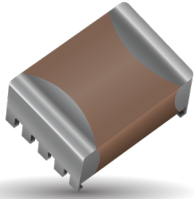# SMPS Capacitors

RH Style - Surface Mount 'J' Lead Range

The RH range uses high volumetric efficient X7R capacitors in a "J" style lead frame.

The range of components are uncoated and are suitable for input or output filter capacitors in high frequency DC-DC convertor, automotive, telecom, industrial and military applications.

When large ceramic capacitors are used in applications they can easily be affected by stresses caused by temperature variations, thermal shock, mechanical vibrations and PCB bend movement. The RH range is designed with a "J" type lead frame which greatly reduces all of these thermo mechanical stresses experienced by large capacitors. The RH range allows the capacitors to be doubled stacked so a higher volumetric efficiency can be achieved by the customer and this saves PCB space.

FEATURES

- RH 21/22 are AEC-Q200 compliant.
- RH range has low ESR/ESL capability
- PCB space saving using double stacked MLCCs
- Enhanced thermo mechanical stress resistance

Note: AVX does not recommend or advise the use of adhesives to secure the RH components to the PCB.

ELECTRICAL SPECIFICATIONS

Temperature Coefficient CECC 30 000, (4.24.1)
X7R: C Temperature Characteristic - ± 15%, -55°C to +125°C

Capacitance Test
Measured at 1 VRMS max at 1KHz

Dissipation Factor 25°C
2.5% max at 1KHz, 1 VRMS max

Insulation Resistance 25°C
100K megohms or 1000 megohms-µF, whichever is less

Dielectric Withstanding Voltage 25°C (Flash Test)
250% rated voltage for 5 seconds with 50 mA max charging current. (500 Volt units @ 150% rated voltage)

Life Test (1000 hrs) CECC 30 000 (4.23)
200% rated voltage at +125°C.
(500 Volt units @ 120% rated voltage)
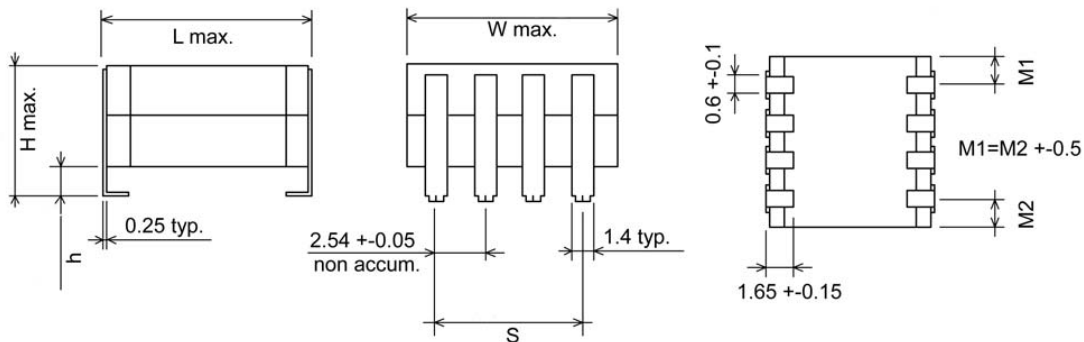
Thermal Shock IEC 68.2.14
-55°C to +125°C, 5 cycles

Resistance to Solder Heat IEC 68.2.20

DIMENSIONS: millimeters (inches)

Typical ESR (mΩ) 3 µF, 100V X7R	
ESR @ 100KHz	17
ESR @ 500KHz	12
ESR @ 1MHz	14

DIMENSIONS   millimeters (inches)

