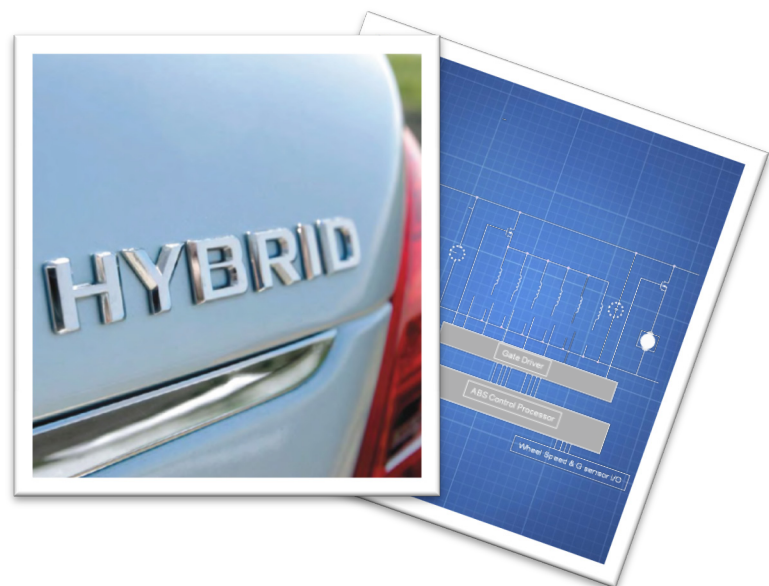


EV/HEV/PHEV

MLCC Application Spotlight

Version A12

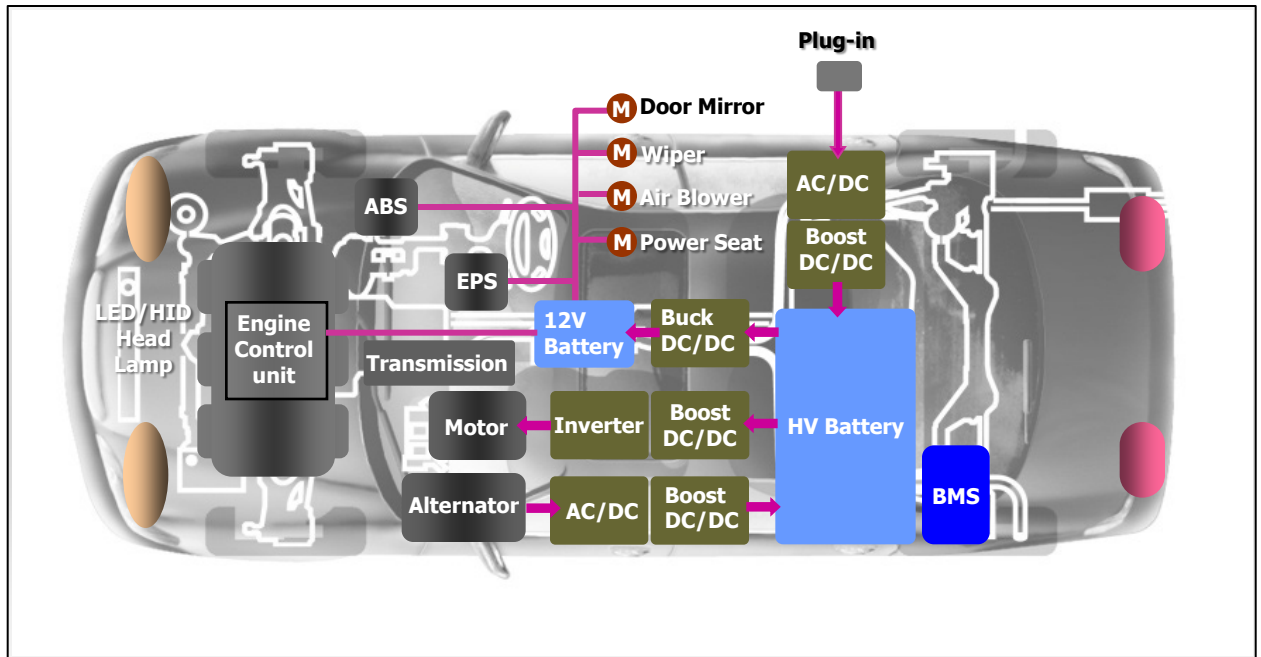
DC/DC Converter
Power Inverter
Electric Power Steering
AC/DC Battery Charger
Battery Management
Regenerative Charging
Automotive Lighting



Introduction

DC/DC Converter
 Power Inverter
 Electric Power Steering
 AC/DC Battery Charger
 Battery Management
 Regenerative Charging
 Automotive Lighting

General Capacitor
 Mid Voltage Capacitor
 High Voltage Capacitor
 High Temp. Capacitor
 Open Mode Capacitor
 Soft Term. Capacitor
 2in1 Array Capacitor
 Serial Design Capacitor
 Mega Cap Capacitor



TDK MLCC Solution for EV/HEV/PHEV Application



General Capacitor (C/CGA)



- Up to 47 μ F
- High performance applications
- Electrolytic replacement
- 6.3V to 50V

Mid & High Voltage (C/CGA)



- Mid Voltage: 100V, 250V, 450V, 630V
- High Voltage: 1000V, 2000V, 3000V
- Lower ESR than Ta
- Up to 15 μ F

High Temperature (C/CGA)



- Stable temperature characteristics up to 150 $^{\circ}$ C
- Available 16V~100V
- Up to 10 μ F
- Safe for automotive underhood application

Array Type (CKC)



- 2-in-1 construction
- Multiple independent caps
- Available in Soft Termination
- Reduce mounting area

Open Mode (C/CGA)



- Same material and manufacturing
- Increased internal gap
- Reduces risk of short
- Available in X7R & X8R up to 22 μ F

Soft Termination (C/CGA)



- Additional conductive resin layer
- Absorb thermal & mechanical stress
- Reduce solder crack
- Higher bending strength

Mega Cap Type (CKG)



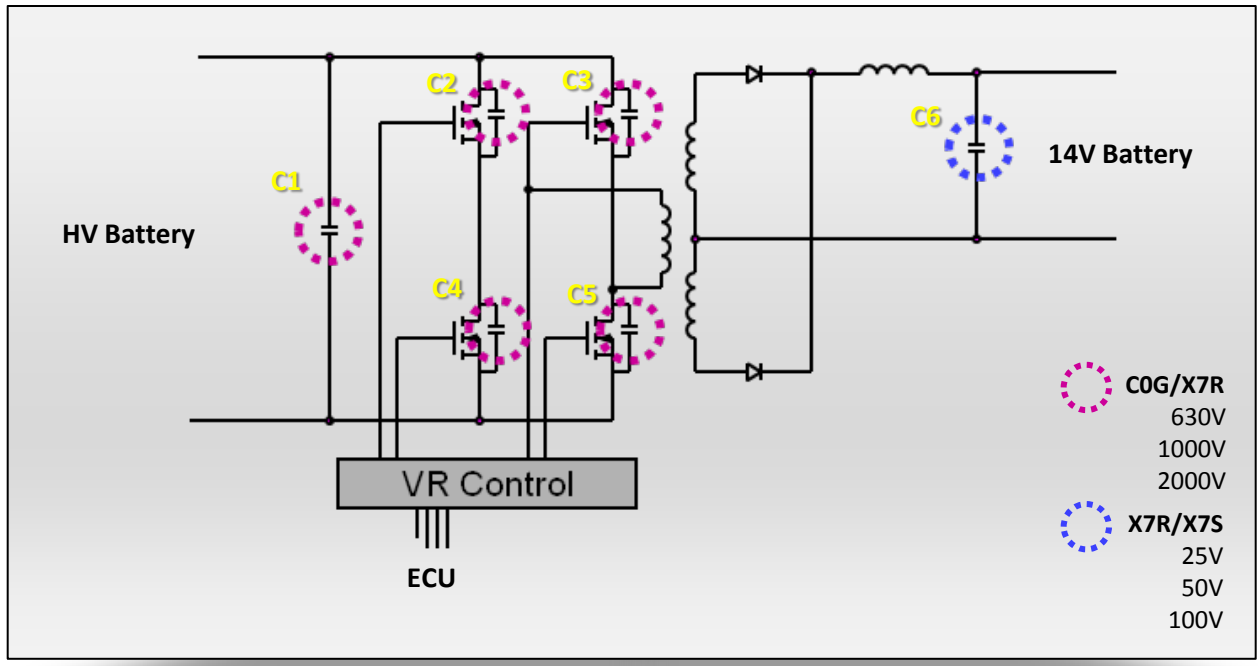
- Single and double stacked
- Absorb thermal & mechanical stress
- Absorb piezoelectric
- Electrolytic replacement

Serial Construction Type (CEU)



- Internal serial construction
- Soft termination reduce solder crack
- Improved bending strength
- Design for automotive battery line

