip Ferrite Beads	BLM/NFZ Series	Noise Suppression
Feed Through Chip EMI Filters	NFE Series	Noise Suppression
Chip Common Mode Choke Coils/Common Mode Noise Filters	DLW/DLM Series	Noise Suppression
Piezoelectric Sounders	PKLCS/PKMCS Series	Sound Component
Coin Manganese Dioxide Lithium Batteries	Standard Type	Battery Backup

Washing machine



1 Sensor

Thermistors
NCP/NXR/PRF Series

Magnetic Sensors
(AMR Sensors)
MR Series

2 Controller

Thermistors
NCP/NXR/PRF Series

3 Sound Component

Piezoelectric Sounders
PKMCS/PKLCs/PKM Series

4 Connectivity

Bluetooth®
Modules

Wi-Fi
Modules

LPWA
Modules

Microwave Coaxial
Connectors with Switch

5 Power Supply

Chip Multilayer
Ceramic Capacitors
for General Purpose
GR/GA Series

Safety Standard Certified
Resin Molding SMD Type
Ceramic Capacitors
for General Purpose
DK1 Series

Safety Standard Certified Lead
Type Disc Ceramic Capacitors
for General Purpose
DE1/DE2 Series

Non-Isolated DC-DC Converters
MYMGK/MYSGK/
OKL/MYLSM Series

6 Sterilizing/Deodorizing

Ozonizer Modules
Ionissimo
MHM500 Series

High Voltage
Resistors
MHR Series

7 Traceability

RFID Tag
LXMS/LXTB Series

8 Timing Device

Crystal Units
XRC Series

Ceramic Resonators CERALOCK
CST Series

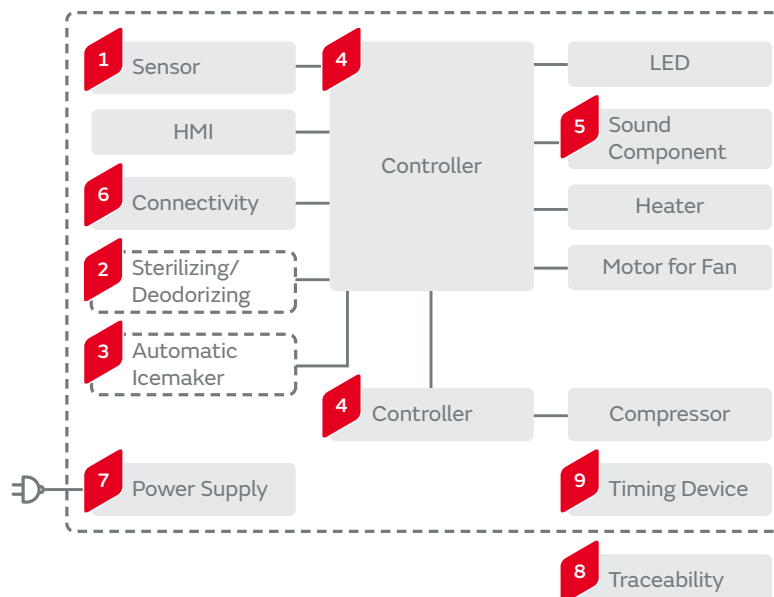
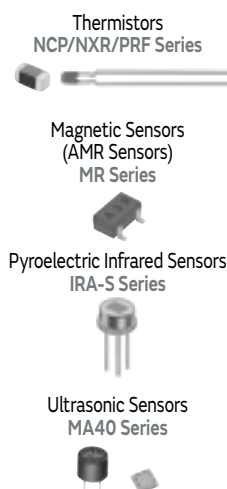
General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose	GRM Series	High Frequency Filter Circuit/Coupling/Decoupling/For Step-up
High Q Chip Multilayer Ceramic Capacitors for General Purpose	GQM / GJM Series	High Frequency Filter Circuit
Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose	GRJ Series	Coupling/Decoupling/For Step-up
3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose	NFM Series	Noise Suppression/Decoupling
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing /Transient Backup
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching /Resonance
Chip Inductors (Chip Coils)	LQM/LQH/DFE Series	Voltage Conversion
Chip Ferrite Beads	BLM/NFZ Series	Noise Suppression
Feed Through Chip EMI Filters	NFE Series	Noise Suppression
Chip Common Mode Choke Coils/Common Mode Noise Filters	DLW/DLM Series	Noise Suppression
Piezoelectric Sounders	PKLCS/PKMCS Series	Sound Component
Coin Manganese Dioxide Lithium Batteries	Standard Type	Battery Backup

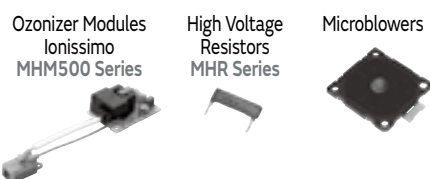
Refrigerator



1 Sensor



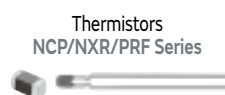
2 Sterilizing/Deodorizing



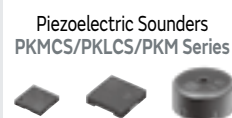
3 Automatic Icemaker



4 Controller



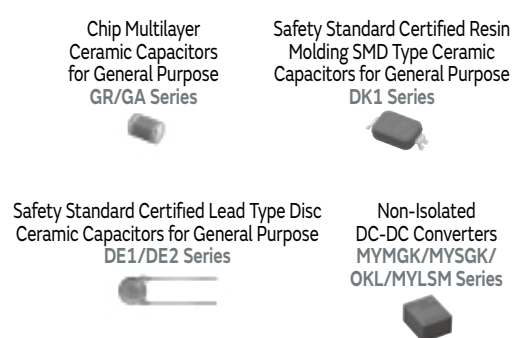
5 Sound Component



6 Connectivity



7 Power Supply



8 Traceability



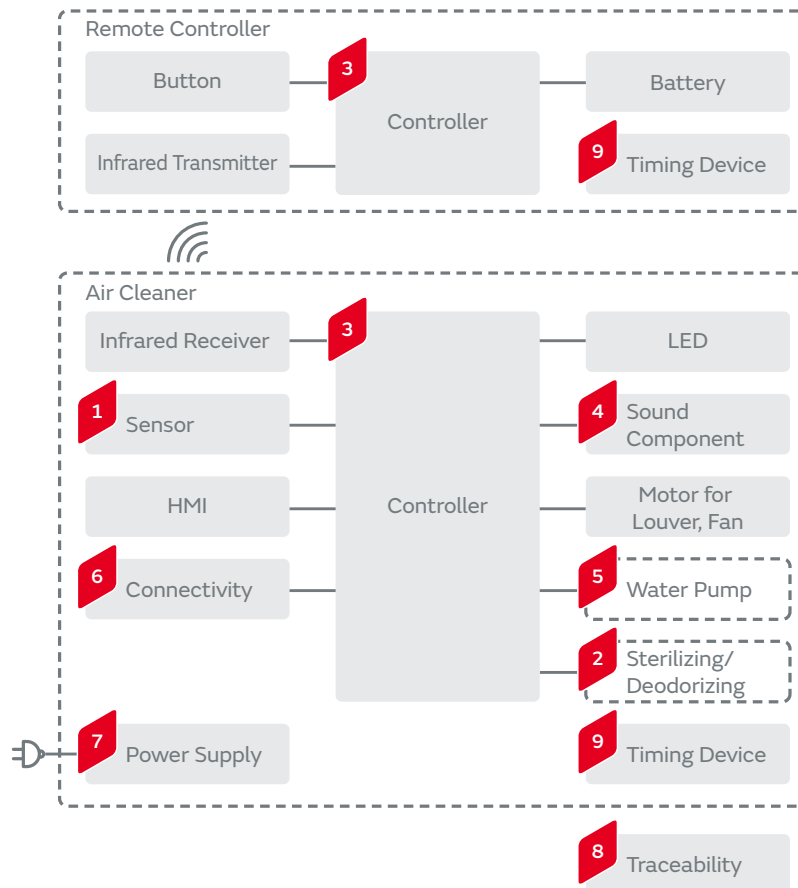
9 Timing Device



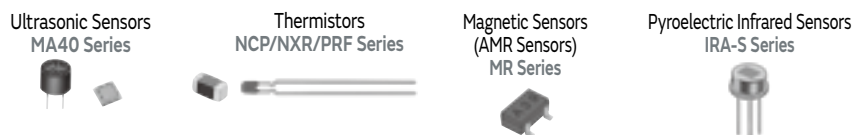
General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose	GRM Series	High Frequency Filter Circuit/Coupling/Decoupling/For Step-up
High Q Chip Multilayer Ceramic Capacitors for General Purpose	GQM / GJM Series	High Frequency Filter Circuit
Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose	GRJ Series	Coupling/Decoupling/For Step-up
3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose	NFM Series	Noise Suppression/Decoupling
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing /Transient Backup
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching /Resonance
Chip Inductors (Chip Coils)	LQM/LQH/DFE Series	Voltage Conversion
Chip Ferrite Beads	BLM/NFZ Series	Noise Suppression
Feed Through Chip EMI Filters	NFE Series	Noise Suppression
Chip Common Mode Choke Coils/Common Mode Noise Filters	DLW/DLM Series	Noise Suppression
Piezoelectric Sounders	PKLCS/PKMCS Series	Sound Component
Coin Manganese Dioxide Lithium Batteries	Standard Type	Battery Backup

Air purifier



1 Sensor



3 Controller



2 Sterilizing/Deodorizing

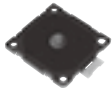


4 Sound Component



5 Water Pump

Microblowers



6 Connectivity

Bluetooth® Modules



Wi-Fi Modules



LPWA Modules


Microwave Coaxial Connectors
with Switch


7 Power Supply

Chip Multilayer
Ceramic Capacitors
for General Purpose
GR/GA Series

Safety Standard Certified
Lead Type Disc Ceramic Capacitors
for General Purpose
DE1/DE2 Series

Safety Standard Certified Resin Molding
SMD Type Ceramic Capacitors
for General Purpose
DK1 Series

Non-Isolated
DC-DC Converters
MYMGK/MYSGK/
OKL/MYLSM Series


8 Traceability

RFID Tag
LXMS/LXTB Series


9 Timing Device

Crystal Units
XRC Series

Ceramic Resonators CERALOCK
CST Series


General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose

High Q Chip Multilayer Ceramic Capacitors for General Purpose

Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose

3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose

Polymer Aluminum Electrolytic Capacitors

Chip Inductors (Chip Coils)

Chip Inductors (Chip Coils)

