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RPEF51H104Z2K1A03B

#### ΕN

This Datasheet is presented by the manufacturer

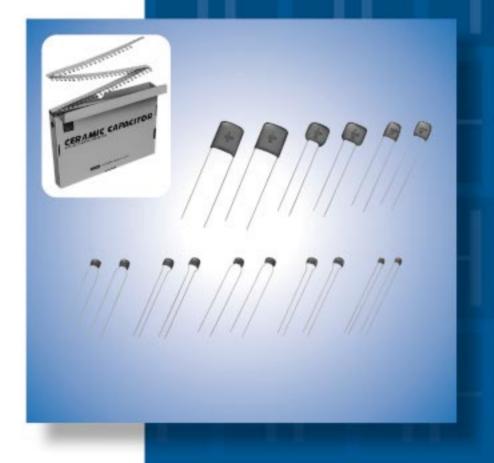
#### DE

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#### FR

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# Radial Lead Type Monolithic Ceramic Capacitors



muRata

Innovator in Electronics

Manufacturing Co., Ltd.

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#### Part Numbering

Radial Lead Type Monolithic Ceramic Capacitors

(Part Number)

RP E R7 1H 104 K 2 M1 A03 A

#### Product ID

#### 2Series/Terminal

Product ID	Series/Terminal	
RP	E	Radial Lead Type Monolithic Ceramic Capacitors (DC25V-DC100V)
RD	E	Radial Lead Type Monolithic Ceramic Capacitors (Only for Commercial Use) (DC250V-DC630V)

#### **3**Temperature Characteristics

Code	Code Temperature Temperature Characteristics Range		Capacitance Change or Temperature Coefficient	Operating Temperature Range		
5C	C0G 25 to 125°c		0±30ppm/°C	-55 to 125°C		
E4	Z5U	10 to 85°C	+22, -56%	10 to 85°C		
F5	Y5V -30 to		+22, -82%	-30 to 85°C		
R7	X7R -55 to 125°C		±15%	-55 to 125°C		

#### 4 Rated Voltage

Code	Rated Voltage
1E	DC25V
1H	DC50V
2A	DC100V
2E	DC250V
2J	DC630V

#### 6 Capacitance

Expressed by three-digit alphanumerics. The unit is pico-farad (pF). The first and second figures are significant digits, and the third figure expresses the number of zeros which follow the two numbers.

If there is a decimal point, it is expressed by the capital letter "R". In this case, all figures are significant digits.

#### **6**Capacitance Tolerance

Code	Capacitance Tolerance	Temperature Characteristics	Capacitance Step		
С	±0.25pF		≦5pF : 1pF Step		
D	±0.5pF	COG 6 to 9pF : 1pF Step			
J	±5%		≥10 : E12 Series		
K	±10%	X7R	E6 Series		
М	±20%	Z5U	E3 Series		
Z	+80%, -20%	Y5V	E3 Series		

#### Dimensions (LxW)

	<u>'</u>
Code	Dimensions (LxW)
2	5.0×3.5mm
3	5.0×4.5mm
4	7.5×5.0mm
5	7.5×7.5mm*
6	10.0×10.0mm
7	12.5×12.5mm
8	7.5×5.5mm
U	7.7×12.5mm*

<sup>\*</sup> DC630V: W+0.5mm

#### 8 Lead Style

Ozeda etyle		
Code	Lead Style	Lead Spacing
B1	Straight Long	5.0mm
C1	Straight Long	10.0mm
E1/E2	Straight Taping	5.0mm
K1	Inside Crimp	5.0mm
M1/M2	Inside Crimp Taping	5.0mm
P1	Outside Crimp	2.5mm
S1/S2	Outside Crimp Taping	2.5mm

Lead distance between reference and bottom planes.