Style	L max	W max	H max	S ± 0.1 (±0.004)	h	No. of leads per side
RH21	7.20 (0.283)	5.40 (0.213)	4.60 (0.181)	2.50 (0.098)	1.50 ±0.30 (0.059 ±0.012)	2
RH22	7.20 (0.283)	5.40 (0.213)	7.50 (0.295)	2.50 (0.098)	1.50 ±0.30 (0.059 ±0.012)	2
RH31	7.62 (0.300)	7.00 (0.270)	5.08 (0.200)	5.08 (0.200)	1.78 ±0.25 (0.070 ±0.010)	3
RH32	7.62 (0.300)	7.00 (0.270)	8.13 (0.320)	5.08 (0.200)	1.78 ±0.25 (0.070 ±0.010)	3
RH41	9.20 (0.362)	8.70 (0.342)	4.90 (0.192)	5.08 (0.200)	1.60 ±0.10 (0.062 ±0.004)	3
RH42	9.20 (0.362)	8.70 (0.342)	8.20 (0.323)	5.08 (0.200)	1.60 ±0.10 (0.062 ±0.004)	3
RH51	10.7 (0.421)	10.7 (0.421)	4.90 (0.192)	7.62 (0.300)	1.60 ±0.10 (0.062 ±0.004)	4
RH52	10.7 (0.421)	10.7 (0.421)	8.20 (0.323)	7.62 (0.300)	1.60 ±0.10 (0.062 ±0.004)	4
RH61	14.9 (0.586)	13.6 (0.535)	4.90 (0.192)	10.2 (0.400)	1.60 ±0.10 (0.062 ±0.004)	5
RH62	14.9 (0.586)	13.6 (0.535)	8.20 (0.323)	10.2 (0.400)	1.60 ±0.10 (0.062 ±0.004)	5

Performance of SMPS capacitors can be simulated by downloading SpiCalci software program - http://www.avx.com/download/software/SpiCalci-AVX.zip
Custom values, ratings and configurations are also available.

The Important Information/Disclaimer is incorporated in these specifications by reference and should be reviewed in full before placing any order.

090518

AVX®

X7R STABLE DIELECTRIC

Cap µF	RH21/RH22 Style 25	50	100	200	500	RH31/RH32 Style 50	100	200	500	RH41/RH42 Style 50	100	200	500	RH51/RH52 Style 50	100	200	500	RH61/RH62 Style 50	100	200	500
0.047																					
0.056																					
0.068									RH31												
0.082																					
0.1																					
0.12																					
0.15									RH32			RH41									
0.18																					
0.22																					
0.27								RH31													
0.33													RH42			RH51					
0.39												RH41									
0.47																					
0.56							RH32									RH52					
0.68																					RH61
0.78															RH51						
0.82						RH31						RH42									
1																					
1.2																					RH62
1.5						RH31					RH41					RH52				RH61	
1.8																					
2.2							RH32			RH41											
3																					
3.3			RH21			RH32					RH42									RH62	
3.9											RH51										
4.7										RH42											
6.8														RH51					RH61		
8.2		RH21																RH61			
10														RH51							
12			RH22																RH62		
15	RH21	RH22												RH51				RH62			
18															RH52						
22														RH52							
33	RH22	DEV	DEV												DEV						
47														DEV							
68	DEV																				

Legend: ▢ BME · ▢ BME · ▢ PME · ▢ PME · ▢ BME Development

For availability of further parts in the RH21/RH22 Series, contact manufacturing.

PACKAGING

Style	Qty/Reel 13"	Max. Qty/Waffle Pack
RH21	800	270
RH22	500	270
RH31	800	108
RH32	500	108
RH41	see note	108
RH42	500	100
RH51	750	88
RH52	see note	88
RH61	500	42
RH62	see note	42

Note: T&R is not yet available. Contact manufacturing for further information as this will be available in the future.

BME Available in RoHS and Non-RoHS

PME Available Only in Non-RoHS

RoHS COMPLIANT

Please contact plant for details

HOW TO ORDER

RH	31	5	C	225	M	A	3	0	A	3
Style Code (see table above)	**Size Code**	**Voltage Code** 3 = 25V 5 = 50V 1 = 100V 2 = 200V 7 = 500V	**Dielectric Code** C = X7R	**Capacitance Code** (2 significant digits + no. of zeros) eg. 105 = 1 uF 104= 0.1 uF	**Capacitance Tolerance** K = ±10% M = ±20%	**Specification Code** A = Non-customized	**Package Code** 3 = Waffle Pack A = Tape & Reel	**Lead Dia. Code** 0 = Standard R = RoHS Compliant	**Lead Space Code** A = Standard	**Lead Style Code** 3 = 'J' Lead

AVX® The Important Information/Disclaimer is incorporated in these specifications by reference and should be reviewed in full before placing any order.

121219

65

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[AVX]():
 RH223C476MA3RA3 RH225C226MA3RA3 RH221C106MA3RA3 RH225C226MAARA3 RH215C106MAARA3
RH221C475MAARA3 RH211C225MAARA3 RH511C126MA3RA3 RH515C186MA3RA3 RH521C226MA3RA3
RH525C336MA3RA3 RH225C126KA30A3 RH317C104KAA0A3 RH317C104KA30A3