Chip Ferrite Beads

Feed Through Chip EMI Filters

Chip Common Mode Choke Coils/Common Mode Noise Filters

Piezoelectric Sounders

Coin Manganese Dioxide Lithium Batteries

GRM Series

GQM / GJM Series

GRJ Series

NFM Series

ECAS Series

LQW/LQP/LQG Series

LQM/LQH/DFE Series

BLM/NFZ Series

NFE Series

DLW/DLM Series

PKLCS/PKMCS Series

Standard Type

High Frequency Filter Circuit/Coupling/Decoupling/For Step-up

High Frequency Filter Circuit

Coupling/Decoupling/For Step-up

Noise Suppression/Decoupling

Smoothing /Transient Backup

High Frequency Circuit-Impedance Matching /Resonance

Voltage Conversion

Noise Suppression

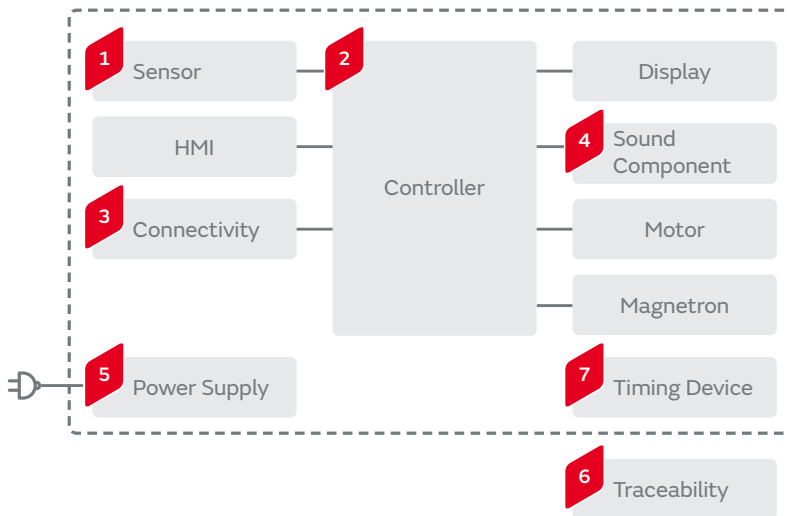
Noise Suppression

Noise Suppression

Sound Component

Battery Backup

Microwave oven



1 Sensor

Thermistors
NCP/NXR/PRF Series

Magnetic Sensors
(AMR Sensors)
MR Series

2 Controller

Thermistors
NCP/NXR/PRF Series

3 Connectivity

Bluetooth® Modules

Wi-Fi Modules

LPWA Modules

Microwave Coaxial Connectors with Switch

4 Sound Component

Piezoelectric Sounders
PKMCS/PKLCs/PKM Series

5 Power Supply

Chip Multilayer Ceramic Capacitors for General Purpose
GR/GA Series

Safety Standard Certified Resin Molding SMD Type Ceramic Capacitors for General Purpose
DK1 Series

Safety Standard Certified Lead Type Disc Ceramic Capacitors for General Purpose
DE1/DE2 Series

Non-Isolated DC-DC Converters
MYMGK/MYSGK/OKL/MYLSM Series

6 Traceability

RFID Tag
LXMS/LXTB Series

7 Timing Device

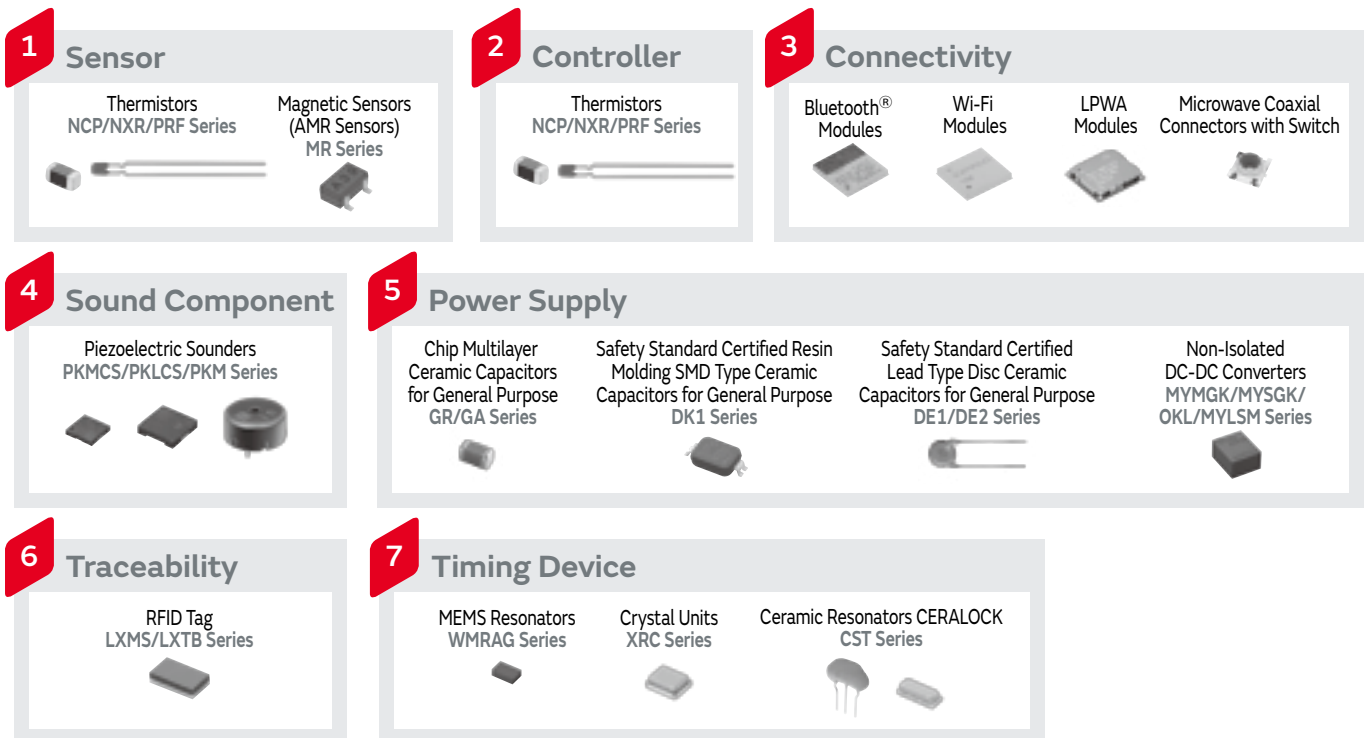
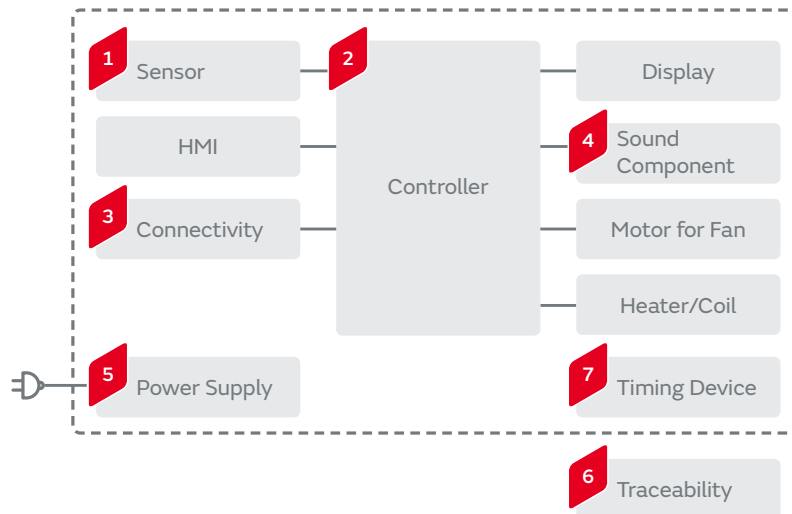
Crystal Units
XRC Series

Ceramic Resonators CERALOCK
CST Series

General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose	GRM Series	High Frequency Filter Circuit/Coupling/Decoupling/For Step-up
High Q Chip Multilayer Ceramic Capacitors for General Purpose	GQM / GJM Series	High Frequency Filter Circuit
Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose	GRJ Series	Coupling/Decoupling/For Step-up
3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose	NFM Series	Noise Suppression/Decoupling
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing /Transient Backup
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching /Resonance
Chip Inductors (Chip Coils)	LQM/LQH/DFE Series	Voltage Conversion
Chip Ferrite Beads	BLM/NFZ Series	Noise Suppression
Feed Through Chip EMI Filters	NFE Series	Noise Suppression
Chip Common Mode Choke Coils/Common Mode Noise Filters	DLW/DLM Series	Noise Suppression
Piezoelectric Sounders	PKLCS/PKMCS Series	Sound Component
Coin Manganese Dioxide Lithium Batteries	Standard Type	Battery Backup

IH rice cooker



General Purpose

Chip Multilayer Ceramic Capacitors for General Purpose	GRM Series	High Frequency Filter Circuit/Coupling/Decoupling/For Step-up
High Q Chip Multilayer Ceramic Capacitors for General Purpose	GQM / GJM Series	High Frequency Filter Circuit
Soft Termination Chip Multilayer Ceramic Capacitors for General Purpose	GRJ Series	Coupling/Decoupling/For Step-up
3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for General Purpose	NFM Series	Noise Suppression/Decoupling
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing /Transient Backup
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching /Resonance
Chip Inductors (Chip Coils)	LQM/LQH/DFE Series	Voltage Conversion
Chip Ferrite Beads	BLM/NFZ Series	Noise Suppression
Feed Through Chip EMI Filters	NFE Series	Noise Suppression
Chip Common Mode Choke Coils/Common Mode Noise Filters	DLW/DLM Series	Noise Suppression
Piezoelectric Sounders	PKLCS/PKMCS Series	Sound Component
Coin Manganese Dioxide Lithium Batteries	Standard Type	Battery Backup

Electrified

1

Inverter

2

BMS (Battery management system)

3

OBC (On board charger)

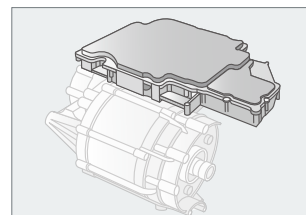
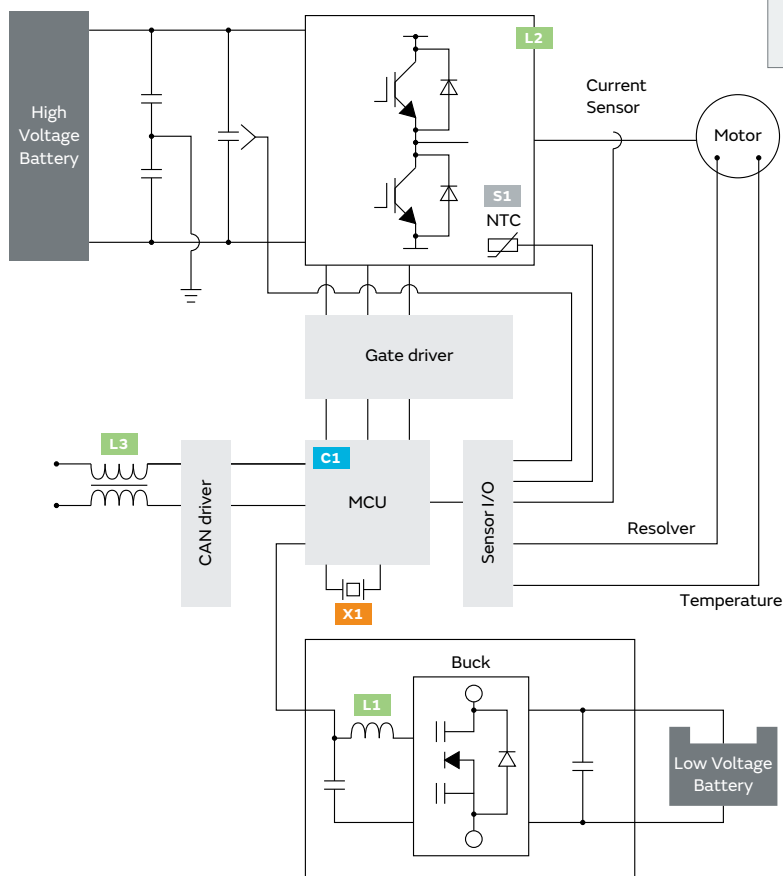
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DC-DC converter