M1, S1:  $H_0 = 16.0\pm0.5$ mm

M2, S2:  $H_0 = 20.0\pm0.5$ mm

E1: H = 17.5±0.5mm

E2: H = 20.0±0.5mm

#### Individual Specification Code

Expressed by three-digit alphanumerics

#### Packaging

Code	Packaging					
Α	Ammo Pack					
В	Bulk					



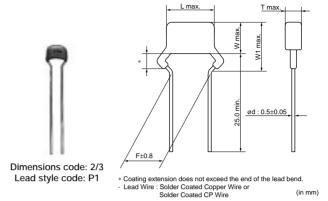
## **Radial Lead Type Monolithic Ceramic Capacitors**

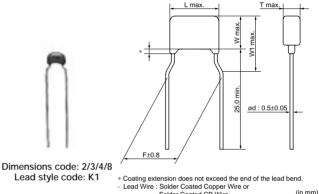
## RPE Series (DC25V-DC100V)

#### ■ Features

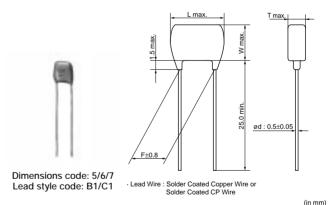
■ Dimensions

- 1. The RPE series capacitors have small dimensions, large capacitance, and a capacity volume ratio of 10 micro F/cm cubed, close to that of electrolytic capacitors. These do not have polarity.
- 2. These have excellent frequency characteristics and due to these small internal inductance are suitable for high frequencies.
- 3. These are not coated with wax so there is no change in their exterior appearance due to the outflow of wax during soldering or solvent during cleansing.
- 4. These are highly inflammable, having characteristics equivalent to the UL94V-0 standard.
- 5. Available product for RoHS Restriction (EU Directive 2002/95/EC)





Dimensions and	Dimensions (mm)								
Lead Style Code	L	W	W1	T	F	d			
2P1/2S1/2S2	5.0	3.5	5.0		2.5	0.5			
2K1/2M1/2M2	5.0	3.5	5.0		5.0	0.5			
3P1/3S1/3S2	5.0	4.5	6.3		2.5	0.5			
3K1/3M1/3M2	5.0	4.5	6.3	See	5.0	0.5			
4K1/4M1/4M2	7.5	5.0	7.0	the individual	5.0	0.5			
5B1/5E1/5E2	7.5	7.5	-	product	5.0	0.5			
6B1/6E1/6E2	10.0	10.0	-	specifications	5.0	0.5			
7C1	12.5	12.5	-		10.0	0.5			
8K1/8M1/8M2	7.5	5.5	8.0		5.0	0.5			
TB1/TE1/TE2	10.0	8.5	-		5.0	0.5			



Continued on the following page.





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Continued from the preceding page.

#### ■ Marking

■ Marking	Туре	Temperature Compensating Type	Н	igh Dielectric Constant Typ	 De				
Dimensions	Temp. Char.	COG	X7R	Z5U	Y5V				
Code									
2	Individual Specification Code A□□ B□□ Z□□	102J 5A  Marked on both sides	(222K)	(222M)	(224Z)				
2	Individual Specification Code Except A□□ B□□ Z□□	682 J5A	(M 224 K5C	(M) 224 (M) M5E	474 Z5F				
3, 4, 8		(M103 J5A	(M684 K5C	M105 M5E	M105 Z5F				
5, 6, 7		(M) 333 J5A	(M) 225 K5C	(M 225 M5E	(M) 225 Z5F				
Temperature Ch	aracteristics	Marked with code (C0G char.: A, X7R char.: C, Z5U char.: E, Y5V char.: F) A part is omitted (Please refer to the marking example.)							
Nominal Cap	acitance	Under 100pF: Actual value 100pF and over: marked with 3 figures							
Capacitance	Tolerance	Marked with code							
Rated Vo	oltage	Marked with code (DC25V: 2, DC50V: 5, DC100V: 1) A part is omitted (Please refer to the marking example.)							
Manufacturer's I	dentification	Marked with M A part is omitted (Please refer to the m	narking example.)						