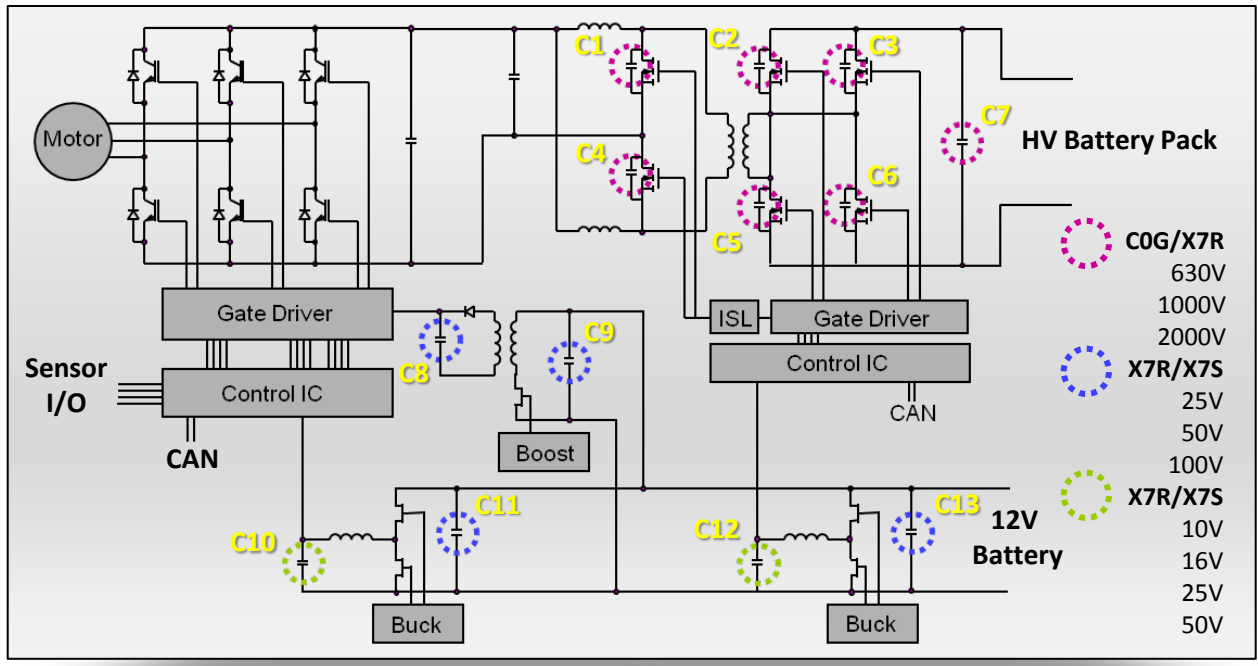




DC/DC Converter

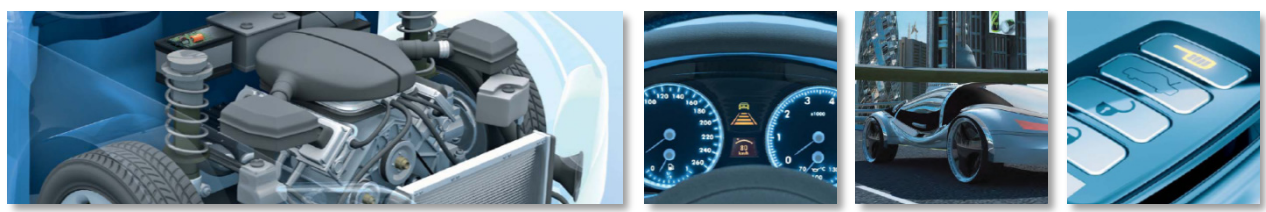


Designation	Series	Description	Product Guide	Item List
C1, C2, C3, C4, C5, C6	Mid Volt	100V - 630V; C0G		
		100V - 630V; X7R/X7S/X7T		
		100V - 630V; Mega Cap		
C6	General	50V; C0G		
		6.3V - 50V; X7R/X7S		
		6.3V - 50V; X5R		
Option	High Voltage	1000V - 3000V; X7R/X7S/C0G		
Option	High Temp	16V - 100V; X8R (150C)		
		25V - 50V; C0G (150C)		
Option	Open Mode	16V - 100V; X7R		
		50V; X8R (150C)		
Option	Soft Term	16V - 630V; X7R/X7S/X7T		
		50V - 100V; C0G; 2:1 Array		
		50V - 100V; X7R; 2:1 Array		
		50V; X8R; 2:1 Array		
		50V - 100V; X7R; Serial Design		
Option	CEU	50V - 100V; X7R; Serial Design		
Option	Mega Cap	16V - 630V; X7R/X7S/X7T		

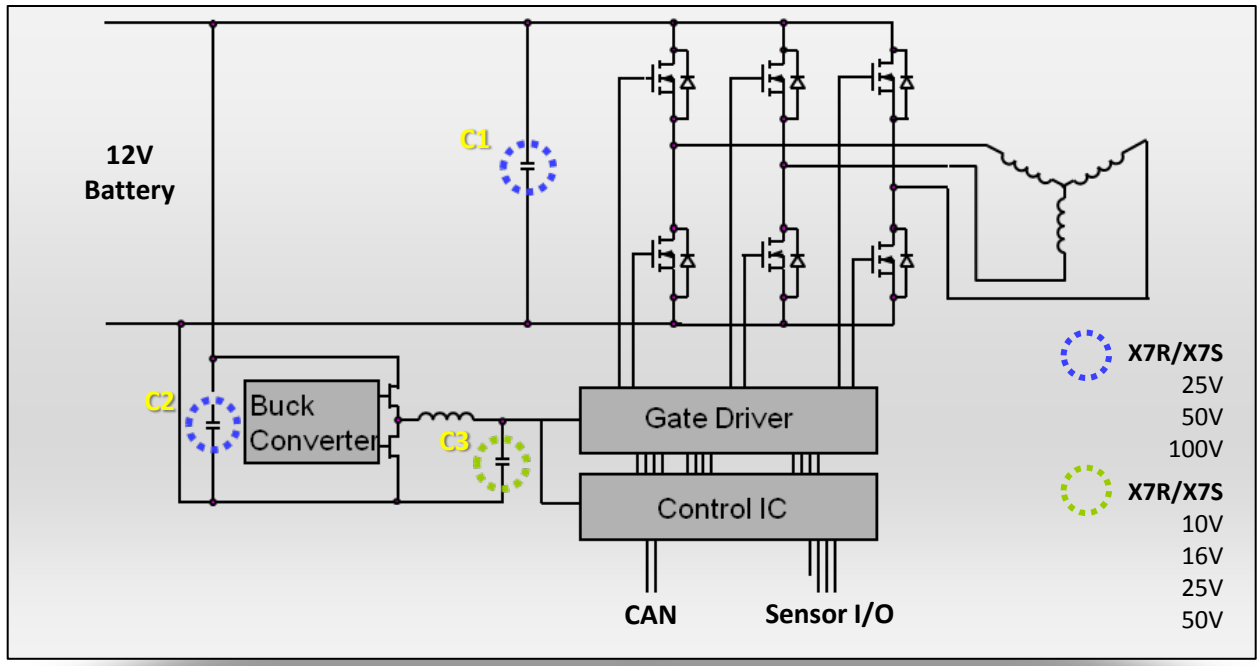


- COG/X7R
630V
1000V
2000V
- X7R/X7S
25V
50V
100V
- X7R/X7S
10V
16V
25V
50V

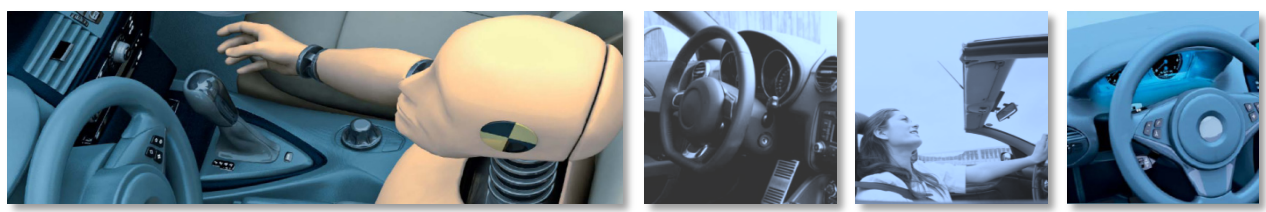
Power Inverter



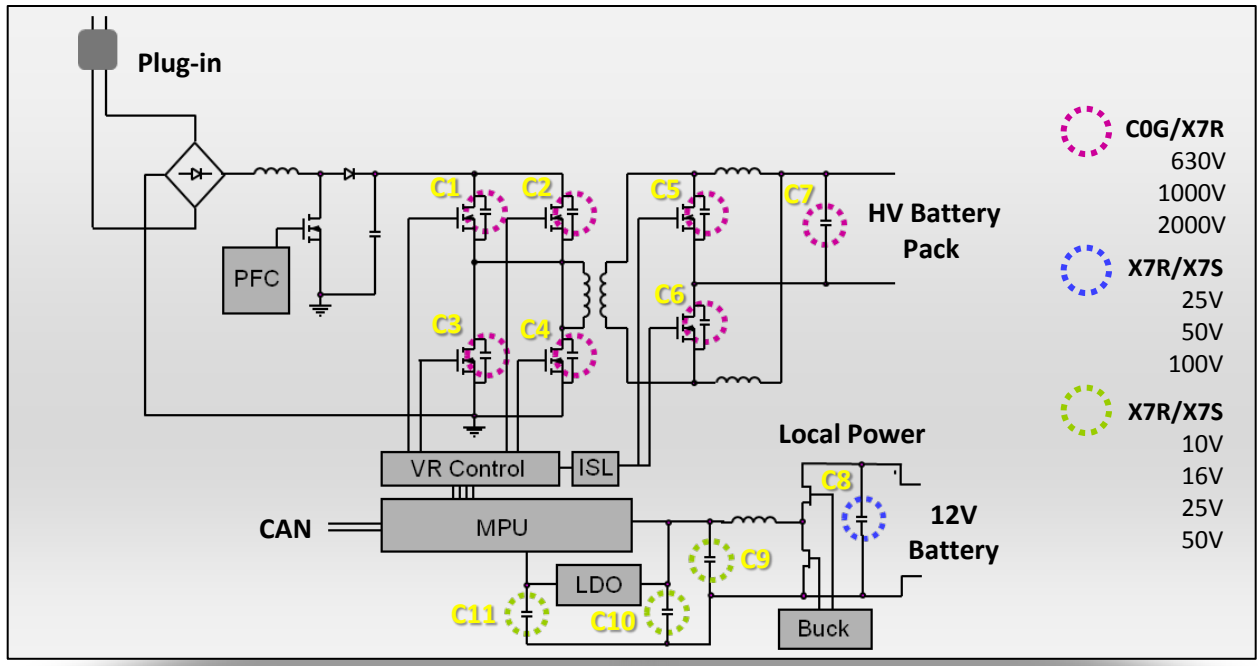
Designation	Series	Description	Product Guide	Item List
C1, C2, C3, C4, C5, C6, C7, C8, C9, C11	Mid Volt	100V - 630V; C0G		
		100V - 630V; X7R/X7S/X7T		
		100V - 630V; Mega Cap		
C8, C9, C10, C11, C12, C13	General	50V; C0G		
		6.3V - 50V; X7R/X7S		
		6.3V - 50V; X5R		
Option	High Voltage	1000V - 3000V; X7R/X7S/C0G		
Option	Mega Cap	16V - 630V; X7R/X7S/X7T		
Option	Open Mode	16V - 100V; X7R		
		50V; X8R (150C)		
Option	Soft Term	16V - 630V; X7R/X7S/X7T		
		50V - 100V; C0G; 2:1 Array		
		50V - 100V; X7R; 2:1 Array		
		50V; X8R; 2:1 Array		
Option	2:1 Array	50V - 100V; X7R; Serial Design		
		50V - 100V; C0G; 2:1 Array		
		10V - 100V; X7R; 2:1 Array		
Option	CEU	50V; X8R; 2:1 Array		
		50V - 100V; X7R; Serial Design		