5

Engine ECU

1 Inverter



MCU

C1 Chip Multilayer Ceramic Capacitors for Automotive GCM Series



DC-DC

L1 Power Inductors LQH/DFE Series



IGBT

L2 Chip Ferrite Beads BLM Series



S1 Thermistors NCU Series



CAN

L3 Chip Common Mode Choke Coils DLW43SH Series



L3 Chip Common Mode Choke Coils DLW43SH Series

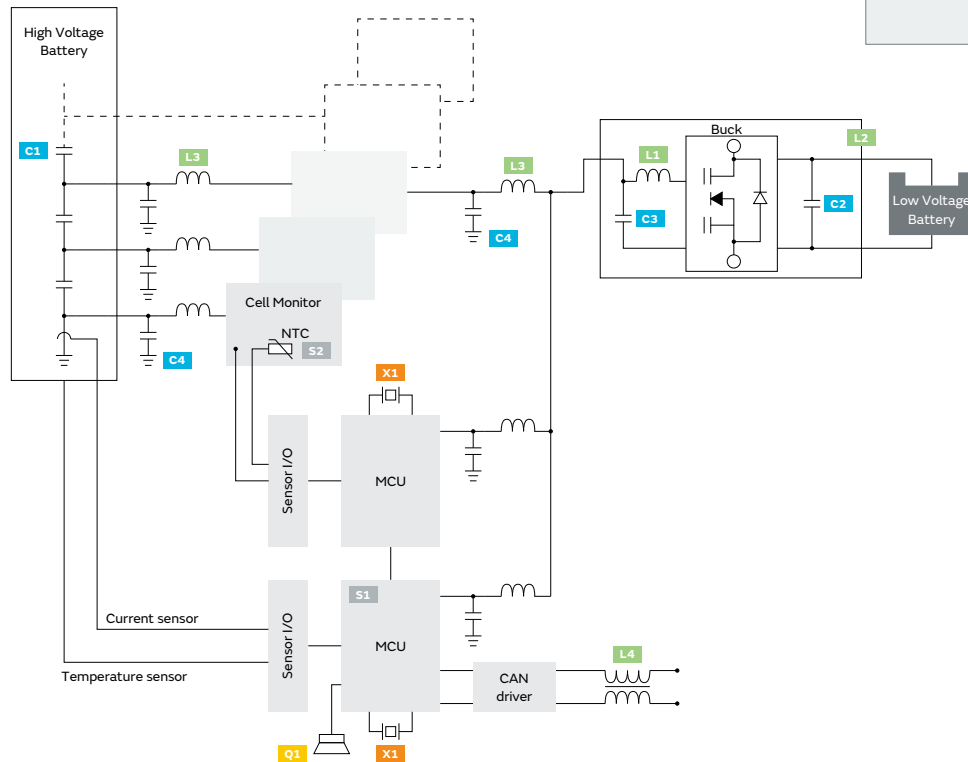
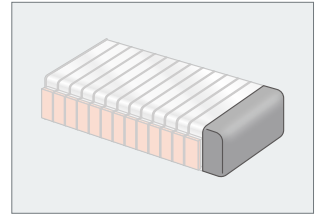


Timing Device

X1 Ceramic Resonators CERALOCK CST Series



2 BMS (Battery management system)



MCU	
S1	Thermistors NCU Series
Q1	Piezoelectric Sounders PKLCS/PKMCS Series

Cell Monitor	
C4	Chip Multilayer Ceramic Capacitors for Automotive GCM Series
C4	Soft Termination Chip Multilayer Ceramic Capacitors for Automotive GCJ Series
C4	Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCM Series
L3	Chip Ferrite Beads BLM Series
S2	Thermistors NCU Series

Battery	
C1	Chip Multilayer Ceramic Capacitors for Automotive GCM Series
C1	Soft Termination Chip Multilayer Ceramic Capacitors for Automotive GCJ Series
C1	Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCM Series

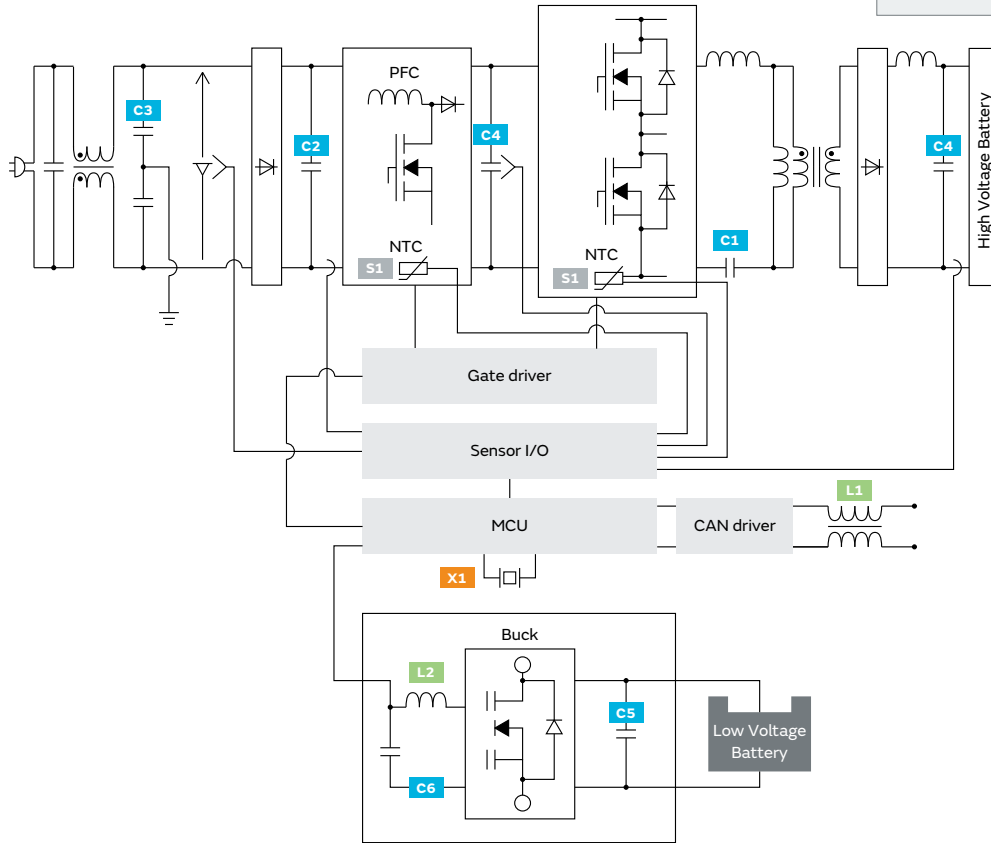
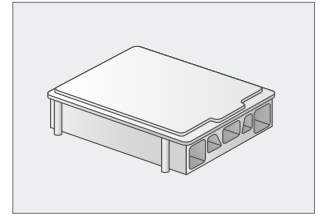
DC-DC	
C2	Soft Termination Chip Multilayer Ceramic Capacitors for Automotive GCJ Series
C2	Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCM Series
C3	Chip Multilayer Ceramic Capacitors for Automotive GCM Series
C2	MLSC Design Chip Multilayer Ceramic Capacitors for Automotive GCD Series

DC-DC	
C3	Soft Termination MLSC Design Chip Multilayer Ceramic Capacitors for Automotive GCE Series
L1	Power Inductors LQH/DFE Series
L2	Large-current Common Mode Choke Coils PLT10HH/PLT5BP Series
L2	Chip Common Mode Choke Coils DLW Series

CAN	
L4	Chip Common Mode Choke Coils DLW32SH Series
L4	Chip Common Mode Choke Coils DLW43SH Series

Timing Device	
X1	Ceramic Resonators CERALOCK CST Series

3 OBC (On board charger)



Filter		
C1	Chip Multilayer Ceramic Capacitors for Automotive GCM Series	
C1	Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCM Series	
C2	High Effective Capacitance & High Allowable Ripple Current Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KC3 Series	

AC-DC		
C3	Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCM Series	
C3	Safety Standard Certified Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCA Series	
C3	Safety Standard Certified Lead Type Disc Ceramic Capacitors for Automotive DE6 Series	

Smoothing		
C4	High Temperature Film Capacitors for Automotive FH Series	
C4	High Effective Capacitance & High Allowable Ripple Current Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KC3 Series	

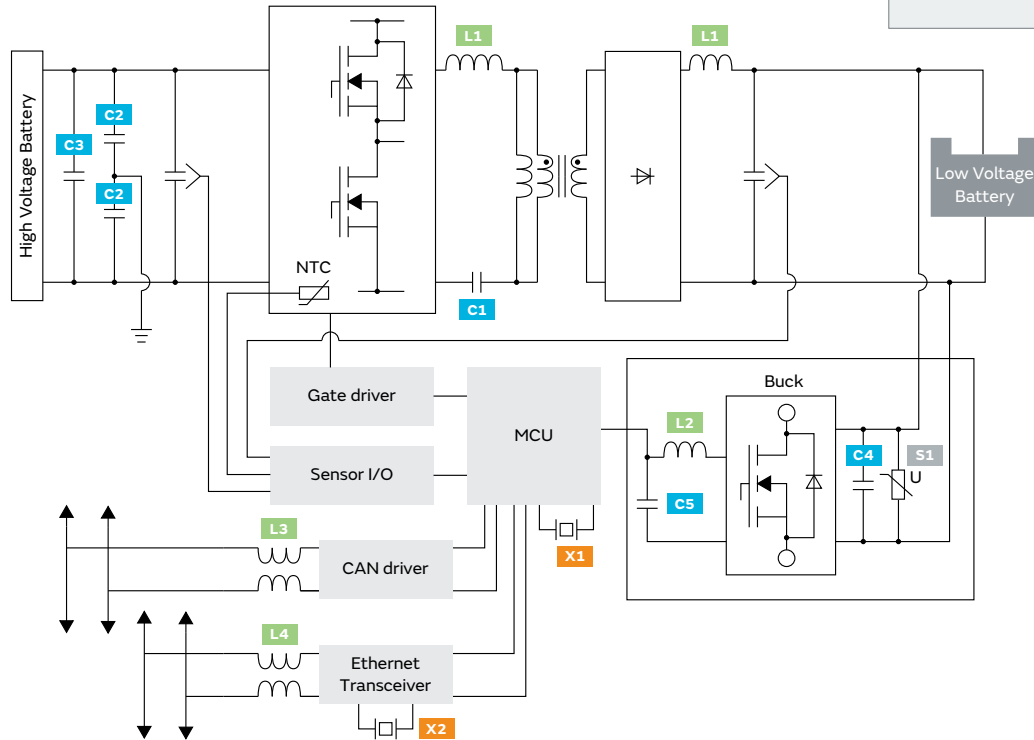
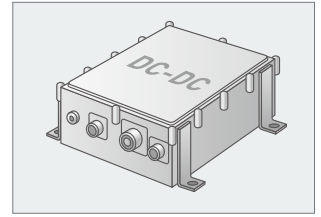
DC-DC		
C5	Soft Termination Chip Multilayer Ceramic Capacitors for Automotive GCJ Series	
C5	Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCM Series	
L2	Power Inductors LQH/DFE Series	
C6	Chip Multilayer Ceramic Capacitors for Automotive GCM Series	

CAN		
L1	Chip Common Mode Choke Coils DLW32SH Series	
L1	Chip Common Mode Choke Coils DLW43SH Series	

PFC		
S1	Thermistors NCU Series	

Timing Device		
X1	Ceramic Resonators CERALOCK CST Series	

4 DC-DC converter



Power line	
C1	High Effective Capacitance & High Allowable Ripple Current Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KC3 Series
C3	High Temperature Film Capacitors for Automotive FH Series
C3	Safety Standard Certified Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCA Series
C2	Safety Standard Certified Lead Type Disc Ceramic Capacitors for Automotive DE6 Series
L1	Chip Ferrite Beads BLM Series
L1	Power Inductors LQH/DFE Series