## Temperature Compensating Type, C0G Characteristics

Part Number	Temp.	Rated Voltage (Vdc)	Capacitance (pF)	Dimensions LxW (mm)	Dimension T (mm)	Lead Space F (mm)	Lead Style Code Bulk	Lead Style Code Taping (1)	Lead Style Code Taping (2)
RPE5C1H1R0C2□□B03□	COG	50	1.0 ±0.25pF	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H1R0C2□□B03□	COG	50	1.0 ±0.25pF	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H2R0C2□□B03□	COG	50	2.0 ±0.25pF	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H2R0C2□□B03□	COG	50	2.0 ±0.25pF	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H3R0C2□□B03□	COG	50	3.0 ±0.25pF	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H3R0C2□□B03□	COG	50	3.0 ±0.25pF	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H4R0C2□□B03□	COG	50	4.0 ±0.25pF	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H4R0C2□□B03□	COG	50	4.0 ±0.25pF	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H5R0C2□□B03□	COG	50	5.0 ±0.25pF	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H5R0C2□□B03□	COG	50	5.0 ±0.25pF	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H6R0D2□□B03□	COG	50	6.0 ±0.5pF	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H6R0D2□□B03□	COG	50	6.0 ±0.5pF	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H7R0D2□□Z03□	COG	50	7.0 ±0.5pF	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H7R0D2□□Z03□	COG	50	7.0 ±0.5pF	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H8R0D2□□Z03□	COG	50	8.0 ±0.5pF	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H8R0D2 Z03	COG	50	8.0 ±0.5pF	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H9R0D2 Z03	COG	50	9.0 ±0.5pF	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H9R0D2□□Z03□	COG	50	9.0 ±0.5pF	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H100J2 Z03	COG	50	10 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H100J2 Z03	COG	50	10 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H120J2□□Z03□	COG	50	12 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H120J2□□Z03□	COG	50	12 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H150J2□□Z03□	COG	50	15 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H150J2□□Z03□	COG	50	15 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H180J2□□Z03□	COG	50	18 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H180J2□□Z03□	COG	50	18 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H220J2□□Z03□	COG	50	22 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H220J2□□Z03□	COG	50	22 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H270J2□□Z03□	COG	50	27 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H270J2□□Z03□	COG	50	27 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H330J2□□Z03□	COG	50	33 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H330J2□□Z03□	COG	50	33 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H390J2□□Z03□	COG	50	39 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H390J2□□Z03□	COG	50	39 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H470J2□□Z03□	COG	50	47 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H470J2□□Z03□	COG	50	47 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H560J2□□Z03□	COG	50	56 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H560J2□□Z03□	COG	50	56 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H680J2□□Z03□	C0G	50	68 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H680J2□□Z03□	C0G	50	68 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H820J2□□Z03□	C0G	50	82 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H820J2□□Z03□	COG	50	82 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H101J2□□A03□	C0G	50	100 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H101J2□□A03□	COG	50	100 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H121J2□□A03□	C0G	50	120 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H121J2□□A03□	C0G	50	120 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H151J2□□A03□	C0G	50	150 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H151J2□□A03□	C0G	50	150 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H181J2□□A03□	C0G	50	180 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H181J2□□A03□	C0G	50	180 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H221J2□□A03□	C0G	50	220 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H221J2□□A03□	C0G	50	220 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H271J2□□A03□	C0G	50	270 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H271J2□□A03□	C0G	50	270 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2