Electric Power Steering



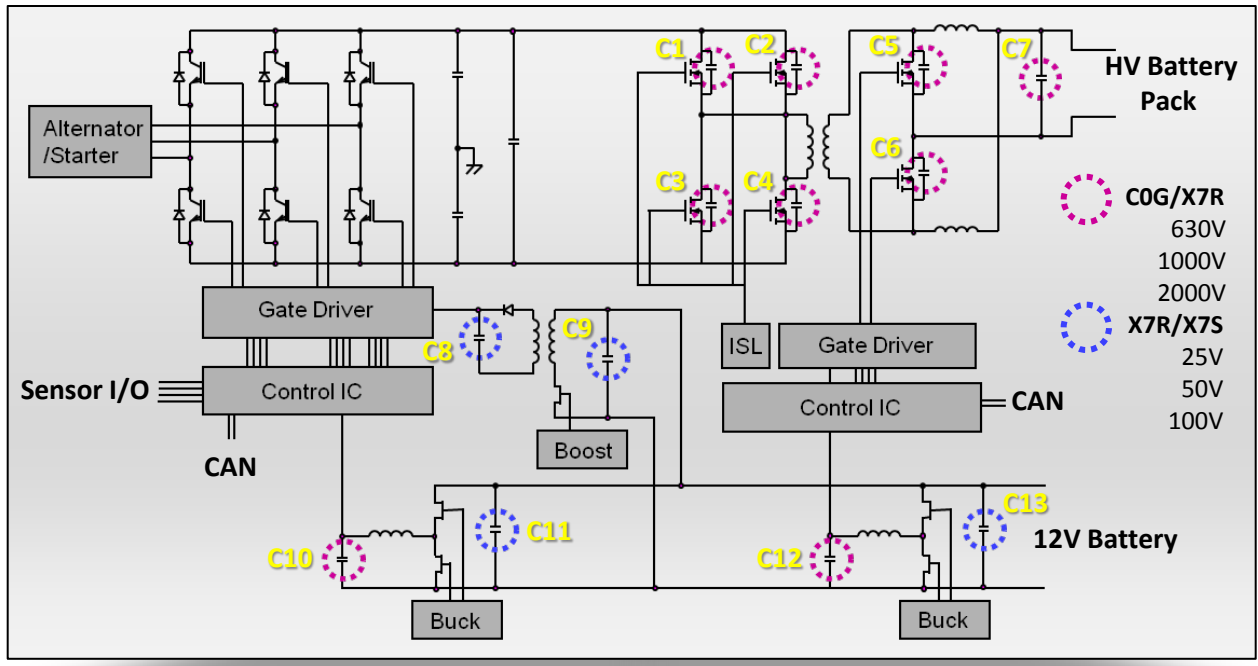
Designation	Series	Description	Product Guide	Item List
C1, C2, C3	General	50V; C0G		
		6.3V - 50V; X7R/X7S		
		6.3V - 50V; X5R		
C1, C2	Mid Volt	100V - 630V; C0G		
		100V - 630V; X7R/X7S/X7T		
		100V - 630V; Mega Cap		
Option	Open Mode	16V - 100V; X7R		
Option	Open Mode	50V; X8R (150C)		
Option	Mega Cap	16V - 630V; X7R/X7S/X7T		
Option	Soft Term	16V - 630V; X7R/X7S/X7T		
		50V - 100V; C0G; 2:1 Array		
		50V - 100V; X7R; 2:1 Array		
		50V; X8R; 2:1 Array		
Option	2:1 Array	50V - 100V; X7R; Serial Design		
		50V - 100V; C0G; 2:1 Array		
		10V - 100V; X7R; 2:1 Array		
Option	CEU	50V; X8R; 2:1 Array		
		50V - 100V; X7R; Serial Design		



AC/DC Battery Charger



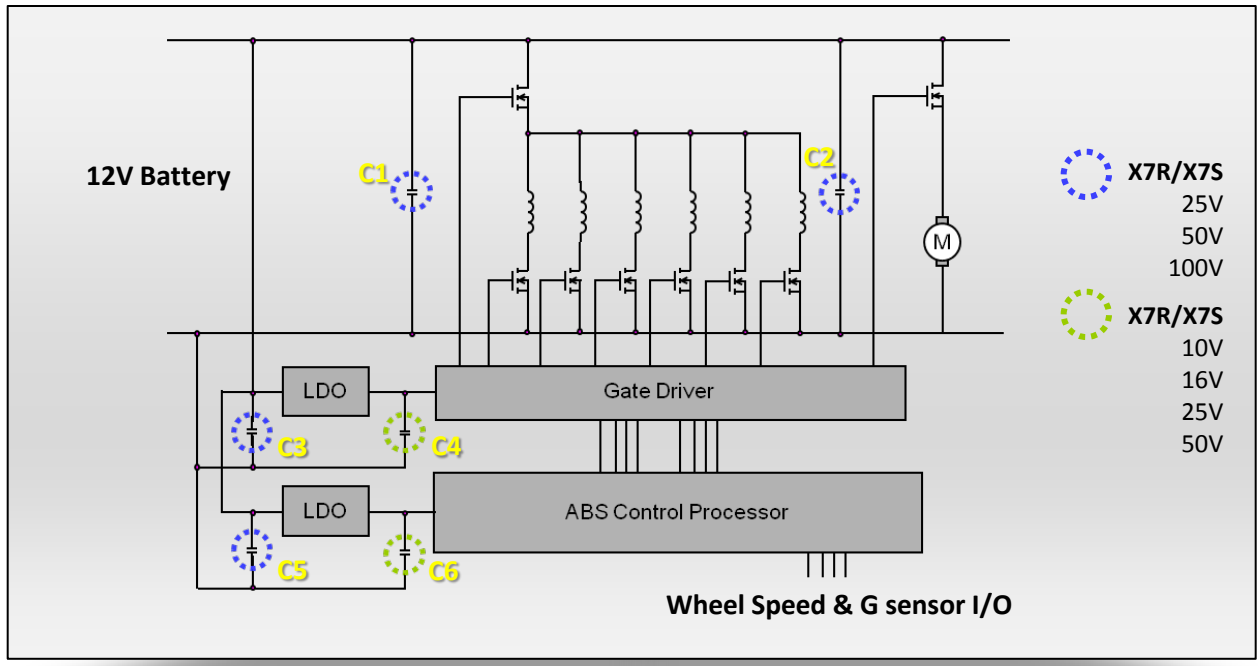
Designation	Series	Description	Product Guide	Item List
C1, C2, C3, C4, C5, C6, C7, C8	Mid Volt	100V - 630V; C0G		
		100V - 630V; X7R/X7S/X7T		
		100V - 630V; Mega Cap		
C8, C9, C10, C11	General	50V; C0G		
		6.3V - 50V; X7R/X7S		
		6.3V - 50V; X5R		
Option	High Voltage	1000V - 3000V; X7R/X7S/C0G		
Option	High Temp	16V - 100V; X8R (150C)		
		25V - 50V; C0G (150C)		
Option	Open Mode	16V - 100V; X7R		
		50V; X8R (150C)		
Option	Mega Cap	16V - 630V; X7R/X7S/X7T		
		16V - 630V; X7R/X7S/X7T		
		50V - 100V; C0G; 2:1 Array		
		50V - 100V; X7R; 2:1 Array		
		50V; X8R; 2:1 Array		
Option	Soft Term	50V - 100V; X7R; Serial Design		
		50V - 100V; X7R; 2:1 Array		
		50V - 100V; X7R; Serial Design		
Option	2:1 Array	50V - 100V; C0G; 2:1 Array		
		10V - 100V; X7R; 2:1 Array		
		50V; X8R; 2:1 Array		
Option	CEU	50V - 100V; X7R; Serial Design		