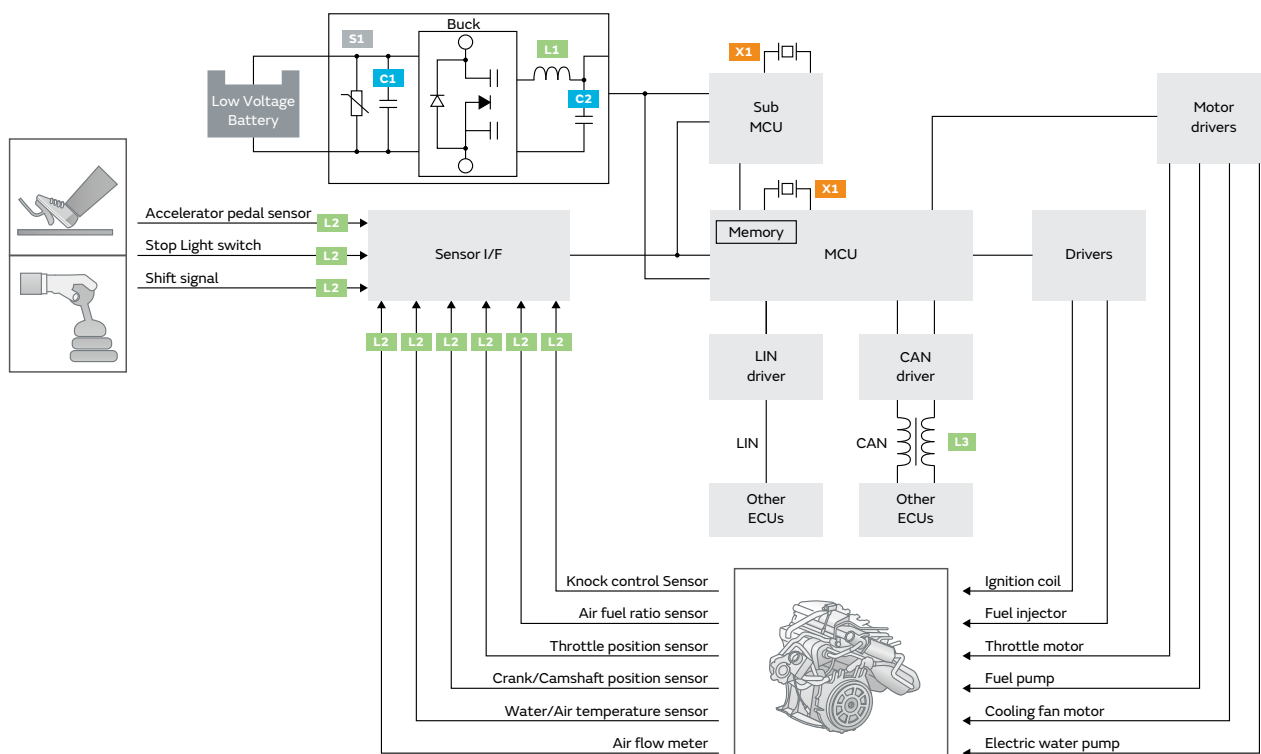
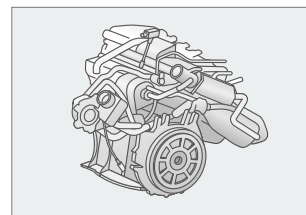
MCU/Sub MCU	
X1	Ceramic Resonators CERALOCK CST Series
X1	Crystal Units XRC Series

CAN	
L3	Chip Common Mode Choke Coils DLW32SH Series
L3	Chip Common Mode Choke Coils DLW43SH Series

Ethernet	
L4	Chip Common Mode Choke Coils DLW32MH Series
L4	Chip Common Mode Choke Coils DLW43MH Series
X2	Crystal Units XRC Series

DC-DC	
C4	Soft Termination MLSC Design Chip Multilayer Ceramic Capacitors for Automotive GCE Series
C4	MLSC Design Chip Multilayer Ceramic Capacitors for Automotive GCD Series
C4	Soft Termination Chip Multilayer Ceramic Capacitors for Automotive GCJ Series
C4	Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCM Series
C5	Chip Multilayer Ceramic Capacitors for Automotive GCM Series
S1	Thermistors NCU Series
L2	Power Inductors LQH/DFE Series

5 Engine ECU



DC-DC	
C1	MLSC Design Chip Multilayer Ceramic Capacitors for Automotive GCD Series
C1	Soft Termination MLSC Design Chip Multilayer Ceramic Capacitors for Automotive GCE Series
C1	Soft Termination Chip Multilayer Ceramic Capacitors for Automotive GCJ Series
C1	Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCM Series
L1	Chip Ferrite Beads BLM Series
L1	Power Inductors LQH/DFE Series

DC-DC	
C2	Chip Multilayer Ceramic Capacitors for Automotive GCM Series
S1	Thermistors NCU Series
Signal Line	
L2	Chip Ferrite Beads BLM Series
MCU/Sub MCU	
X1	Ceramic Resonators CERALOCK CST Series
X1	Crystal Units XRC Series

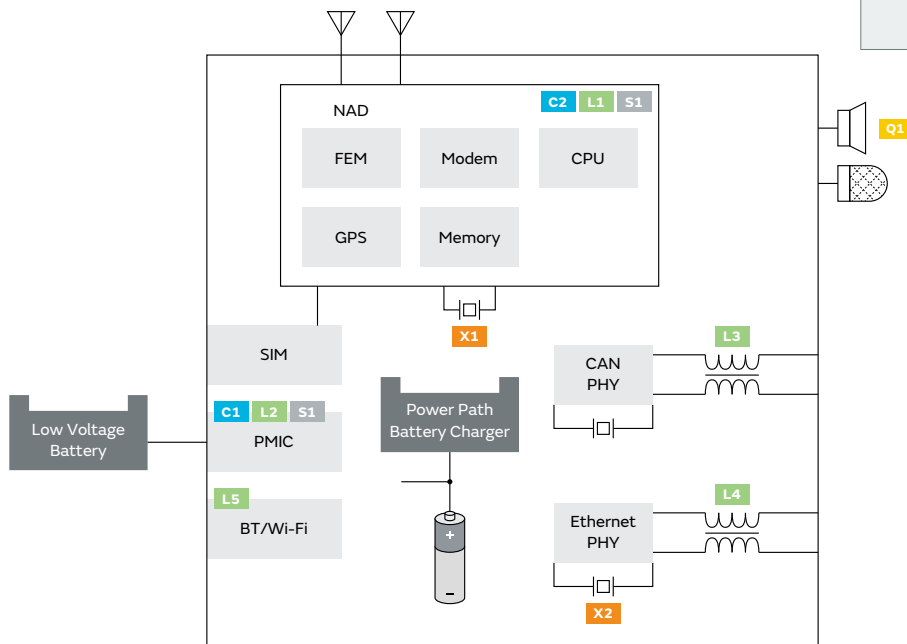
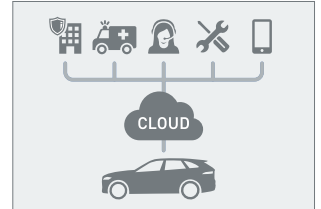
CAN	
L3	Chip Common Mode Choke Coils DLW32SH Series
L3	Chip Common Mode Choke Coils DLW43SH Series

Connected

1 TCU (Telematics control unit)

2 IVI (In vehicle infotainment)

1 TCU (Telematics control unit)

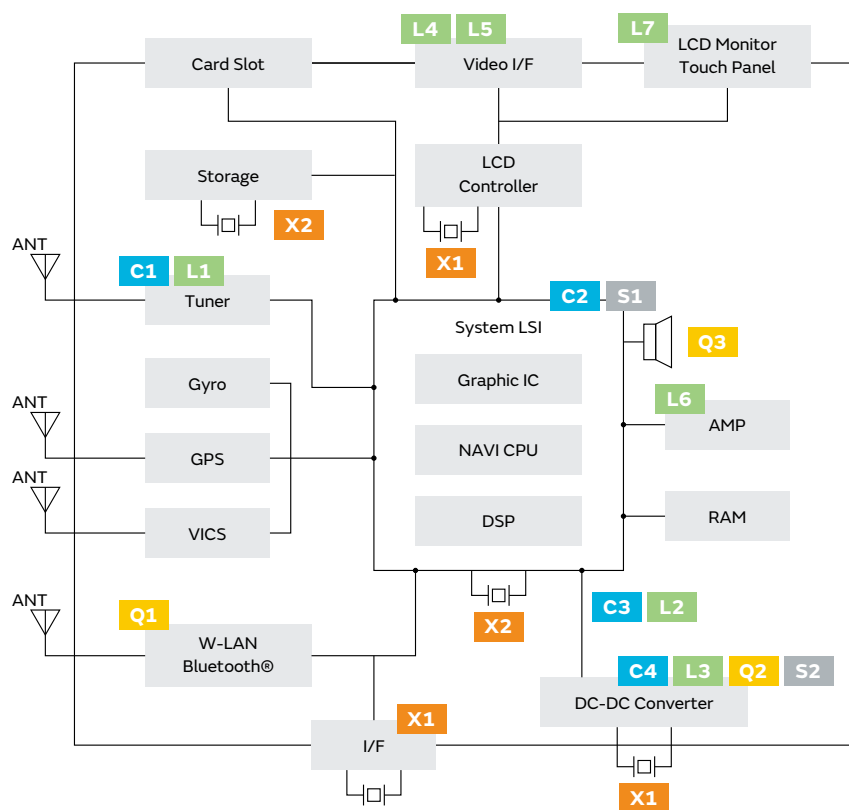
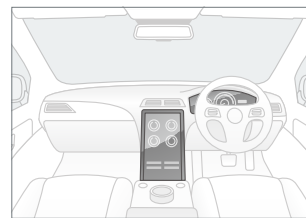


PMIC	
C1	Soft Termination Chip Multilayer Ceramic Capacitors for Automotive GCJ Series
C1	Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCM Series
C1	Chip Multilayer Ceramic Capacitors for Automotive GCM Series
C1	AEC-Q200 Compliant 3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for Infotainment NFM Series
L2	Chip Inductors (Chip Coils) LQM/LQH/DFE Series
L2	Chip Ferrite Beads BLM Series
S1	Thermistors NCU Series

BT/Wi-Fi	
L5	Chip Inductors (Chip Coils) LQW/LQP/LQG Series
NAD	
C2	AEC-Q200 Compliant 3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for Infotainment NFM Series
C2	Chip Multilayer Ceramic Capacitors for Automotive GCM Series
L1	Chip Inductors (Chip Coils) LQW/LQP/LQG Series
S1	Thermistors NCU Series
Q1	Piezoelectric Sounders PKLCS/PKMCS Series

CAN	
L3	Chip Common Mode Choke Coils DLW32SH Series
L3	Chip Common Mode Choke Coils DLW43SH Series
Ethernet	
L4	Chip Common Mode Choke Coils DLW32MH Series
L4	Chip Common Mode Choke Coils DLW43MH Series
Timing Device	
X1	Ceramic Resonators CERALOCK CST Series
X2	Crystal Units XRC Series

2 IVI (In vehicle infotainment)



Tuner

C1	High Q Chip Multilayer Ceramic Capacitors for Automotive GCQ Series	
L1	Chip Inductors (Chip Coils) LQW/LQP/LQG Series	
L1	Variable inductors 5CCEG Series	

Video I/F

L4	Chip Common Mode Choke Coils DLW21SZ Series	
L4	Chip Inductors (Chip Coils) LQW18C/LQM18J Series	
L4	Chip Inductors (Chip Coils) LQW32FT Series	
L4	Chip Inductors (Chip Coils) LQH Series	
L5	Chip Common Mode Choke Coils DLW32MH Series	
L5	Chip Common Mode Choke Coils DLW43MH Series	

System LSI

C2	AEC-Q200 Compliant 3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for Infotainment NFM Series	
C2	AEC-Q200 Compliant Chip Multilayer Ceramic Capacitors for Infotainment GRT Series	
S1	Thermistors NCU Series	
Q1	Piezoelectric Sounders PKLCS/PKMCS Series	

AMP	
L6	Power Inductors LQH/DEM/DFE Series
L6	Large-current Common Mode Choke Coils PLT10/PLT5B/DLW5A/ DLW5B/UCMH Series