Part Number	Temp. Char.	Rated Voltage (Vdc)	Capacitance (pF)	Dimensions LxW (mm)	Dimension T (mm)	Lead Space F (mm)	Lead Style Code Bulk	Lead Style Code Taping (1)	Lead Style Code Taping (2)
RPE5C1H331J2□□A03□	C0G	50	330 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H331J2□□A03□	C0G	50	330 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H391J2□□A03□	C0G	50	390 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H391J2□□A03□	C0G	50	390 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H471J2□□A03□	C0G	50	470 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H471J2□□A03□	COG	50	470 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H561J2□□A03□	COG	50	560 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H561J2□□A03□	COG	50	560 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H681J2□□A03□	COG	50	680 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H681J2□□A03□	COG	50	680 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H821J2□□A03□	COG	50	820 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H821J2□□A03□	COG	50	820 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H102J2□□A03□	COG	50	1000 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C1H102J2□□A03□	COG	50	1000 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C1H122J2□□A03□	COG	50	1200 ±5%	5.0 x 3.5	3.15	2.5	P1	S1	S2
RPE5C1H122J2□□A03□	COG	50	1200 ±5%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPE5C1H152J2□□A03□	COG	50	1500 ±5%	5.0 x 3.5	3.15	2.5	P1	S1	S2
RPE5C1H152J2□□A03□	COG	50	1500 ±5%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPE5C1H182J2 C03	COG	50	1800 ±5%	5.0 x 3.5	3.15	2.5	P1	S1	S2
RPE5C1H182J2 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	COG	50	1800 ±5%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPE5C1H222J2 C03	COG	50	2200 ±5%	5.0 x 3.5	3.15	2.5	P1	S1	S2
RPE5C1H222J2	COG	50	2200 ±5%	5.0 x 3.5	3.15	5.0	K1	M1	M2
		50					P1	S1	
RPE5C1H272J2 C03	COG		2700 ±5%	5.0 x 3.5	3.15	2.5			S2
RPE5C1H272J2 A03	COG	50	2700 ±5%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPE5C1H332J2 C03	COG	50	3300 ±5%	5.0 x 3.5	3.15	2.5	P1	S1	S2
RPE5C1H332J2 A03	COG	50	3300 ±5%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPE5C1H392J2 C03	COG	50	3900 ±5%	5.0 x 3.5	3.15	2.5	P1	S1	S2
RPE5C1H392J2 A03	C0G	50	3900 ±5%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPE5C1H472J2□□C03□	C0G	50	4700 ±5%	5.0 x 3.5	3.15	2.5	P1	S1	S2
RPE5C1H472J2□□A03□	C0G	50	4700 ±5%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPE5C1H562J2□□C03□	C0G	50	5600 ±5%	5.0 x 3.5	3.15	2.5	P1	S1	S2
RPE5C1H562J2□□A03□	C0G	50	5600 ±5%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPE5C1H682J2□□C03□	C0G	50	6800 ±5%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPE5C1H822J2□□C03□	C0G	50	8200 ±5%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPE5C1H103J2□□C03□	C0G	50	10000 ±5%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPE5C1H123J4□□F03□	C0G	50	12000 ±5%	7.5 x 5.0	3.15	5.0	K1	M1	M2
RPE5C1H153J4□□F03□	C0G	50	15000 ±5%	7.5 x 5.0	3.15	5.0	K1	M1	M2
RPE5C1H183J5□□X03□	C0G	50	18000 ±5%	7.5 x 7.5	4.0	5.0	B1	E1	E2
RPE5C1H223J6□□F12□	C0G	50	22000 ±5%	10.0 x 10.0	4.0	5.0	B1	E1	E2
RPE5C1H273J6□□F12□	C0G	50	27000 ±5%	10.0 x 10.0	4.0	5.0	B1	E1	E2
RPE5C1H333J6□□F03□	COG	50	33000 ±5%	10.0 x 10.0	4.0	5.0	B1	E1	E2
RPE5C1H393J6□□F03□	COG	50	39000 ±5%	10.0 x 10.0	4.0	5.0	B1	E1	E2
RPE5C1H473J7□□F03□	COG	50	47000 ±5%	12.5 x 12.5	5.0	10.0	C1	-	-
RPE5C1H563J7□□F03□	COG	50	56000 ±5%	12.5 x 12.5	5.0	10.0	C1		-
RPE5C1H683J7□□F03□	COG	50	68000 ±5%	12.5 x 12.5	5.0	10.0	C1	-	-
RPE5C2A1R0C2□□B03□	COG	100	1.0 ±0.25pF	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A1R0C2□□B03□	COG	100	1.0 ±0.25pF	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A2R0C2□□B03□	COG	100	2.0 ±0.25pF	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A2R0C2□□B03□	COG	100	2.0 ±0.25pF	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A3R0C2□□B03□	COG	100	3.0 ±0.25pF	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A3R0C2□□B03□	COG	100	3.0 ±0.25pF	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A4R0C2□□B03□	COG	100	4.0 ±0.25pF	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A4R0C2□□B03□	COG	100	4.0 ±0.25pF	5.0 x 3.5	2.5	5.0	K1	M1	M2
	COG	100	5.0 ±0.25pF	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A5R0C2□□B03□□					۷.٠	2.0		J 1	UZ
RPE5C2A5R0C2□□B03□			<u> </u>			5.0	<b>K</b> 1	N/11	N/IO
RPE5C2A5R0C2	COG COG	100	5.0 ±0.25pF 6.0 ±0.5pF	5.0 x 3.5 5.0 x 3.5	2.5	5.0	K1 P1	M1 S1	M2 S2