Battery Management System



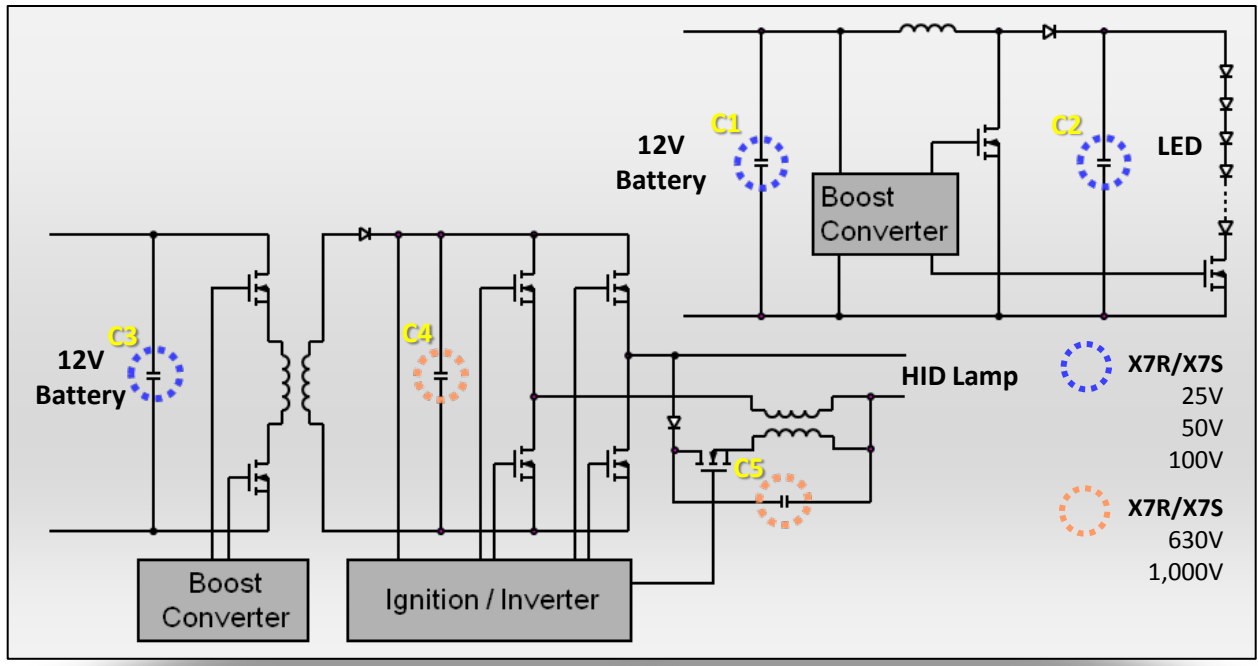
Designation	Series	Description	Product Guide	Item List
C1, C2, C3, C4, C5, C6, C7, C8, C9, C11	Mid Volt	100V - 630V; C0G		
		100V - 630V; X7R/X7S/X7T		
		100V - 630V; Mega Cap		
C8, C9, C10, C11, C12, C13	General	50V; C0G		
		6.3V - 50V; X7R/X7S		
		6.3V - 50V; X5R		
Option	High Voltage	1000V - 3000V; X7R/X7S/C0G		
Option	High Temp	16V - 100V; X8R (150C)		
		25V - 50V; C0G (150C)		
Option	Open Mode	16V - 100V; X7R		
		50V; X8R (150C)		
Option	Mega Cap	16V - 630V; X7R/X7S/X7T		
		16V - 630V; X7R/X7S/X7T		
		50V - 100V; C0G; 2:1 Array		
		50V - 100V; X7R; 2:1 Array		
		50V; X8R; 2:1 Array		
Option	2:1 Array	50V - 100V; X7R; Serial Design		
		50V - 100V; C0G; 2:1 Array		
		10V - 100V; X7R; 2:1 Array		
Option	CEU	50V; X8R; 2:1 Array		
		50V - 100V; X7R; Serial Design		



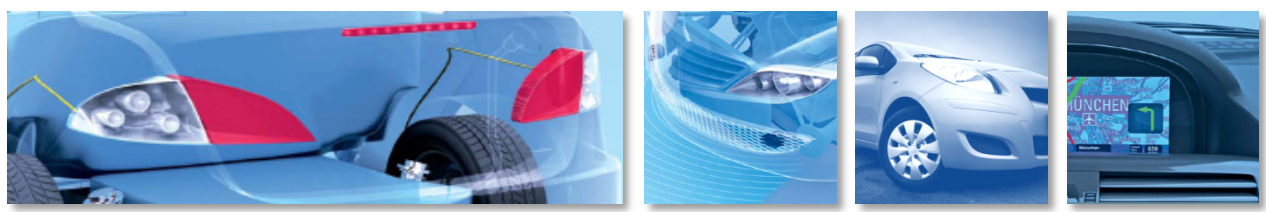
Regenerative Charging



Designation	Series	Description	Product Guide	Item List
C1, C2, C3, C4, C5, C6	General	50V; C0G		
		6.3V - 50V; X7R/X7S		
		6.3V - 50V; X5R		
C1, C2, C3, C5	Mid Volt	100V - 630V; C0G		
		100V - 630V; X7R/X7S/X7T		
		100V - 630V; Mega Cap		
Option	High Temp	16V - 100V; X8R (150C)		
		25V - 50V; C0G (150C)		
Option	Open Mode	16V - 100V; X7R		
		50V; X8R (150C)		
Option	Mega Cap	16V - 630V; X7R/X7S/X7T		
Option	Soft Term	16V - 630V; X7R/X7S/X7T		
		50V - 100V; C0G; 2:1 Array		
		50V - 100V; X7R; 2:1 Array		
		50V; X8R; 2:1 Array		
		50V - 100V; X7R; Serial Design		
Option	2:1 Array	50V - 100V; C0G; 2:1 Array		
		10V - 100V; X7R; 2:1 Array		
		50V; X8R; 2:1 Array		
Option	CEU	50V - 100V; X7R; Serial Design		



Automotive Lighting



Designation	Series	Description	Product Guide	Item List
C1, C2	High Temp	16V - 100V; X8R (150C)		
		25V - 50V; C0G (150C)		
C3	General	50V; C0G		
		6.3V - 50V; X7R/X7S		
C1, C2, C3, C4, C5	Mid Volt	6.3V - 50V; X5R		
		100V - 630V; C0G		
C4, C5	High Volt	100V - 630V; X7R/X7S/X7T		
		3000V; C0G		
Option	Open Mode	1000V - 2000V; X7R/X7S		
		16V - 100V; X7R		
Option	Mega Cap	50V; X8R (150C)		
		16V - 630V; X7R/X7S/X7T		
Option	Soft Term	16V - 630V; X7R/X7S/X7T		
		50V - 100V; C0G; 2:1 Array		
		50V - 100V; X7R; 2:1 Array		
		50V; X8R; 2:1 Array		
Option	2:1 Array	50V - 100V; X7R; Serial Design		
		50V - 100V; C0G; 2:1 Array		
		10V - 100V; X7R; 2:1 Array		
Option	CEU	50V; X8R; 2:1 Array		
		50V - 100V; X7R; Serial Design		

General (50V and lower) Capacitor

Introduction

DC/DC Converter

Power Inverter

Electric Power Steering

AC/DC Battery Charger

Battery Management

Regenerative Charging

Automotive Lighting

General Capacitor

Mid Voltage Capacitor

High Voltage Capacitor

High Temp. Capacitor

Open Mode Capacitor

Soft Term. Capacitor

2in1 Array Capacitor

Serial Design Capacitor

Mega Cap Capacitor

• DIMENSIONS

	Body Length (mm)	Body Width (mm)
CGA2 (0402)	1.00	0.50
CGA3 (0603)	1.60	0.80
CGA4 (0805)	2.00	1.25
CGA5 (1206)	3.20	1.60
CGA6 (1210)	3.20	2.50
CGA8 (1812)	4.50	3.20
CGA9 (2220)	5.70	5.00

• PART NUMBER DESCRIPTIONS

CGA9 N 3 X7R 1H 106 K I 0000

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

- 1) Series Name & Dimensions
- 2) Thickness Dimensions
- 3) Life Test Condition
- 4) Temperature Characteristics
- 5) Rated Voltage (DC)
- 6) Nominal Capacitance (pF)
- 7) Capacitance Tolerance
- 8) Packaging Style
- 9) Internal Codes

• FEATURES

- ❖ Wide range of case size and superior dimension precision
- ❖ Voltage rating up to 50V
- ❖ High mechanical strength
- ❖ Capacitance range up to 46 μ F
- ❖ No polarity
- ❖ Low ESR

Capacitor Range // C0G

Capacitance (pF)	Cap Code	CGA2 (0402)		CGA3 (0603)		CGA4 (0805)		CGJ5 (1206)	CGJ6 (1210)	CGJ8 (1812)
		1H (50V)	1H (50V)	1E (25V)	1H (50V)	1E (25V)	1H (50V)	1H (50V)	1H (50V)	
100	101	█	█							
120	121	█	█							
150	151	█	█							
180	181	█	█							
220	221	█	█							
270	271	█	█							
330	331	█	█							
390	391	█	█							
470	471	█	█							
560	561	█	█							
680	681	█	█							
820	821	█	█							
1,000	102	█	█							
1,200	122	█	█							
1,500	152	█	█							
1,800	182	█	█							
2,200	222	█	█							
2,700	272	█	█			█				
3,300	332	█	█			█				
3,900	392	█	█			█				
4,700	472		█			█		█		
5,600	562		█			█		█		
6,800	682		█			█		█		
8,200	822		█			█		█		
10,000	103		█			█		█		
15,000	153			█		█		█		
22,000	223			█		█		█		
33,000	333			█		█		█		
47,000	473						█	█		█
68,000	683						█	█		█
100,000	104						█	█		█
150,000	154									█
220,000	224									█