DC-DC Converter	
C4	AEC-Q200 Compliant Chip Multilayer Ceramic Capacitors for Infotainment GRT Series
C4	AEC-Q200 Compliant 3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for Infotainment NFM Series
C4	Polymer Aluminum Electrolytic Capacitors ECAS Series
L3	Large-current Common Mode Choke Coils PLT10/PLT5B/DLW5A/ DLW5B/UCMH Series
L3	Chip Ferrite Beads BLM Series
S2	Thermistors NCU Series
Q2	Non-Isolated DC-DC Converters MYMGK/MYSGK/OKL/ MYLSM Series

Secondary	
C3	AEC-Q200 Compliant 3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for Infotainment NFM Series
C3	AEC-Q200 Compliant Chip Multilayer Ceramic Capacitors for Infotainment GRT Series
C3	Polymer Aluminum Electrolytic Capacitors ECAS Series
L2	Chip Inductors (Chip Coils) LQM/LQH/DFE Series
L2	Chip Ferrite Beads BLM Series

Timing Device	
X1	Ceramic Resonators CERALOCK CST Series
X2	Crystal Units XRC Series

Connectivity	
Q3	Bluetooth® - Wi-Fi Combo Modules

LCD Monitor Touch Panel	
L7	LC combined filters NFL Series

AD & ADAS

1

ADAS (Advanced driver assist system)

2

IPA (Intelligent parking assist)

3

Lidar

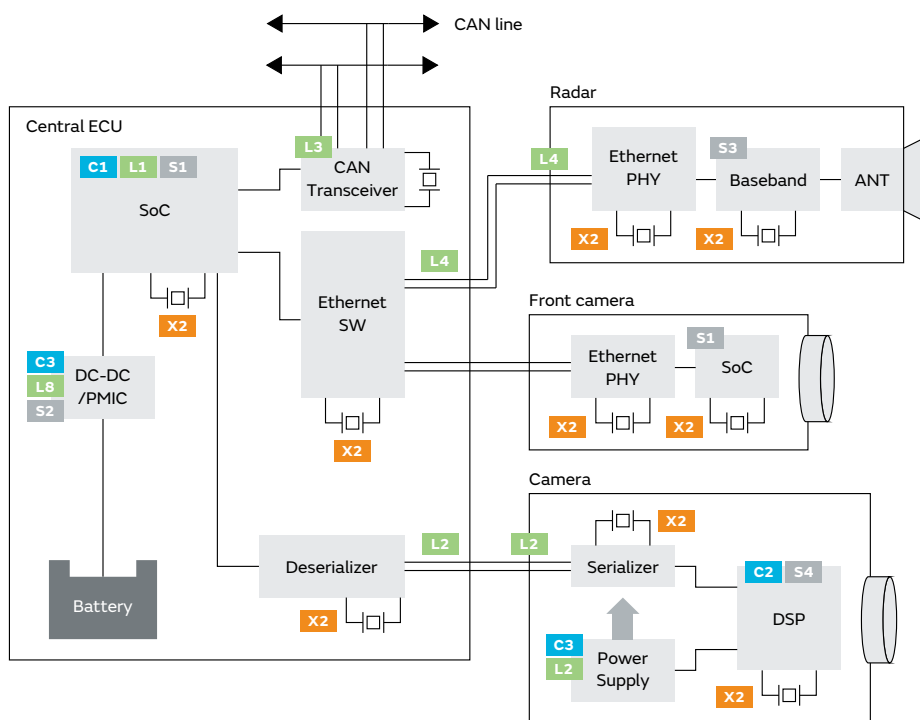
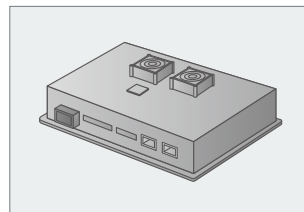
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Radar

5

Front camera

1 ADAS (Advanced driver assist system)



SoC

C1 3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for Automotive NFM Series

C1 Chip Multilayer Ceramic Capacitors for Automotive GCM Series

L1 Chip Ferrite Beads BLM Series

S1 Thermistors NCU Series


DC-DC/PMIC

C3 Soft Termination Chip Multilayer Ceramic Capacitors for Automotive GCJ Series

C3 Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCM Series

C3 Chip Multilayer Ceramic Capacitors for Automotive GCM Series

C3 3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for Automotive NFM Series


DC-DC/PMIC

L8 Power Inductors LQH/DFE Series

S2 Thermistors NCU Series


Power Supply		
C3	Soft Termination Chip Multilayer Ceramic Capacitors for Automotive GCJ Series	
C3	Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCM Series	
C3	Chip Multilayer Ceramic Capacitors for Automotive GCM Series	
C3	3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for Automotive NFM Series	
L2	Chip Ferrite Beads BLM Series	
L2	Chip Inductors (Chip Coils) LQW18C/LQM18J Series	
L2	Chip Inductors (Chip Coils) LQW32FT Series	
L2	Chip Inductors (Chip Coils) LQH Series	

Baseband		
S3	Thermistors NCU Series	

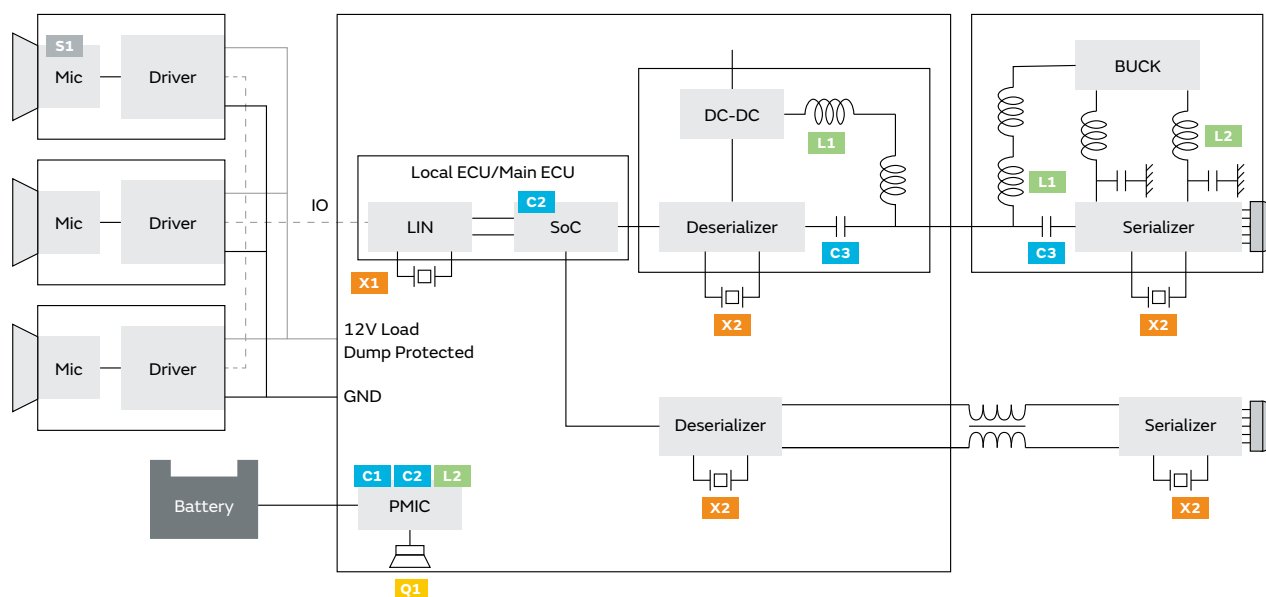
Timing Device		
X1	Ceramic Resonators CERALOCK CST Series	
X2	Crystal Units XRC Series	

DSP		
C2	AEC-Q200 Compliant Chip Multilayer Ceramic Capacitors for Infotainment GRT Series	
C2	3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for Automotive NFM Series	
S4	Thermistors NCU Series	

SerDes		
L2	Chip Ferrite Beads BLM Series	
L2	Chip Inductors (Chip Coils) LQW18C/LQM18J Series	
L2	Chip Inductors (Chip Coils) LQW32FT Series	
L2	Chip Inductors (Chip Coils) LQH Series	

CAN Transceiver		
L3	Chip Common Mode Choke Coils DLW32SH Series	
L3	Chip Common Mode Choke Coils DLW43SH Series	

Ethernet		
L4	Chip Common Mode Choke Coils DLW32MH Series	
L4	Chip Common Mode Choke Coils DLW43MH Series	



Mic	
S1	Ultrasonic Sensors MA58 Series 

PMIC		
C1	Soft Termination Chip Multilayer Ceramic Capacitors for Automotive GCJ Series	
C1	Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCM Series	
C1	Chip Multilayer Ceramic Capacitors for Automotive GCM Series	
C2	3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for Automotive NFM Series	
L2	Chip Inductors (Chip Coils) LQM/LQH/DFE Series	
Q1	Piezoelectric Sounders PKLCS/PKMCS Series	

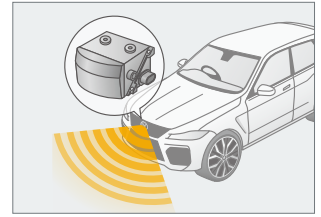
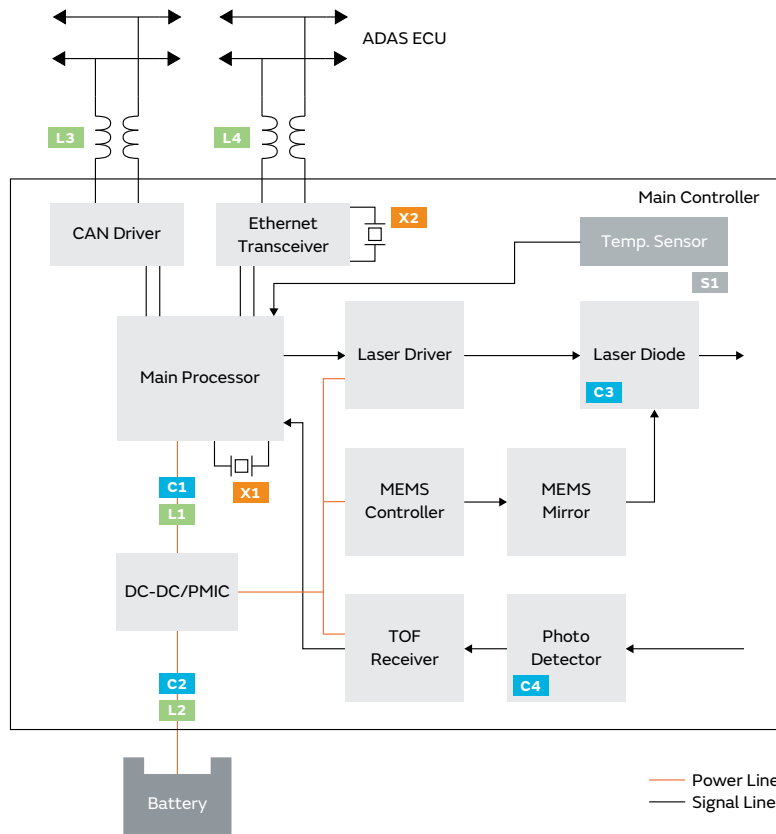
SoC		
C2	3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for Automotive NFM Series	
C2	Chip Multilayer Ceramic Capacitors for Automotive GCM Series	

PoC		
C3	Chip Multilayer Ceramic Capacitors for Automotive GCM Series	
L1	Chip Ferrite Beads BLM Series	
L1	Chip Inductors (Chip Coils) LQW18C/LQM18J Series	
L1	Chip Inductors (Chip Coils) LQW32FT Series	
L1	Chip Inductors (Chip Coils) LQH Series	

DC-DC	
L2	Chip Inductors (Chip Coils) LQM/LQH/DFE Series 

Timing Device		
X1	Ceramic Resonators CERALOCK CST Series	
X2	Crystal Units XRC Series	

3 Lidar



Battery Line

L2	Chip Common Mode Choke Coils DLW Series	
L2	Chip Ferrite Beads BLM Series	

Temperature Control

S1	Thermistors NCU Series	
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Gate Driver

C3	3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for Automotive NFM Series	
C3	Silicon Capacitors	

APD Bias Cap.