Part Number	Temp. Char.	Rated Voltage (Vdc)	Capacitance (pF)	Dimensions LxW (mm)	Dimension T (mm)	Lead Space F (mm)	Lead Style Code Bulk	Lead Style Code Taping (1)	Lead Style Code Taping (2)
RPE5C2A7R0D2□□Z03□	C0G	100	7.0 ±0.5pF	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A7R0D2□□Z03□	C0G	100	7.0 ±0.5pF	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A8R0D2□□Z03□	C0G	100	8.0 ±0.5pF	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A8R0D2□□Z03□	C0G	100	8.0 ±0.5pF	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A9R0D2□□Z03□	C0G	100	9.0 ±0.5pF	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A9R0D2□□Z03□	C0G	100	9.0 ±0.5pF	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A100J2□□Z03□	C0G	100	10 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A100J2□□Z03□	C0G	100	10 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A120J2□□Z03□	C0G	100	12 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A120J2□□Z03□	C0G	100	12 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A150J2□□Z03□	C0G	100	15 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A150J2□□Z03□	C0G	100	15 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A180J2□□Z03□	C0G	100	18 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A180J2□□Z03□	C0G	100	18 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A220J2□□Z03□	C0G	100	22 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A220J2□□Z03□	C0G	100	22 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A270J2□□Z03□	COG	100	27 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A270J2□□Z03□	C0G	100	27 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A330J2□□Z03□	C0G	100	33 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A330J2□□Z03□	C0G	100	33 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A390J2□□Z03□	C0G	100	39 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A390J2□□Z03□	C0G	100	39 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A470J2□□Z03□	C0G	100	47 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A470J2□□Z03□	C0G	100	47 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A560J2□□Z03□	C0G	100	56 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A560J2□□Z03□	C0G	100	56 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A680J2□□Z03□	C0G	100	68 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A680J2□□Z03□	C0G	100	68 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A820J2□□Z03□	COG	100	82 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A820J2□□Z03□	COG	100	82 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A101J2□□A03□	COG	100	100 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A101J2□□A03□	COG	100	100 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A121J2□□A03□	COG	100	120 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A121J2□□A03□	COG	100	120 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A151J2□□A03□	COG	100	150 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A151J2□□A03□	COG	100	150 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A181J2□□A03□	COG	100	180 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A181J2□□A03□	COG	100	180 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A221J2□□A03□	COG	100	220 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A221J2□□A03□	COG	100	220 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A271J2 A03	COG	100	270 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A271J2□□A03□	COG	100	270 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A331J2□□A03□	COG	100	330 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A331J2 A03	COG	100	330 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A391J2□□A03□	COG	100	390 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A391J2□□A03□	COG	100	390 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A471J2 A03	COG	100	470 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A471J2 A03	COG	100	470 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A561J2 A03	COG	100	560 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A561J2 A03	COG	100	560 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A681J2 A03	COG	100	680 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPE5C2A681J2 A03	COG	100	680 ±5%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPE5C2A821J2 A03	COG	100	820 ±5%	5.0 x 3.5	3.15	2.5	P1	S1	S2
RPE5C2A821J2 A03	COG	100	820 ±5%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPE5C2A102J2 A03	COG	100	1000 ±5%	5.0 x 3.5	3.15	2.5	P1	S1	S2
RPE5C2A102J2 A03	COG	100	1000 ±5%	5.0 x 3.5	3.15	5.0	K1	M1	M2