█ C0G █ Under Development

Capacitor Range // X7R

Introduction

DC/DC

Converter

Power

Inverter

Electric Power

Steering

AC/DC Battery

Charger

Battery

Management

Regenerative

Charging

Automotive

Lighting

General Capacitor

Mid Voltage Capacitor

High Voltage Capacitor

High Temp. Capacitor

Open Mode Capacitor

Soft Term. Capacitor

2in1 Array Capacitor

Serial Design Capacitor

Mega Cap Capacitor

Capacitance (pF)	Cap Code	CGA2 (0402)					CGA3 (0603)				
		1H (50V)	1V (35V)	1E (25V)	1C (16V)	1A (10V)	1H (50V)	1V (35V)	1E (25V)	1C (16V)	0J (6.3V)
1,000	102	X7R					X7R				
1,500	152	X7R					X7R				
2,200	222	X7R					X7R				
3,300	332	X7R					X7R				
4,700	472	X7R					X7R				
6,800	682	X7R					X7R				
10,000	103	X7R	X7R	X7R			X7R				
15,000	153	X7R	X7R	X7R			X7R				
22,000	223	X7R	X7R	X7R	X7R		X7R				
33,000	333	X7R	X7R	X7R	X7R		X7R				
47,000	473	X7R	X7R	X7R	X7R		X7R				
68,000	683	X7R	X7R	X7R	X7R		X7R	X7R			
100,000	104	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R		
150,000	154	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	
220,000	224	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R
330,000	334	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R
470,000	474	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R
680,000	684	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R
1,000,000	105	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R
1,500,000	155	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R
2,200,000	225	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R

Capacitance (pF)	Cap Code	CGA4 (0805)					CGA5 (1206)				
		1H (50V)	1V (35V)	1E (25V)	1C (16V)	1A (10V)	1H (50V)	1V (35V)	1E (25V)	1C (16V)	0J (6.3V)
150,000	154	X7R									
220,000	224	X7R									
330,000	334	X7R									
470,000	474	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	
680,000	684	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R
1,000,000	105	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R
1,500,000	155	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R
2,200,000	225	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R
3,300,000	335	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R
4,700,000	475	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R
6,800,000	685	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R
10,000,000	106	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R
15,000,000	156	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R
22,000,000	226	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R

Capacitance (pF)	Cap Code	CGA6 (1210)				CGA8 (1812)			CGA9 (2220)		
		1H (50V)	1E (25V)	1C (16V)	0J (6.3V)	1H (50V)	1E (25V)	1C (16V)	1H (50V)	1E (25V)	1C (16V)
1,000,000	105	X7R									
1,500,000	155	X7R				X7R					
2,200,000	225	X7R	X7R			X7R					
3,300,000	335	X7R	X7R			X7R	X7R				
4,700,000	475	X7R	X7R			X7R	X7R	X7R			
6,800,000	685	X7R	X7R			X7R	X7R	X7R	X7R		
10,000,000	106	X7R	X7R	X7R		X7R	X7R	X7R	X7R	X7R	
15,000,000	156	X7R	X7R	X7R		X7R	X7R	X7R	X7R	X7R	X7R
22,000,000	226	X7R	X7R	X7R		X7R	X7R	X7R	X7R	X7R	X7R
33,000,000	336	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R
47,000,000	476	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R	X7R

X7R X7S Under Development

Capacitor Range // X5R

Introduction

DC/DC

Converter

Power

Inverter

Electric Power

Steering

AC/DC Battery

Charger

Battery

Management

Regenerative

Charging

Automotive

Lighting

General

Capacitor

Mid Voltage

Capacitor

High Voltage

Capacitor

High Temp.

Capacitor

Open Mode

Capacitor

Soft Term.

Capacitor

2in1 Array

Capacitor

Serial Design

Capacitor

Mega Cap

Capacitor

Capacitance (pF)	Cap Code	CGA2 (0402)					CGA3 (0603)					
		1H (50V)	1V (35V)	1E (25V)	1C (16V)	1A (10V)	1H (50V)	1V (35V)	1E (25V)	1C (16V)	1A (10V)	0J (6.3V)
1,000	102	█					█					
1,500	152	█					█					
2,200	222	█					█					
3,300	332	█					█					
4,700	472	█					█					
6,800	682	█					█					
10,000	103	█	█	█			█					
15,000	153	█	█	█			█					
22,000	223	█	█	█			█					
33,000	333	█	█	█			█					
47,000	473	█	█	█	█		█					
68,000	683	█	█	█	█	█	█					
100,000	104	█	█	█	█	█	█	█				
150,000	154	█	█	█	█	█	█	█				
220,000	224	█	█	█	█	█	█	█				
330,000	334	█	█	█	█	█	█	█				
470,000	474	█	█	█	█	█	█	█				
680,000	684	█	█	█	█	█	█	█				
1,000,000	105	█	█	█	█	█	█	█				
1,500,000	155	█	█	█	█	█	█	█	█			
2,200,000	225	█	█	█	█	█	█	█	█			
3,300,000	335	█	█	█	█	█	█	█	█			
4,700,000	475	█	█	█	█	█	█	█	█			

Capacitance (pF)	Cap Code	CGA4 (0805)					CGA5 (1206)				CGA6 (1210)	
		1H (50V)	1V (35V)	1E (25V)	1C (16V)	1A (10V)	1H (50V)	1V (35V)	1E (25V)	1C (16V)	1A (10V)	0J (6.3V)
150,000	154	█										
220,000	224	█										
330,000	334	█										
470,000	474	█	█	█			█					
680,000	684	█	█	█	█		█					
1,000,000	105	█	█	█	█		█					
1,500,000	155	█	█	█	█	█	█	█				
2,200,000	225	█	█	█	█	█	█	█				
3,300,000	335	█	█	█	█	█	█	█				
4,700,000	475	█	█	█	█	█	█	█				
6,800,000	685	█	█	█	█	█	█	█	█			
10,000,000	106	█	█	█	█	█	█	█	█			
15,000,000	156	█	█	█	█	█	█	█	█	█		
22,000,000	226	█	█	█	█	█	█	█	█	█	█	
33,000,000	336	█	█	█	█	█	█	█	█	█	█	█
47,000,000	476	█	█	█	█	█	█	█	█	█	█	█

█ X5R █ Under Development

Mid Voltage Capacitor

Introduction

DC/DC Converter

Power Inverter

Electric Power Steering

AC/DC Battery Charger

Battery Management

Regenerative Charging

Automotive Lighting

General Capacitor

Mid Voltage Capacitor

High Voltage Capacitor

High Temp. Capacitor

Open Mode Capacitor

Soft Term. Capacitor

2in1 Array Capacitor

Serial Design Capacitor

Mega Cap Capacitor

DIMENSIONS

	Body Length (mm)	Body Width (mm)
CGA2 (0402)	1.00	0.50
CGA3 (0603)	1.60	0.80
CGA4 (0805)	2.00	1.25
CGA5 (1206)	3.20	1.60
CGA6 (1210)	3.20	2.50
CGA8 (1812)	4.50	3.20
CGA9 (2220)	5.70	5.00

PART NUMBER DESCRIPTIONS

CGA9 N 3 X7S 2A 106 K I 0000

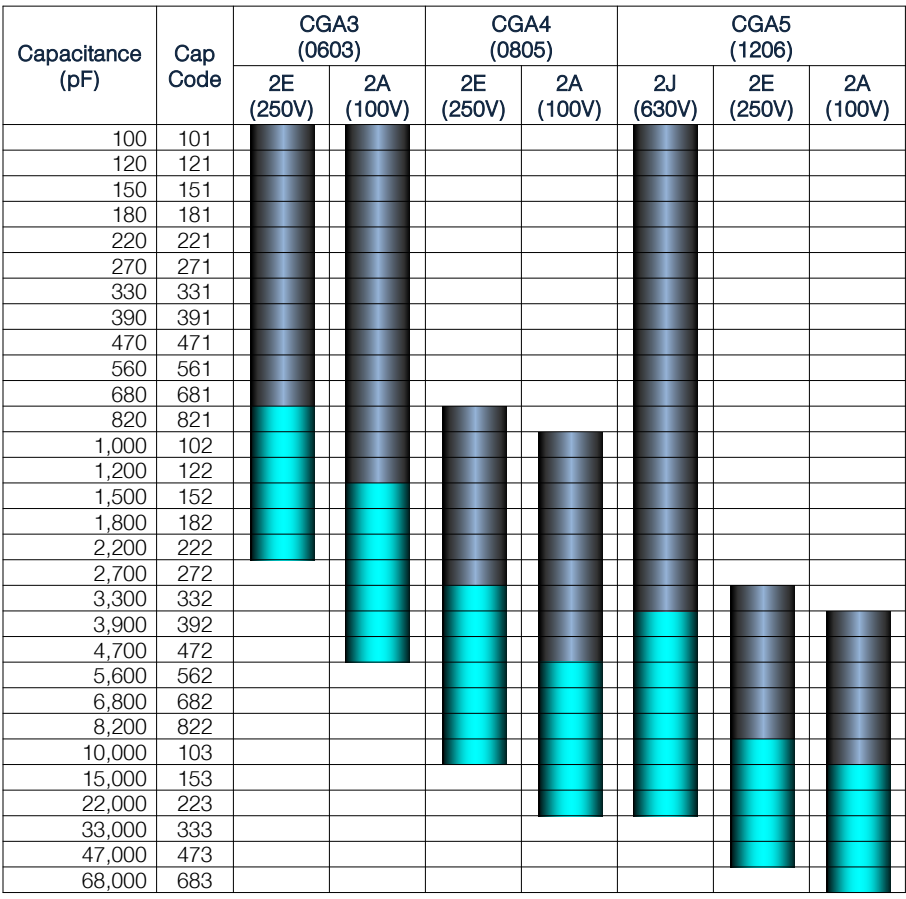
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

- 1) Series Name & Dimensions
- 2) Thickness Dimensions
- 3) Life Test Condition
- 4) Temperature Characteristics
- 5) Rated Voltage (DC)
- 6) Nominal Capacitance (pF)
- 7) Capacitance Tolerance
- 8) Packaging Style
- 9) Internal Codes