C4	Chip Multilayer Ceramic Capacitors for Automotive GCM Series	
C4	Soft Termination Chip Multilayer Ceramic Capacitors for Automotive GCJ Series	

CAN

L3	Chip Common Mode Choke Coils DLW32SH Series	
L3	Chip Common Mode Choke Coils DLW43SH Series	

Ethernet

L4	Chip Common Mode Choke Coils DLW32MH Series	
L4	Chip Common Mode Choke Coils DLW43MH Series	
X2	Crystal Units XRC Series	

Main Processor

X1	Ceramic Resonators CERALOCK CST Series	
X1	Crystal Units XRC Series	

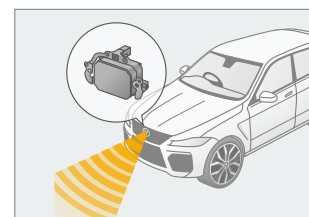
DC-DC/PMIC

C1	3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for Automotive NFM Series	
C1	Chip Multilayer Ceramic Capacitors for Automotive GCM Series	
L1	Chip Inductors (Chip Coils) LQM/LQH/DFE Series	

Battery Line

C2	MLSC Design Chip Multilayer Ceramic Capacitors for Automotive GCD Series	
C2	Soft Termination MLSC Design Chip Multilayer Ceramic Capacitors for Automotive GCE Series	
C2	Soft Termination Chip Multilayer Ceramic Capacitors for Automotive GCJ Series	
C2	Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCM Series	
C2	Chip Multilayer Ceramic Capacitors for Automotive GCM Series	
L2	Large-current Common Mode Choke Coils PLT10HH/PLT5BP Series	

4



Battery Line

- | | | |
|----|--|---|
| L2 | Chip Common Mode Choke Coils
DLW Series |  |
| L2 | Chip Ferrite Beads
BLM Series |  |

Temperature Control

- ## S1 Thermistors NCU Series

RFIC

- X2** Crystal Units
XRC Series

CAN

- | | | |
|----|---|---|
| L3 | Chip Common Mode
Choke Coils
DLW32SH Series |  |
| L3 | Chip Common Mode
Choke Coils
DLW43SH Series |  |

Ethernet

- | | |
|----|--|
| L3 | <p>Chip Common Mode
Choke Coils
DLW32MH Series</p>  |
| L3 | <p>Chip Common Mode
Choke Coils
DLW43MH Series</p>  |
| X3 | <p>Crystal Units
XRC Series</p>  |

Main Processor

- | | | |
|-----------|--|---|
| X1 | Ceramic Resonators
CERALOCK
CST Series |  |
| X1 | Crystal Units
XRC Series |  |

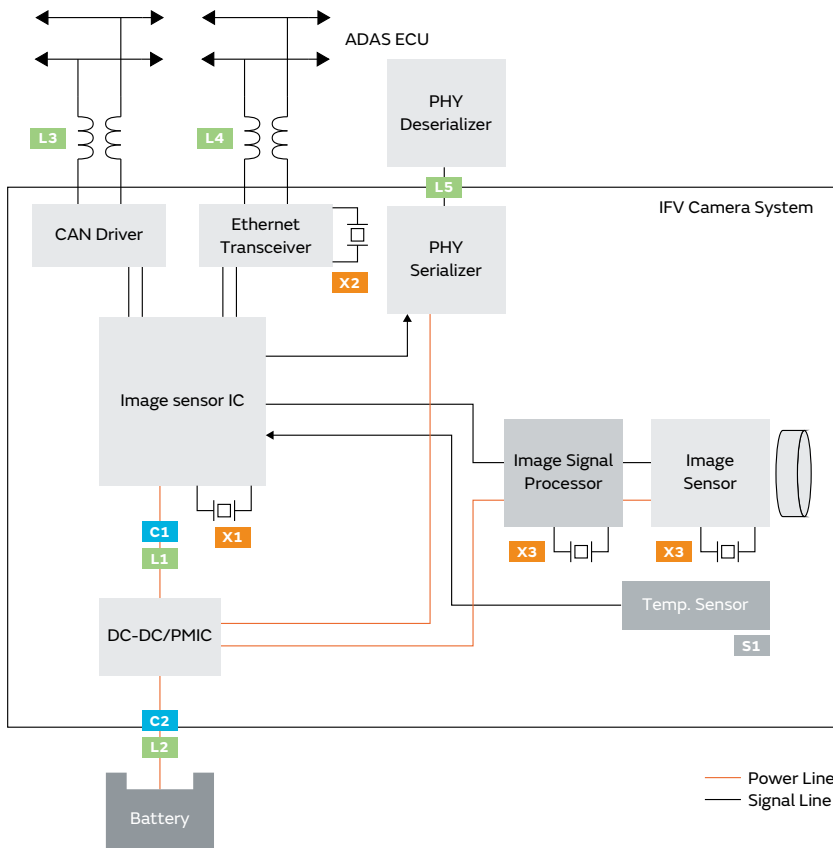
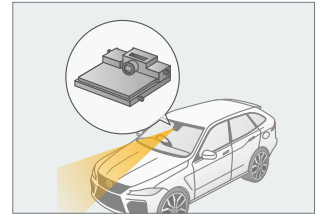
DC-DC/PMIC

- | | | |
|-----------|--|---|
| C1 | 3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for Automotive NFM Series |  |
| C1 | Chip Multilayer Ceramic Capacitors for Automotive GCM Series |  |
| L1 | Chip Inductors (Chip Coils) LQM/LQH/DFE Series |  |

Battery Line

- | | | |
|-----------|---|---|
| C2 | MLSC Design Chip Multilayer Ceramic Capacitors for Automotive GCD Series |  |
| C2 | Soft Termination MLSC Design Chip Multilayer Ceramic Capacitors for Automotive GCE Series |  |
| C2 | Soft Termination Chip Multilayer Ceramic Capacitors for Automotive GCJ Series |  |
| C2 | Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCM Series |  |
| C2 | Chip Multilayer Ceramic Capacitors for Automotive GCM Series |  |
| L2 | Large-current Common Mode Choke Coils
PLT10HH/PLT5BP Series |  |

5 Front camera



Battery Line	
L2	Large-current Common Mode Choke Coils PLT10HH/PLT5BP Series
L2	Chip Common Mode Choke Coils DLW Series
L2	Chip Ferrite Beads BLM Series

Power over Coax	
L5	Chip Inductors (Chip Coils) LQW Series

Temperature Control	
S1	Thermistors NCU Series

Image Sensor/ISP	
X3	Crystal Units XRC Series

CAN	
L3	Chip Common Mode Choke Coils DLW32SH Series
L3	Chip Common Mode Choke Coils DLW43SH Series

Ethernet	
L4	Chip Common Mode Choke Coils DLW32MH Series
L4	Chip Common Mode Choke Coils DLW43MH Series
X2	Crystal Units XRC Series

Image sensor IC	
X1	Crystal Units XRC Series

DC-DC/PMIC	
C1	3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for Automotive NFM Series
C1	Chip Multilayer Ceramic Capacitors for Automotive GCM Series
L1	Chip Inductors (Chip Coils) LQM/LQH/DFE Series

Battery Line	
C2	MLSC Design Chip Multilayer Ceramic Capacitors for Automotive GCD Series
C2	Soft Termination MLSC Design Chip Multilayer Ceramic Capacitors for Automotive GCE Series
C2	Soft Termination Chip Multilayer Ceramic Capacitors for Automotive GCJ Series
C2	Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCM Series
C2	Chip Multilayer Ceramic Capacitors for Automotive GCM Series

Other

1

Automotive lighting

2

EPS (Electric power steering)

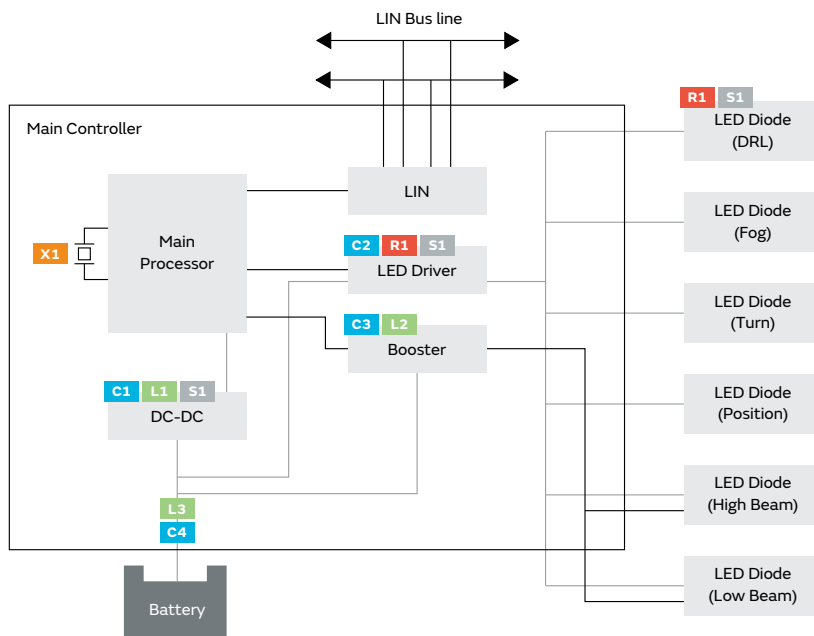
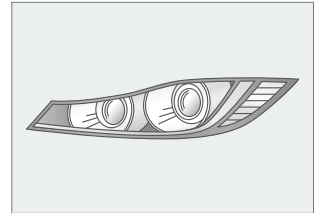
3

PKE / TPMS

4

Gateway / in-vehicle LAN

1 Automotive lighting



Booster

C3 Chip Multilayer Ceramic Capacitors for Automotive GCM Series



L2 Power Inductors LQH Series



LED Diode (DRL)

R1 Thermistors PRF/PRG Series



S1 Thermistors NCU Series



Primary

C4 Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCM Series



L3 Chip Ferrite Beads BLM Series



L3 Large-current Common Mode Choke Coils PLT10HH/PLT5BP Series



L3 Chip Common Mode Choke Coils DLW Series



Timing Device

X1 Ceramic Resonators CERALOCK CST Series



DC-DC

C1 Soft Termination Chip Multilayer Ceramic Capacitors for Automotive GCJ Series



C1 Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCM Series



C1 Chip Multilayer Ceramic Capacitors for Automotive GCM Series



L1 Power Inductors LQH Series



S1 Thermistors NCU Series



LED Driver

C2 Chip Multilayer Ceramic Capacitors for Automotive GCM Series



C2 Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCM Series



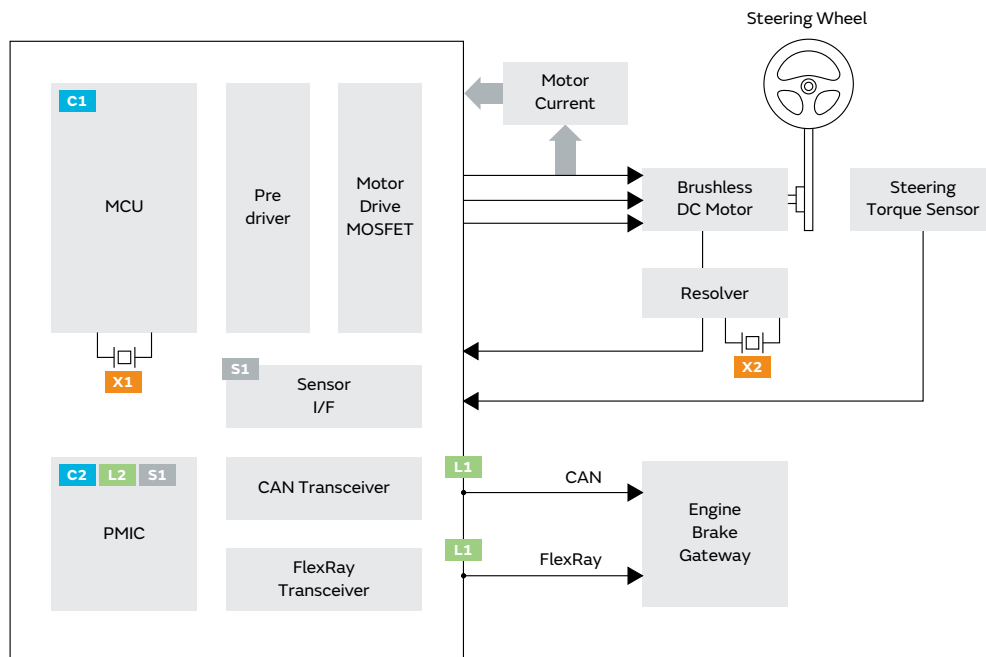
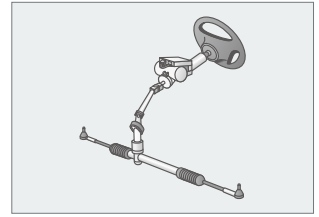
R1 Thermistors PRF/PRG Series