Continued from the preceding												
Part Number	Temp. Char.	Rated Voltage (Vdc)	Capacitance (pF)	Dimensions LxW (mm)	Dimension T (mm)	Lead Space F (mm)	Lead Style Code Bulk	Lead Style Code Taping (1)	Lead Style Code Taping (2)			
RPE5C2A122J2□□A03□	C0G	100	1200 ±5%	5.0 x 3.5	3.15	5.0	K1	M1	M2			
RPE5C2A152J2□□A03□	C0G	100	1500 ±5%	5.0 x 3.5	3.15	2.5	P1	S1	S2			
RPE5C2A152J2□□A03□	C0G	100	1500 ±5%	5.0 x 3.5	3.15	5.0	K1	M1	M2			
RPE5C2A182J2□□D03□	C0G	100	1800 ±5%	5.0 x 3.5	3.15	2.5	P1	S1	S2			
RPE5C2A182J2□□D03□	C0G	100	1800 ±5%	5.0 x 3.5	3.15	5.0	K1	M1	M2			
RPE5C2A222J2□□D03□	C0G	100	2200 ±5%	5.0 x 3.5	3.15	2.5	P1	S1	S2			
RPE5C2A222J2□□D03□	C0G	100	2200 ±5%	5.0 x 3.5	3.15	5.0	K1	M1	M2			
RPE5C2A272J3□□D03□	C0G	100	2700 ±5%	5.0 x 4.5	3.15	2.5	P1	S1	S2			
RPE5C2A272J3□□D03□	C0G	100	2700 ±5%	5.0 x 4.5	3.15	5.0	K1	M1	M2			
RPE5C2A332J3□□D03□	C0G	100	3300 ±5%	5.0 x 4.5	3.15	2.5	P1	S1	S2			
RPE5C2A332J3□□D03□	C0G	100	3300 ±5%	5.0 x 4.5	3.15	5.0	K1	M1	M2			
RPE5C2A392J3□□D03□	C0G	100	3900 ±5%	5.0 x 4.5	3.15	2.5	P1	S1	S2			
RPE5C2A392J3□□D03□	C0G	100	3900 ±5%	5.0 x 4.5	3.15	5.0	K1	M1	M2			
RPE5C2A472J4□□X03□	C0G	100	4700 ±5%	7.5 x 5.0	2.5	5.0	K1	M1	M2			
RPE5C2A562J4□□F03□	C0G	100	5600 ±5%	7.5 x 5.0	3.15	5.0	K1	M1	M2			
RPE5C2A682J4□□F03□	C0G	100	6800 ±5%	7.5 x 5.0	3.15	5.0	K1	M1	M2			
RPE5C2A822J5□□X03□	C0G	100	8200 ±5%	7.5 x 7.5	4.0	5.0	B1	E1	E2			
RPE5C2A103J5□□X03□	C0G	100	10000 ±5%	7.5 x 7.5	4.0	5.0	B1	E1	E2			
RPE5C2A123J5□□X03□	C0G	100	12000 ±5%	7.5 x 7.5	4.0	5.0	B1	E1	E2			
RPE5C2A153J6□□X13□	C0G	100	15000 ±5%	10.0 x 10.0	4.0	5.0	B1	E1	E2			
RPE5C2A183J6□□X13□	C0G	100	18000 ±5%	10.0 x 10.0	4.0	5.0	B1	E1	E2			
RPE5C2A223J6□□X03□	C0G	100	22000 ±5%	10.0 x 10.0	4.0	5.0	B1	E1	E2			
RPE5C2A273J6□□X03□	C0G	100	27000 ±5%	10.0 x 10.0	4.0	5.0	B1	E1	E2			
RPE5C2A333J6□□F03□	C0G	100	33000 ±5%	10.0 x 10.0	4.0	5.0	B1	E1	E2			
RPE5C2A393J7□□X03□	C0G	100	39000 ±5%	12.5 x 12.5	5.0	10.0	C1	-	-			
RPE5C2A473J7□□F03□	C0G	100	47000 ±5%	12.5 x 12.5	5.0	10.0	C1	-	-			
RPE5C2A563J7□□F03□	C0G	100	56000 ±5%	12.5 x 12.5	5.0	10.0	C1	-	-			

Two blank columns are filled with the lead style code. Please refer to the 3 columns on the right for the appropriate code.

## **High Dielectric Constant Type, X7R Characteristics**

Part Number	Temp. Char.	Rated Voltage (Vdc)	Capacitance	Dimensions LxW (mm)	Dimension T (mm)	Lead Space F (mm)	Lead Style Code Bulk	Lead Style Code Taping (1)	Lead Style Code Taping (2)
RPER71E474K2□□A03□	X7R	25	0.47μF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPER71E684K2□□C03□	X7R	25	0.68μF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPER71E105K2□□C03□	X7R	25	1.0μF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPER71E155K3□□C07□	X7R	25	1.5μF ±10%	5.0 x 4.5	3.15	5.0	K1	M1	M2
RPER71E225K3□□C07□	X7R	25	2.2μF ±10%	5.0 x 4.5	3.15	5.0	K1	M1	M2
RPER71H221K2□□A03□	X7R	50	220pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPER71H221K2□□A03□	X7R	50	220pF ±10%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPER71H331K2□□A03□	X7R	50	330pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPER71H331K2□□A03□	X7R	50	330pF ±10%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPER71H471K2□□A03□	X7R	50	470pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPER71H471K2□□A03□	X7R	50	470pF ±10%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPER71H681K2□□A03□	X7R	50	680pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPER71H681K2□□A03□	X7R	50	680pF ±10%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPER71H102K2□□A03□	X7R	50	1000pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPER71H102K2□□A03□	X7R	50	1000pF ±10%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPER71H152K2□□A03□	X7R	50	1500pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPER71H152K2□□A03□	X7R	50	1500pF ±10%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPER71H222K2□□A03□	X7R	50	2200pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPER71H222K2□□A03□	X7R	50	2200pF ±10%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPER71H332K2□□A03□	X7R	50	3300pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPER71H332K2□□A03□	X7R	50	3300pF ±10%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPER71H472K2□□A03□	X7R	50	4700pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	S2