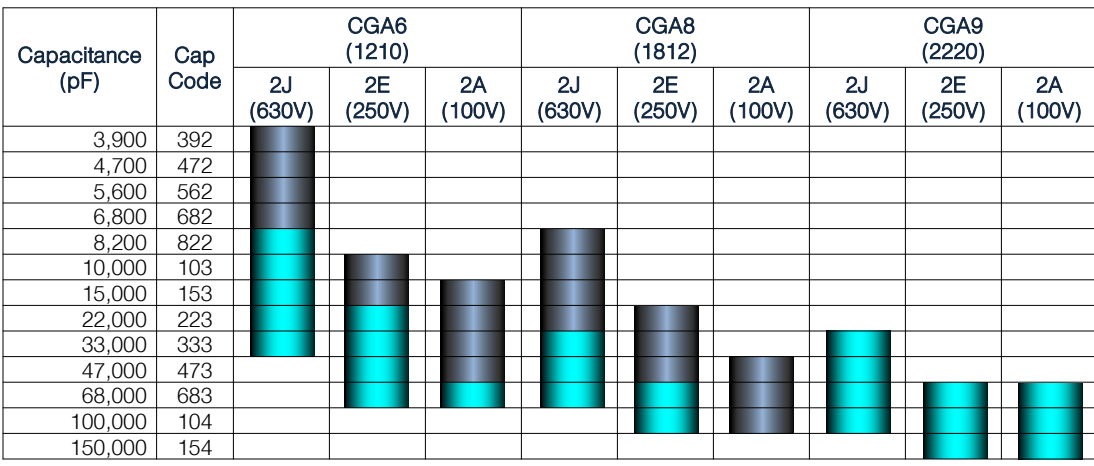
FEATURES

- ❖ Unique electrode design allows higher voltage application in smaller case size
- ❖ Voltage rating of 100V, 250V, 450V, and 630V
- ❖ High mechanical strength
- ❖ No polarity
- ❖ Low ESR

Capacitor Range // C0G



█ C0G
█ Under Development



Introduction

DC/DC

Converter

Power

Inverter

Electric Power

Steering

AC/DC Battery

Charger

Battery

Management

Regenerative

Charging

Automotive

Lighting

General

Capacitor

Mid Voltage

Capacitor

High Voltage

Capacitor

High Temp.

Capacitor

Open Mode

Capacitor

Soft Term.

Capacitor

2in1 Array

Capacitor

Serial Design

Capacitor

Mega Cap

Capacitor

Capacitance (pF)	Cap Code	CGA2 (0402)	CGA3 (0603)	CGA4 (0805)			CGA5 (1206)				
		2A (100V)	2A (100V)	2W (450V)	2E (250V)	2A (100V)	2J (630V)	2W (450V)	2E (250V)	2A (100V)	
1,000	102	X7R	X7R		X7R	X7R	X7R				
1,500	152	X7R	X7R		X7R	X7R	X7R				
2,200	222	X7R	X7R		X7R	X7R	X7R				
3,300	332	X7R	X7R		X7R	X7R	X7R				
4,700	472	X7R	X7R		X7R	X7R	X7R				
6,800	682	X7R	X7R	X7T	X7R	X7R	X7R	X7T			
10,000	103	X7R	X7R	X7T	X7R	X7R	X7R	X7T			
15,000	153	X7R	X7R	X7T	X7R	X7R	X7R	X7T	X7R		
22,000	223	X7R	X7R	X7T	X7R	X7R	X7R	X7T	X7R		
33,000	333	X7R	X7S	X7T	X7R	X7R	X7R	X7T	X7R	X7R	
47,000	473		X7S	X7T	X7R	X7R	X7R	X7T	X7R	X7R	
68,000	683		X7S	X7T	X7R	X7R	X7R	X7T	X7R	X7R	
100,000	104		X7R		X7R	X7R	X7R	X7T	X7R	X7R	
150,000	154		X7R		X7R	X7R	X7R	X7T	X7R	X7R	
220,000	224		X7R		X7R	X7R	X7R	X7T	X7R	X7R	
330,000	334				X7R	X7R	X7R	X7T	X7R	X7R	X7R
470,000	474				X7R	X7R	X7R	X7T	X7R	X7R	X7R
680,000	684				X7R	X7R	X7R	X7T	X7R	X7R	X7R
1,000,000	105				X7R	X7R	X7R	X7T	X7R	X7R	X7R
1,500,000	155				X7R	X7R	X7R	X7T	X7R	X7R	X7R
2,200,000	225				X7R	X7R	X7R	X7T	X7R	X7R	X7R
3,300,000	335				X7R	X7R	X7R	X7T	X7R	X7R	X7R
4,700,000	475				X7R	X7R	X7R	X7T	X7R	X7R	X7R

Capacitance (pF)	Cap Code	CGA6 (1210)			CGA8 (1812)			CGA9 (2220)				
		2J (630V)	2E (250V)	2A (100V)	2J (630V)	2W (450V)	2E (250V)	2A (100V)	2J (630V)	2W (450V)	2E (250V)	2A (100V)
47,000	473	X7R			X7R							
68,000	683	X7R			X7R							
100,000	104	X7R	X7R		X7R							
150,000	154	X7R	X7R		X7R							
220,000	224	X7R	X7R		X7R							
330,000	334	X7R	X7R		X7R	X7T			X7R			
470,000	474		X7R		X7R	X7T			X7R			
680,000	684		X7R		X7R	X7T			X7R	X7T		
1,000,000	105		X7R		X7R	X7T			X7R	X7T		
1,500,000	155		X7R		X7R	X7T			X7R	X7T		
2,200,000	225		X7R		X7R	X7T			X7R	X7T		
3,300,000	335		X7R	X7S	X7R	X7T			X7R	X7T	X7R	
4,700,000	475		X7R	X7S	X7R	X7T			X7R	X7T	X7R	
6,800,000	685		X7R	X7S	X7R	X7T			X7R	X7T	X7R	
10,000,000	106		X7R	X7S	X7R	X7T			X7R	X7T	X7R	
15,000,000	156		X7R	X7S	X7R	X7T			X7R	X7T	X7R	

■ X7R
 ■ X7T
 ■ X7S
 ■ Under Development

High Voltage Capacitor

Introduction

DC/DC Converter

Power Inverter

Electric Power Steering

AC/DC Battery Charger

Battery Management

Regenerative Charging

Automotive Lighting

General Capacitor

Mid Voltage Capacitor

High Voltage Capacitor

High Temp. Capacitor

Open Mode Capacitor

Soft Term. Capacitor

2in1 Array Capacitor

Serial Design Capacitor

Mega Cap Capacitor

• DIMENSIONS

	Body Length (mm)	Body Width (mm)
CGA5 (1206)	3.20	1.60
CGA6 (1210)	3.20	2.50
CGA7 (1808)	4.50	2.00
CGA8 (1812)	4.50	3.20
CGA9 (2220)	5.70	5.00

• PART NUMBER DESCRIPTIONS

CGA9 N 3 X7S 3A 473 K I 0000

① ②③ ④ ⑤ ⑥ ⑦⑧ ⑨

- 1) Series Name & Dimensions
- 2) Thickness Dimensions
- 3) Life Test Condition
- 4) Temperature Characteristics
- 5) Rated Voltage (DC)
- 6) Nominal Capacitance (pF)
- 7) Capacitance Tolerance
- 8) Packaging Style
- 9) Internal Codes

• FEATURES

- ❖ Up to 3000V rated voltage
- ❖ Advanced design provides improved withstanding voltage characteristics
- ❖ TDK's proprietary internal electrode structure
- ❖ Low-dielectric-strength material

Capacitor Range // C0G, X7R, X7S

Capacitance (pF)	Cap Code	C4520 (1808)	C4532 (1812)
		3F (3KV)	3F (3KV)
10	100		
12	120		
15	150		
18	180		
22	220		
27	270		
33	330		
39	390		
47	470		
56	560		
68	680		
82	820		
100	101		
120	121		
150	151		
180	181		
220	221		
270	271		
330	331		

Capacitance (pF)	Cap Code	C3216 (1206)		C3225 (1210)		C4520 (1808)		C4532 (1812)		C5750 (2220)	
		3D (2KV)	2A (1KV)	3D (2KV)	2A (1KV)	3D (2KV)	2A (1KV)	3D (2KV)	2A (1KV)	3D (2KV)	2A (1KV)
100	101										
220	221										
470	471										
1,000	102										
2,200	222										
4,700	472										
10,000	103										
22,000	223										
47,000	473										

C0G X7R X7S

High Temperature Capacitor

Introduction

DC/DC Converter

Power Inverter

Electric Power Steering

AC/DC Battery Charger

Battery Management

Regenerative Charging

Automotive Lighting

General Capacitor

Mid Voltage Capacitor

High Voltage Capacitor

High Temp. Capacitor

Open Mode Capacitor

Soft Term. Capacitor

2in1 Array Capacitor

Serial Design Capacitor

Mega Cap Capacitor

• DIMENSIONS

	Body Length (mm)	Body Width (mm)
CGA2 (0402)	1.00	0.50
CGA3 (0603)	1.60	0.80
CGA4 (0805)	2.00	1.25
CGA5 (1206)	3.20	1.60
CGA6 (1210)	3.20	2.50
CGA8 (1812)	4.50	3.20

• PART NUMBER DESCRIPTIONS

CGA6 P 2 X8R 1E 335 K I 0000

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

- 1) Series Name & Dimensions
- 2) Thickness Dimensions
- 3) Life Test Condition
- 4) Temperature Characteristics
- 5) Rated Voltage (DC)
- 6) Nominal Capacitance (pF)
- 7) Capacitance Tolerance
- 8) Packaging Style
- 9) Internal Codes

• FEATURES

- ❖ These products have no polarity
- ❖ Stable temperature characteristics (15% up to 150°C)
- ❖ Highly precise temperature characteristics (±7.5% up to 125°C)