S1 Thermistors NCU Series



2 EPS (Electric power steering)

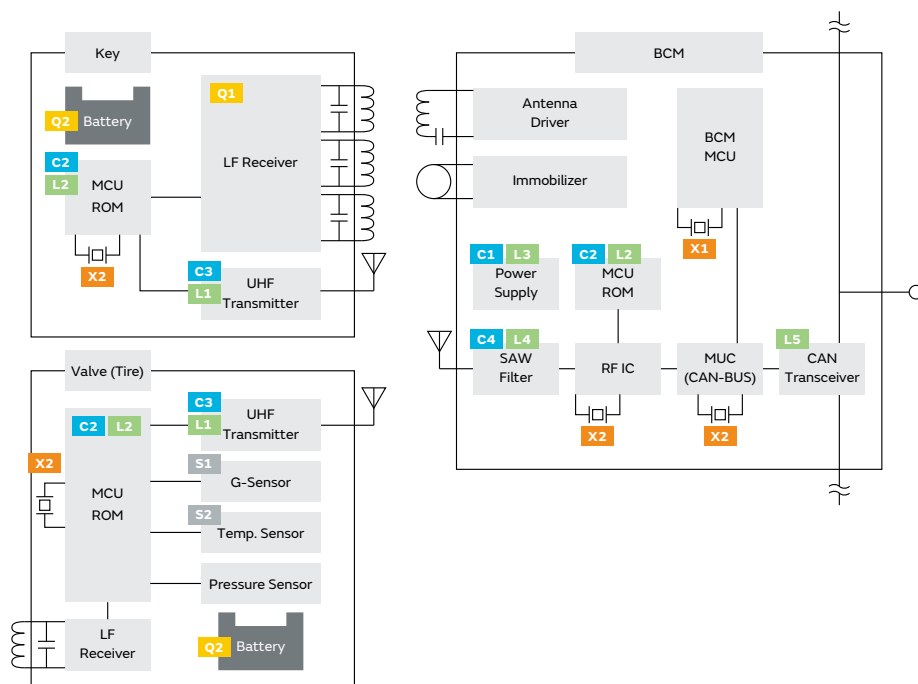
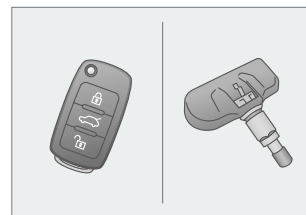


MCU		
C1	Chip Multilayer Ceramic Capacitors for Automotive GCM Series	
Timing Device		
X1	Ceramic Resonators CERALOCK CST Series	
X1	Crystal Units XRC Series	
X2	Ceramic Resonators CERALOCK CST Series	

PMIC		
C2	Soft Termination Chip Multilayer Ceramic Capacitors for Automotive GCJ Series	
C2	Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCM Series	
C2	Chip Multilayer Ceramic Capacitors for Automotive GCM Series	
L2	Chip Ferrite Beads BLM Series	
S1	Thermistors NCU Series	

PHY		
L1	Chip Common Mode Choke Coils DLW325H Series	
L1	Chip Common Mode Choke Coils DLW435H Series	
Sensor I/F		
S1	Thermistors NCU Series	

3 PKE / TPMS



LF Receiver

Q1 Antenna Coil
SA3D12/SA3D14 Series



UHF Transmitter

C3 High Q Chip Multilayer Ceramic Capacitors for Automotive GCQ Series



L1 Chip Inductors (Chip Coils)
LQW/LQP/LQG/LQB Series



MCU ROM

L2 Chip Inductors (Chip Coils)
LQW/LQP/LQG/LQB Series



C2 Chip Multilayer Ceramic Capacitors for Automotive GCM Series



G-Sensor

S1 Chip Multilayer Ceramic Capacitors for Automotive GCM Series



Temp. Sensor

S2 Thermistors
NCU Series



Power Supply

C1 Soft Termination Chip Multilayer Ceramic Capacitors for Automotive GCJ Series



C1 Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCM Series



C1 Chip Multilayer Ceramic Capacitors for Automotive GCM Series



L3 Chip Inductors (Chip Coils)
LQM/LQH/DFE Series



L3 Chip Ferrite Beads
BLM Series



SAW Filter

C4 High Q Chip Multilayer Ceramic Capacitors for Automotive GCQ Series



L4 Chip Inductors (Chip Coils)
LQW/LQP/LQG/LQB Series



CAN Transceiver

L5 Chip Common Mode Choke Coils
DLW32SH Series



L5 Chip Common Mode Choke Coils
DLW43SH Series



Timing Device

X1 Ceramic Resonators
CERALOCK
CST Series



X2 Crystal Units
XRC Series

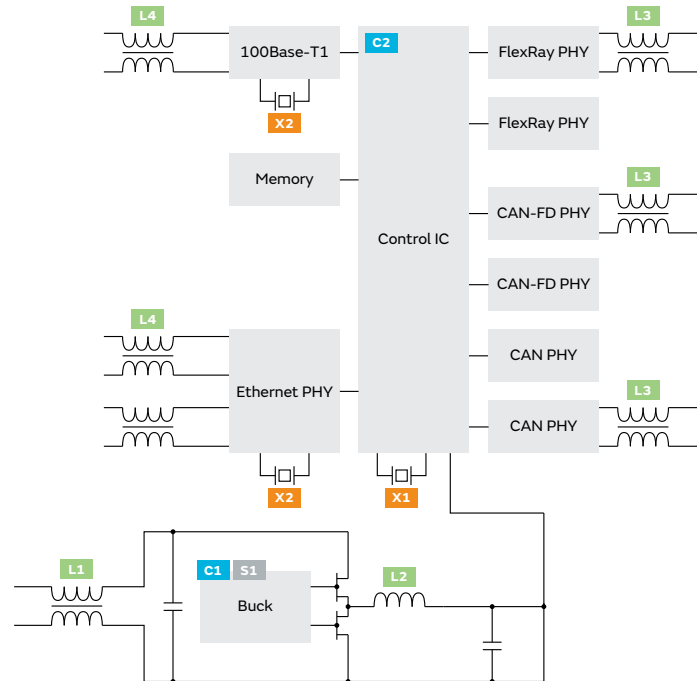
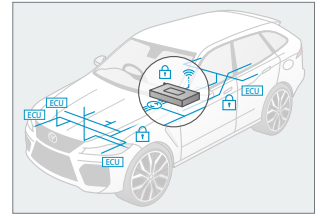


Battery

Q2 Coin Manganese Dioxide
Lithium Batteries
Heat-resistant Type/
Extended Temperature Type



4 Gateway / in-vehicle LAN



DC-DC		
C1	Soft Termination Chip Multilayer Ceramic Capacitors for Automotive GCJ Series	
C1	Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCM Series	
C1	Chip Multilayer Ceramic Capacitors for Automotive GCM Series	
L1	Large-current Common Mode Choke Coils PLT10HH/PLT5BP Series	
L1	Chip Common Mode Choke Coils DLW Series	
L2	Chip Inductors (Chip Coils) LQM/LQH/DFE Series	
S1	Thermistors NCU Series	

Control IC		
C2	Chip Multilayer Ceramic Capacitors for Automotive GCM Series	
C2	3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for Automotive NFM Series	

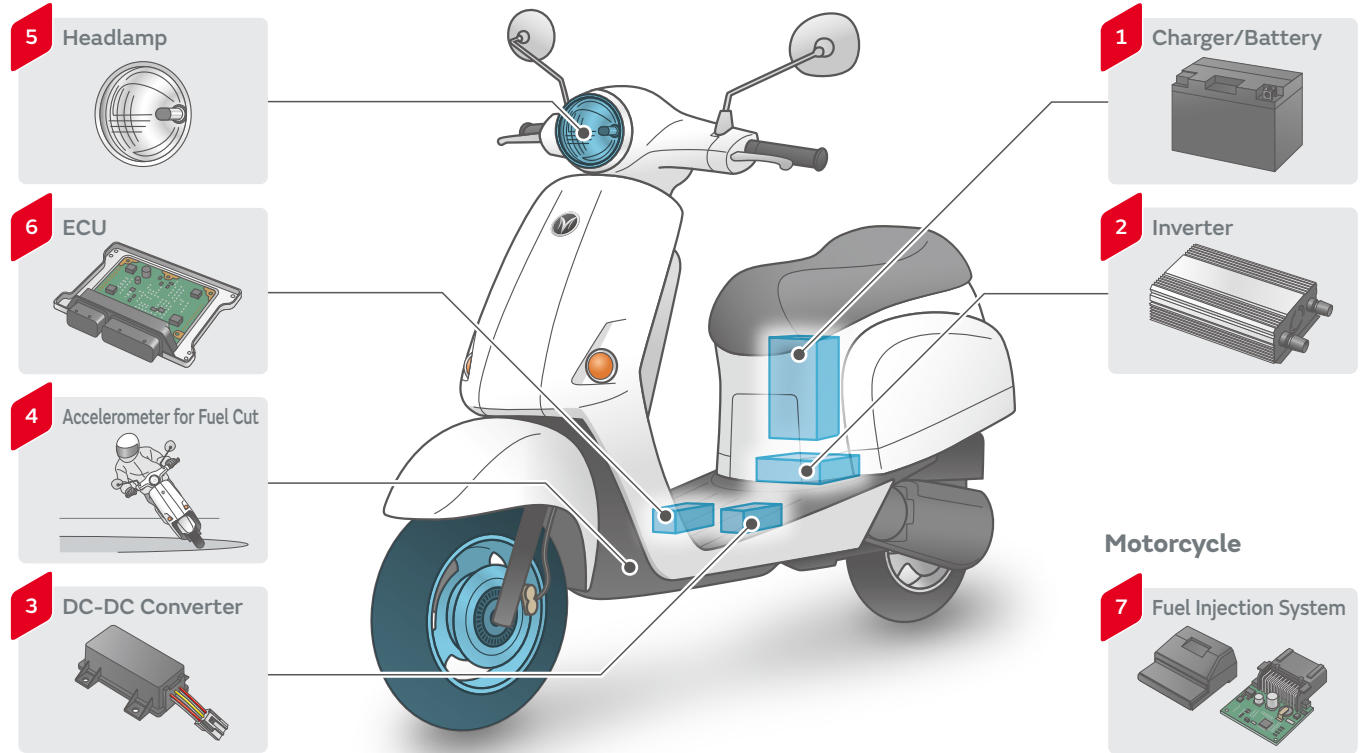
FlexRay/CAN/CAN-FD		
L3	Chip Common Mode Choke Coils DLW32SH Series	
L3	Chip Common Mode Choke Coils DLW43SH Series	

OBC/Ethernet		
L4	Chip Common Mode Choke Coils DLW32MH Series	
L4	Chip Common Mode Choke Coils DLW43MH Series	

Timing Device		
X1	Ceramic Resonators CERALOCK CST Series	
X2	Crystal Units XRC Series	

Motorcycle

E-Motorcycle



1 Charger/Battery

Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCM Series	Chip Multilayer Ceramic Capacitors for Automotive GCM Series	Soft Termination Chip Multilayer Ceramic Capacitors for Automotive GCJ Series	Safety Standard Certified Lead Type Disc Ceramic Capacitors for Automotive DE6 Series	Ceramic Resonators CERALOCK CST Series
Crystal Units XRC Series	Large-current Common Mode Choke Coils PLT10HH/PLT5BP Series	Thermistors PRF/NCU Series	High Reliability Chip Ferrite Beads BLM_SH1/BH1/TH1/JH1 Series	

2 Inverter

Chip Multilayer Ceramic Capacitors for Automotive GCM Series	Soft Termination Chip Multilayer Ceramic Capacitors for Automotive GCJ Series	AgPd Termination Conductive Glue Mounting Chip Multilayer Ceramic Capacitors for Automotive GCG Series	Ni Plating + Pd Plating Termination Conductive Glue Mounting Chip Multilayer Ceramic Capacitors for Automotive GCB Series	Crystal Units XRC Series
150°C/ 200°C Operation Leaded MLCC for Automotive RH Series	Large-current Common Mode Choke Coils PLT10HH/PLT5BP Series	Ceramic Resonators CERALOCK CST Series	High Reliability Chip Ferrite Beads BLM_SH1/BH1/TH1/JH1 Series	Thermistors PRF/NCU Series

3 DC-DC converter

Non-Isolated DC-DC Converters MYPMA Series 	Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCM Series 	Soft Termination Chip Multilayer Ceramic Capacitors for Automotive GCJ Series 	Chip Multilayer Ceramic Capacitors for Automotive GCM Series 	AgPd Termination Conductive Glue Mounting Chip Multilayer Ceramic Capacitors for Automotive GCG Series 
Ni Plating + Pd Plating Termination Conductive Glue Mounting Chip Multilayer Ceramic Capacitors for Automotive GCB Series 	Ceramic Resonators CERALOCK CST Series 	High Reliability Chip Ferrite Beads BLM_SH1/BH1/TH1/JH1 Series 	Thermistors PRF/NCU Series 	Large-current Common Mode Choke Coils PLT10HH/PLT5BP Series 
				Crystal Units XRC Series 
				Chip Inductors (Chip Coils) LQM/LQH/DFE Series 

4 Accelerometer for Fuel Cut

Accelerometers SCA Series 	Gyro Sensors SCC Series 	Chip Multilayer Ceramic Capacitors for Automotive GCM Series 	Ceramic Resonators CERALOCK CST Series 	Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCM Series 	Soft Termination Chip Multilayer Ceramic Capacitors for Automotive GCJ Series 
AgPd Termination Conductive Glue Mounting Chip Multilayer Ceramic Capacitors for Automotive GCG Series 		Ni Plating + Pd Plating Termination Conductive Glue Mounting Chip Multilayer Ceramic Capacitors for Automotive GCB Series 		Crystal Units XRC Series 	Thermistors NCU Series 
					High Reliability Chip Ferrite Beads BLM_SH1/BH1/TH1/JH1 Series 

5 Headlamp

Chip Multilayer Ceramic Capacitors for Automotive GCM Series 	Ceramic Resonators CERALOCK CST Series 	Soft Termination Chip Multilayer Ceramic Capacitors for Automotive GCJ Series 
Crystal Units XRC Series 	High Reliability Chip Ferrite Beads BLM_SH1/BH1/TH1/JH1 Series 	Thermistors NCU/PRG Series 

6 ECU

Chip Ferrite Beads BLM Series 	Power Inductor LQH/DFE Series 	Thermistors PRF/NCU Series 
	Ceramic Resonators CERALOCK CST Series 	Crystal Units XRC Series 

7 Fuel Injection ECU

Metal Terminal Type Multilayer Ceramic Capacitors for Automotive KCM Series 	Chip Multilayer Ceramic Capacitors for Automotive GCM Series 	Soft Termination Chip Multilayer Ceramic Capacitors for Automotive GCJ Series 	Ceramic Resonators CERALOCK CST Series 	Ni Plating + Pd Plating Termination Conductive Glue Mounting Chip Multilayer Ceramic Capacitors for Automotive GCB Series 
AgPd Termination Conductive Glue Mounting Chip Multilayer Ceramic Capacitors for Automotive GCG Series 		Thermistors NXF/NXR Series 	High Reliability Chip Ferrite Beads BLM_SH1/BH1/TH1/JH1 Series 	Crystal Units XRC Series 

General Purpose

General Purpose

AEC-Q 200 Compliant Chip Multilayer Ceramic Capacitors for Infotainment	GRT Series	Coupling/Decoupling	125°C
Chip Multilayer Ceramic Capacitors for Automotive	GCM Series	Coupling/Decoupling	125°C 150°C
Soft Termination Chip Multilayer Ceramic Capacitors for Automotive	GCJ Series	Coupling/Decoupling/For Step-up	125°C 150°C
High Q Chip Multilayer Ceramic Capacitors for Automotive	GCQ Series	High Frequency Filter Circuit	125°C
MLSC Design Chip Multilayer Ceramic Capacitors for Automotive	GCD Series	Coupling/Decoupling/For Step-up	125°C
Soft Termination MLSC Design Chip Multilayer Ceramic Capacitors for Automotive	GCE Series	Coupling/Decoupling/For Step-up	125°C
3 Terminals Low ESL Chip Multilayer Ceramic Capacitors for Automotive	NFM Series	Noise Suppression/Decoupling	125°C
AgPd Termination Conductive Glue Mounting Chip Multilayer Ceramic Capacitors for Automotive	GCG Series	Coupling/Decoupling/For Step-up	125°C 150°C
Leaded MLCC for Automotive	RCE Series	Noise Suppression/Decoupling	125°C
150°C/200°C Operation Leaded MLCC for Automotive	RH Series	Noise Suppression/Decoupling	125°C 150°C 175°C 200°C
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing /Transient Backup	105°C 125°C
Chip Ferrite Beads	BLM Series	Noise Suppression	125°C 150°C 175°C
Chip Ferrite Beads	NFZ Series	Noise Suppression	105°C 125°C
EMI Suppression Filters EMIFIL	NFL Series	Noise Suppression	125°C
EMI Suppression Filters EMIFIL	NFE Series	Noise Suppression	125°C
Chip Inductors (Chip Coils)	LQM/LQH/DFE Series	Voltage Conversion	85°C 105°C 125°C 150°C
Chip Inductors (Chip Coils)	LQW Series	Matching/High Frequency Choke	125°C
Piezoelectric Sounders	PKLCS/PKMCS Series	Sound Component	

Memo

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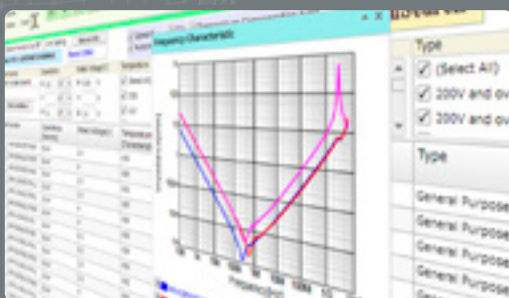
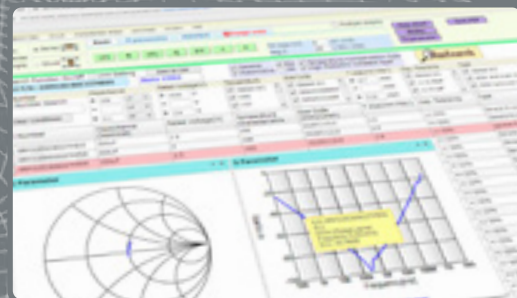
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[DFCH31G88HDJAA-RD1](#) [DFCH32G64HDNAA-RF1](#) [DFYH61G88HDHAB-RGB](#) [DFYH61G74HDHAA-RGB](#)
[DFCH31G64HDJAA-RF1](#) [DFCH32G15HDHAA-RF1](#) [DFCH31G74HDJAA-RD1](#) [DFCH4836MHDJAB-RF1](#)
[DFCH21G64HFHAA-RFB](#) [DFCH32G44HDHAA-RF1](#) [DFCH32G14HDHAA-RF1](#) [DFCH31G54HDJAA-RF1](#)
[DFCH31G95HDHAA-RF1](#) [DFCH41G84HDJAA-RF1](#) [DFCH41G88HDJAA-RF1](#) [DFCH3815MHDJAA-RF1](#)
[DFCH32G62HDNAA-RF1](#) [DFCH31G84HDJAA-RD1](#) [DFCH3897MHDJAA-RF1](#) [DFYH5897MHDJAA-RGB](#)
[DFCH31G63HDJAA-TT1](#) [DFCH3866MHDJAA-RF1](#) [DFCH2866MHDJAA-RF1](#) [DFCH3942MHDJAA-RF1](#)
[DFCH3947MHDJAA-TT1](#) [DFCH3881MHDJAA-RF1](#) [DFCH3897MHDJAA-TT1](#) [DFCH31G96HDJAA-TT1](#)
[DFYH61G88HDHAA-RGB](#) [DFYH61G74HDHAB-RGB](#) [DFYH7836MHCJAA-RG1](#) [LDD211G3703A-088](#)
[DFCH31G61HDHAA-RF1](#) [DFYH7815MHDJAA-RHB](#) [DFCH22G44HDHAA-RD1](#) [DFCH4897MHDJAB-RF1](#)
[DFCH3860MHDJAA-TT1](#) [DFCH21G57HDHAA-RF1](#) [DFCH4881MHDJAA-RF1](#) [DFCH42G35HDHAA-RF1](#)
[DFCH31G55HFHAA-RFB](#) [DFCH42G31HDHAA-RF1](#) [DFYH7836MHDJAD-RHB](#) [DFCH3860MHDJAA-RF1](#)
[DFCH3836MHDJAA-RF1](#) [DFCH41G96HDJAA-RF1](#) [DFCH31G96HDJAA-RD1](#) [DFCH21G57HDJAA-RD1](#)
[DFYH6902MHDJAA-RGB](#) [DFCH2915MHDJAA-RF1](#) [DFCH3888MHDJAA-RF1](#) [LDD211G4003A-087](#)
[DFCH32G49HFHAA-RFB](#) [LDD211G6203A-086](#) [LDD211G6103A-095](#) [DFCH4836MHDJAB-TT1](#) [DFCH3947MHDJAA-](#)
[RF1](#) [DFCH32G59HDHBA-RF1](#) [DFCH3915MHDJAC-RF1](#) [DFCH21G61HDJAA-RD1](#) [DFCH42G59HDHAA-RF1](#)
[DFCH4902MHDJAA-RF1](#) [DFYH7836MHDJAB-RHB](#) [DFCH3902MHDJAA-RF1](#) [DFYH5902MHDJAA-RGB](#)
[DFCH4947MHDJAA-RF1](#) [DFCH4942MHDJAA-RF1](#) [DFCH41G74HDJAA-RF1](#) [DFCH22G15HDHAB-RF1](#)
[DFCH21G57HDJAC-RD1](#) [DFCH22G01HDJAARD1](#) [DFCH22G45HDHAARD1](#) [DFCH32G01HDNAARF1](#)
[DFCH32G45HDHAARF1](#) [DFCH4897MHDJAARF1](#) [DFCH3915MHDJAC-RF1-P](#) [DFCH51G73HDNBA-RFB](#)
[DFCH51G76HDNBA-RFB](#) [DFCH51G88HDNAA-RFB](#) [DFCH51G95HDNBA-RFB](#) [DFCH52G43HFHAA-TM1](#)
[DFCH52G59HFHAA-RHB](#) [DFYH7836MHDJAC](#) [DFCH52G59HFHAA-TM1](#) [DFCH2915MHDJAB-RF1](#)