Capacitor Range // X8R

Capacitance (pF)	Cap Code	CGA2 (0402)			CGA3 (0603)			CGA4 (0805)				
		1H (50V)	1E (25V)	1C (16V)	2A (100V)	1H (50V)	1E (25V)	1C (16V)	2A (100V)	1H (50V)	1E (25V)	1C (16V)
150	151	█										
220	221	█										
330	331	█										
470	471	█										
680	681	█										
1,000	102	█			█	█						
1,500	152	█			█	█						
2,200	222	█			█	█						
3,300	332	█			█	█						
4,700	472	█			█	█						
6,800	682	█	█		█	█						
10,000	103	█	█		█	█						
15,000	153		█			█						
22,000	223		█	█		█			█			
33,000	333			█		█			█	█		
47,000	473			█		█			█	█		
68,000	683						█		█	█		
100,000	104						█			█	█	
150,000	154						█			█	█	
220,000	224										█	
330,000	334										█	
470,000	474								█		█	
680,000	684										█	█
1,000,000	105											█

Capacitance (pF)	Cap Code	CGA5 (1206)				CGA6 (1210)			
		2A (100V)	1H (50V)	1E (25V)	1C (16V)	2A (100V)	1H (50V)	1E (25V)	1C (16V)
33,000	333	█							
47,000	473	█							
68,000	683	█							
100,000	104	█							
150,000	154	█	█						
220,000	224	█	█						
330,000	334	█	█	█					
470,000	474		█	█		█			
680,000	684		█	█		█			
1,000,000	105		█	█		█			
1,500,000	155			█			█	█	
2,200,000	225			█			█	█	
3,300,000	335							█	
4,700,000	475							█	
6,800,000	685								█
10,000,000	106								█

█ X8R █ Under Development

Introduction

DC/DC

Converter

Power

Inverter

Electric Power

Steering

AC/DC Battery

Charger

Battery

Management

Regenerative

Charging

Automotive

Lighting

General

Capacitor

Mid Voltage

Capacitor

High Voltage

Capacitor

High Temp.

Capacitor

Open Mode

Capacitor

Soft Term.

Capacitor

2in1 Array

Capacitor

Serial Design

Capacitor

Mega Cap

Capacitor

Capacitance (pF)	Cap Code	C1005 (0402)		C1608 (0603)		C2012 (0805)		C3216 (1206)		C3225 (1210)		C4532 (1812)	
		1H (50V)	2A (100V)	1H (50V)	2A (100V)	1H (50V)	2A (100V)	1H (50V)	2A (100V)	1H (50V)	2A (100V)	1H (50V)	2A (100V)
100	101	█	█	█									
120	121	█	█	█									
150	151	█	█	█									
220	221	█	█	█									
270	271	█	█	█									
330	331	█	█	█									
390	391	█	█	█									
470	471	█	█	█									
560	561	█	█	█									
680	681	█	█	█									
820	821	█	█	█									
1,000	102	█	█	█		█							
1,200	122		█	█		█							
1,500	152		█	█		█							
1,800	182		█	█		█							
2,200	222		█	█		█							
2,700	272		█	█		█							
3,300	332		█	█		█							
3,900	392		█	█		█							
4,700	472		█	█		█							
5,600	562		█	█		█							
6,800	682		█	█		█							
8,200	822		█	█		█							
10,000	103		█	█		█							
15,000	153		█	█		█				█			
22,000	223		█	█		█				█			
33,000	333		█	█		█				█			
47,000	473		█	█		█				█			
68,000	683		█	█		█				█			
100,000	104		█	█		█				█			
150,000	154		█	█		█				█			
220,000	224		█	█		█				█			

█ C0G █ Under Development

Introduction

DC/DC Converter

Power Inverter

Electric Power Steering

AC/DC Battery Charger

Battery Management

Regenerative Charging

Automotive Lighting

General Capacitor

Mid Voltage Capacitor

High Voltage Capacitor

High Temp. Capacitor

Open Mode Capacitor

Soft Term. Capacitor

2in1 Array Capacitor

Serial Design Capacitor

Mega Cap Capacitor

• DIMENSIONS

	Body Length (mm)	Body Width (mm)
CGA4 (0805)	2.00	1.25
CGA5 (1206)	3.20	1.60
CGA6 (1210)	3.20	2.50
CGA8 (1812)	4.50	3.20
CGA9 (2220)	5.70	5.00

• PART NUMBER DESCRIPTIONS

CGA6 P 2 X7R 1H 335 K I 5000

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

- 1) Series Name & Dimensions
- 2) Thickness Dimensions
- 3) Life Test Condition
- 4) Temperature Characteristics
- 5) Rated Voltage (DC)
- 6) Nominal Capacitance (pF)
- 7) Capacitance Tolerance
- 8) Packaging Style
- 9) Internal Codes

• FEATURES

- ❖ Increase resistance to mechanical bending, temperature cycle, vibration, and electrical stresses
- ❖ Wider distance between the end of the opposite electrode and the termination
- ❖ Reduces the risk of short circuit failures
- ❖ X7R and X8R temperature ranges

Capacitor Range // X7R, X8R

Capacitance (pF)	Cap Code	C2012 (0805)			C3216 (1206)			C3225 (1210)	
		2E (250V)	2A (100V)	1H (50V)	2J (630V)	2E (250V)	2A (100V)	1C (16V)	2J (630V)
1,000	102	■	■		■				
1,500	152	■	■		■				
2,200	222	■	■		■				
3,300	332	■	■		■				
4,700	472	■	■		■				
6,800	682	■	■		■				
10,000	103	■	■		■				
15,000	153	■	■		■				
22,000	223		■	■	■	■			
33,000	333		■	■	■	■			
47,000	473			■		■		■	
68,000	683			■		■		■	
100,000	104			■		■			■
150,000	154								■
220,000	224								
330,000	334								
470,000	474								
680,000	684								
1,000,000	105						■		
1,500,000	155								
2,200,000	225								
3,300,000	335								
4,700,000	475							■	

Capacitance (pF)	Cap Code	C3225 (1210)				C4532 (1812)					
		2A (100V)	1H (50V)	1E (25V)	1C (16V)	2J (630V)	2E (250V)	2A (100V)	1H (50V)	1E (25V)	1C (16V)
68,000	683					■					
100,000	104					■					
150,000	154					■					
220,000	224					■					
330,000	334	■					■				
470,000	474		■				■				
680,000	684		■				■	■			
1,000,000	105	■		■					■		
1,500,000	155			■					■		
2,200,000	225	■		■							
3,300,000	335				■					■	
4,700,000	475				■						■
6,800,000	685										■
10,000,000	106										■

■ X7R ■ X8R

Introduction

DC/DC

Converter

Power

Inverter

Electric Power

Steering

AC/DC Battery

Charger

Battery

Management

Regenerative

Charging

Automotive

Lighting

General

Capacitor

Mid Voltage

Capacitor

High Voltage

Capacitor

High Temp.

Capacitor

Open Mode

Capacitor

Soft Term.

Capacitor

2in1 Array

Capacitor

Serial Design

Capacitor

Mega Cap

Capacitor

Capacitance (pF)	Cap Code	C5750 (2220)					
		2J (630V)	2E (250V)	2A (100V)	1H (50V)	1E (25V)	1C (16V)
150,000	154						
220,000	224						
330,000	334						
470,000	474						
680,000	684						
1,000,000	105						
1,500,000	155						
2,200,000	225						
3,300,000	335						
4,700,000	475						
6,800,000	685						
10,000,000	106						
15,000,000	156						
22,000,000	226						

X7R

Soft Termination Capacitor

Introduction

DC/DC Converter

Power Inverter

Electric Power Steering

AC/DC Battery Charger

Battery Management

Regenerative Charging

Automotive Lighting

General Capacitor

Mid Voltage Capacitor

High Voltage Capacitor

High Temp. Capacitor

Open Mode Capacitor

Soft Term. Capacitor

2in1 Array Capacitor

Serial Design Capacitor

Mega Cap Capacitor

• DIMENSIONS

	Body Length (mm)	Body Width (mm)
CGA4 (0805)	2.00	1.25
CGA5 (1206)	3.20	1.60
CGA6 (1210)	3.20	2.50
CGA8 (1812)	4.50	3.20
CGA9 (2220)	5.70	5.00

• PART NUMBER DESCRIPTIONS

CGA6 N 3 X7S 1H 106 K I 000S

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

- 1) Series Name & Dimensions
- 2) Thickness Dimensions
- 3) Life Test Condition
- 4) Temperature Characteristics
- 5) Rated Voltage (DC)
- 6) Nominal Capacitance (pF)
- 7) Capacitance Tolerance
- 8) Packaging Style
- 9) Internal Codes

• FEATURES

- ❖ Improved bending resistance (Board Flex Resistance)
- ❖ Improved temperature cycle performance
- ❖ RoHS, WEE, and REACH compliant

Capacitor Range // X7R, X7S, X7T

Capacitance (pF)	Cap Code	CGA4 (0805)						CGA5 (1206)			
		2W (450V)	2E (250V)	2A (100V)	1H (50V)	1V (35V)	1C (16V)	2J (630V)	2W (450V)	2E (250V)	2A (100V)
10,000	103										
22,000	223										
47,000	473										
100,000	104										
220,000	224										
470,000	474										
1,000,000	105										
2,200,000	225										
4,700,000	475										

Capacitance (pF)	Cap Code	CGA5 (1206)			CGA6 (1210)				
		1H (50V)	1V (35V)	1E (25V)	2J (630V)	2W (450V)	2E (250V)	2A (100V)	1H (50V)
47,000	473								
100,000	104								
220,000	224								
470,000	474								
1,000,000	105								
2,200,000	225								
4,700,000	475								
10,000,000	106								

Capacitance (pF)	Cap Code	CGA7 (1812)			CGA9 (2220)			
		2J (630V)	2W (450V)	2E (250V)	2J (630V)	2W (450V)	2E (250V)	2A (100V)
220,000	224							
470,000	474							
1,000,000	105							
2,200,000	225							
4,700,000	475							
10,000,000	106							

* This is standard product line up. Please contact TDK for additional capacitance value.

X7R X7T X7S

2-in-1 Array Capacitor

Introduction

DC/DC Converter

Power Inverter

Electric Power Steering

AC/DC Battery Charger

Battery Management

Regenerative Charging

Automotive Lighting

General Capacitor

Mid Voltage Capacitor

High Voltage Capacitor

High Temp. Capacitor

Open Mode Capacitor

Soft Term. Capacitor

2in1 Array Capacitor

Serial Design Capacitor

Mega Cap Capacitor

• DIMENSIONS

	Body Length (mm)	Body Width (mm)	Terminal Spacing (mm)	Terminal Width (mm)	Max. Height (mm)
CKCM25 (C1312/0504)	1.37	1.00	0.64	0.36	0.66
CKCL22 (C2012/0805)	2.00	1.25	1.00	0.45	1.00

• PART NUMBER DESCRIPTIONS

CKCM25 X7R 1E 103 M I 0000
 ① ② ③ ④ ⑤ ⑥ ⑦

- 1) Series Name & Dimensions
- 2) Temperature Characteristics
- 3) Rated Voltage (DC)
- 4) Nominal Capacitance (pF)
- 5) Capacitance Tolerance
- 6) Packaging Style
- 7) Internal Codes

• FEATURES

- ❖ 2 capacitors in one package
- ❖ Reduced PCB space and mounting time
- ❖ Unique electrode construction reduces crosstalk
- ❖ Also available in soft termination

Capacitor Range // C0G, X7R, X5R, X8R

Capacitance (pF)	Cap Code	CKCM25 (0504)			CKCL22 (0805)			
		2A (100V)	1H (50V)	1E (25V)	2A (100V)	1H (50V)	1E (25V)	1A (10V)
10	100	█	█		█	█		
15	150							
22	220							
33	330							
47	470							
68	680							
100	101	█	█		█	█		
150	151							
220	221		█					
330	331							
470	471							
680	681		█					
1,000	102		█					
1,500	152		█					
2,200	222							
3,300	332							
4,700	472							
6,800	682		█	█				
10,000	103			█				
15,000	153							
22,000	223							
33,000	333							
47,000	473							
68,000	683							
100,000	104							
150,000	154						█	
220,000	224							█

█ C0G █ X7R █ X5R █ X8R

Serial Design Capacitor

Introduction

DC/DC Converter

Power Inverter

Electric Power Steering

AC/DC Battery Charger

Battery Management

Regenerative Charging

Automotive Lighting

General Capacitor

Mid Voltage Capacitor

High Voltage Capacitor

High Temp. Capacitor

Open Mode Capacitor

Soft Term. Capacitor

2in1 Array Capacitor

Serial Design Capacitor

Mega Cap Capacitor

• DIMENSIONS

	Body Length (mm)	Body Width (mm)	Max. Height (mm)	Life Test Conditions*
CEU3E2 (0603)	1.60	0.80	0.95	WV x 2
CEU4J2 (0805)	2.00	1.25	1.45	WV x 2

• PART NUMBER DESCRIPTIONS

CEU3 E 2 X7R 1H 103 K T O000
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

- 1) Series Name & Dimensions
- 2) Thickness Dimensions
- 3) Life Test Condition
- 4) Temperature Characteristics
- 5) Rated Voltage (DC)
- 6) Nominal Capacitance (pF)
- 7) Capacitance Tolerance
- 8) Packaging Style
- 9) Internal Codes

• FEATURES

- ❖ Improved bending resistance (Board Flex Resistance)
- ❖ Improved temperature cycle performance
- ❖ Allow space reduction on PCB
- ❖ Ultra high reliability
- ❖ RoHS, WEE, and REACH compliant

Capacitor Range // X7R

Capacitance (pF)	Cap Code	CEU3E (0603)		CEU4J (0805)	
		2A (100V)	1H (50V)	2A (100V)	1H (50V)
1,000	102	■			
1,500	152	■			
2,200	222	■			
3,300	332	■			
4,700	472		■		
6,800	682		■		
10,000	103		■	■	
15,000	153		■	■	
22,000	223		■		■
33,000	333		■		■
47,000	473		■		■
68,000	683		■		■
100,000	104				■

■ X7R

Mega Cap Capacitor

Introduction

DC/DC Converter

Power Inverter

Electric Power Steering

AC/DC Battery Charger

Battery Management

Regenerative Charging

Automotive Lighting

General Capacitor

Mid Voltage Capacitor

High Voltage Capacitor

High Temp. Capacitor

Open Mode Capacitor

Soft Term. Capacitor

2in1 Array Capacitor

Serial Design Capacitor

Mega Cap Capacitor

• DIMENSIONS

	Body Length (mm)	Body Width (mm)	Body Height (mm)
CKG32K	3.8	2.0	4.3
CKG45K	5.5	4.0	2.4
CKG57K	6.5	5.5	4.5
CKG45N	5.5	4.0	3.4
CKG57N	6.5	5.5	3.4

• PART NUMBER DESCRIPTIONS

CKG57N X7R 1H 106 M I 0000

① ② ③ ④ ⑤ ⑥ ⑦

- 1) Series Name & Dimensions
- 2) Temperature Characteristics
- 3) Rated Voltage (DC)
- 4) Nominal Capacitance (pF)
- 5) Capacitance Tolerance
- 6) Packaging Style
- 7) Internal Codes

• FEATURES

- ❖ Twice the capacitance on single capacitor foot print
- ❖ Lower ESR and ESL than Al caps
- ❖ Capable of absorbing thermal and mechanical stress
- ❖ Improved heat generation by ripple current
- ❖ Improved vibration performance

Capacitor Range // X7R, X7S, X7T

Capacitance (pF)	Cap Code	CKG32K (1210 - Single)					CKG45K (1812 - Single)				
		2J (630V)	2W (450V)	2E (250V)	2A (100V)	1H (50V)	1E (25V)	2J (630V)	2W (450V)	2E (250V)	2A (100V)
47,000	473										
100,000	104										
150,000	154										
220,000	224										
330,000	334										
470,000	474										
680,000	684										
1,000,000	105										
1,500,000	155										
2,200,000	225										
3,300,000	335										
4,700,000	475										
6,800,000	685										
10,000,000	106										

Capacitance (pF)	Cap Code	CKG45K (1812 - Single)			CKG57K (2220 - Single)						
		1H (50V)	1E (25V)	1C (16V)	2J (630V)	2W (450V)	2E (250V)	2A (100V)	1H (50V)	1E (25V)	1C (16V)
220,000	224										
330,000	334										
470,000	474										
680,000	684										
1,000,000	105										
1,500,000	155										
2,200,000	225										
3,300,000	335										
4,700,000	475										
6,800,000	685										
10,000,000	106										
15,000,000	156										
22,000,000	226										
33,000,000	336										
47,000,000	476										

X7R X7T X7S

Introduction

DC/DC

Converter

Power

Inverter

Electric Power

Steering

AC/DC Battery

Charger

Battery

Management

Regenerative

Charging

Automotive

Lighting

General

Capacitor

Mid Voltage

Capacitor

High Voltage

Capacitor

High Temp.

Capacitor

Open Mode

Capacitor

Soft Term.

Capacitor

2in1 Array

Capacitor

Serial Design

Capacitor

Mega Cap

Capacitor

Capacitance (pF)	Cap Code	CKG45N (1812 - Double)						
		2J (630V)	2W (450V)	2E (250V)	2A (100V)	1H (50V)	1E (25V)	1C (16V)
220,000	224	X7R						
330,000	334	X7T						
470,000	474	X7R						
680,000	684	X7T						
1,000,000	105		X7T	X7R				
1,500,000	155			X7T				
2,200,000	225			X7T	X7R			
3,300,000	335					X7R		
4,700,000	475				X7R			
6,800,000	685				X7S	X7R		
10,000,000	106				X7S	X7R	X7R	
15,000,000	156						X7R	
22,000,000	226							X7R
33,000,000	336							X7R
47,000,000	476							X7S

Capacitance (pF)	Cap Code	CKG57N (2220 - Double)						
		2J (630V)	2W (450V)	2E (250V)	2A (100V)	1H (50V)	1E (25V)	1C (16V)
470,000	474	X7R						
680,000	684	X7T						
1,000,000	105	X7R		X7R				
1,500,000	155		X7T					
2,200,000	225		X7T	X7R	X7R			
3,300,000	335			X7T				
4,700,000	475				X7R			
6,800,000	685							
10,000,000	106				X7R	X7R		
15,000,000	156							
22,000,000	226				X7S	X7S	X7R	
33,000,000	336							X7R
47,000,000	476						X7S	
68,000,000	686							
100,000,000	107							X7S

X7R
 X7T
 X7S



Powered by creativity



TDK. The electronic components company.

TDK Corporation of America

475 Half Day Road
Lincolnshire, IL 60069-2934
Phone: (847) 699-2299

TDK Electronics Europe GmbH

Wanheimer Strasse 57
D-40472 Düsseldorf
Phone: +49-(0)211-90770

TDK Singapore PTE LTD.

166 Kallang Way
Singapore 349249
Tel: +65 6273 5022

TDK China Co., LTD.

Shanghai Inter'l Trade Ctr 2201
Yan An rd (w.) – Room 1907 – Shanghai
Tel: +86-21-6196-2345

1 Micron x 1,000 Layers



To make multilayer ceramic chip capacitors more compact with larger capacity, we drew on our advanced material technologies, making the particle sizes super fine. By putting our original processing technologies to full use, we have perfected the advanced layering technique which ensures the precise placing of dielectric and electrode layers, as well as the multi-layering technology capable of as many as 1000 layers. The thickness of each layer is at a submicron level. By reducing the thickness of each layer and increasing the number of layers, even the ultra small chip combines the capacity close to that of tantalum capacitors with excellent reliability.