The last blank column is filled with the packaging code. (B: bulk, A: ammo pack)

Part Number	Temp. Char.	Rated Voltage (Vdc)	Capacitance	Dimensions LxW (mm)	Dimension T (mm)	Lead Space F (mm)	Lead Style Code Bulk	Lead Style Code Taping (1)	Lead Style Code Taping (2)
RPER71H472K2□□A03□	X7R	50	4700pF ±10%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPER71H682K2□□A03□	X7R	50	6800pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPER71H682K2□□A03□	X7R	50	6800pF ±10%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPER71H103K2□□A03□	X7R	50	10000pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPER71H103K2□□A03□	X7R	50	10000pF ±10%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPER71H153K2□□A03□	X7R	50	15000pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPER71H153K2□□A03□	X7R	50	15000pF ±10%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPER71H223K2□□A03□	X7R	50	22000pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPER71H223K2□□A03□	X7R	50	22000pF ±10%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPER71H333K2□□A03□	X7R	50	33000pF ±10%	5.0 x 3.5	3.15	2.5	P1	S1	S2
RPER71H333K2□□A03□	X7R	50	33000pF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPER71H473K2□□A03□	X7R	50	47000pF ±10%	5.0 x 3.5	3.15	2.5	P1	S1	S2
RPER71H473K2□□A03□	X7R	50	47000pF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPER71H683K2□□A03□	X7R	50	68000pF ±10%	5.0 x 3.5	3.15	2.5	P1	S1	S2
RPER71H683K2□□A03□	X7R	50	68000pF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPER71H104K2□□A03□	X7R	50	0.10μF ±10%	5.0 x 3.5	3.15	2.5	P1	S1	S2
RPER71H104K2□□A03□	X7R	50	0.10μF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPER71H154K2□□C03□	X7R	50	0.15μF ±10%	5.0 x 3.5	3.15	2.5	P1	S1	S2
RPER71H154K2□□C03□	X7R	50	0.15μF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPER71H224K2□□C03□	X7R	50	0.22μF ±10%	5.0 x 3.5	3.15	2.5	P1	S1	S2
RPER71H224K2□□C03□	X7R	50	0.22μF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPER71H334K2□□C03□	X7R	50	0.33μF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPER71H334K2□□C03□	X7R	50	0.33μF ±10%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPER71H474K2□□C03□	X7R	50	0.47μF ±10%	5.0 x 3.5	3.15	2.5	P1	S1	S2
RPER71H474K2□□C03□	X7R	50	0.47μF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPER71H684K3□□C03□	X7R	50	0.68μF ±10%	5.0 x 4.5	3.15	2.5	P1	S1	S2
RPER71H684K3□□C03□	X7R	50	0.68μF ±10%	5.0 x 4.5	3.15	5.0	K1	M1	M2
RPER71H105K3□□C07□	X7R	50	1.0μF ±10%	5.0 x 4.5	3.15	2.5	P1	S1	S2
RPER71H105K3□□C07□	X7R	50	1.0μF ±10%	5.0 x 4.5	3.15	5.0	K1	M1	M2
RPER71H155K8□□C03□	X7R	50	1.5μF ±10%	7.5 x 5.5	4.0	5.0	K1	M1	M2
RPER71H225K8□□C03□	X7R	50	2.2μF ±10%	7.5 x 5.5	4.0	5.0	K1	M1	M2
RPER71H335K5□□C03□	X7R	50	3.3μF ±10%	7.5 x 7.5	5.0	5.0	B1	E1	E2
RPER71H475K5□□C03□	X7R	50	4.7μF ±10%	7.5 x 7.5	4.0	5.0	B1	E1	E2
RPER72A221K2□□B03□	X7R	100	220pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPER72A221K2□□B03□	X7R	100	220pF ±10%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPER72A331K2□□B03□	X7R	100	330pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPER72A331K2□□B03□	X7R	100	330pF ±10%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPER72A471K2□□B03□	X7R	100	470pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPER72A471K2□□B03□	X7R	100	470pF ±10%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPER72A681K2□□B03□	X7R	100	680pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPER72A681K2□□B03□	X7R	100	680pF ±10%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPER72A102K2□□A03□	X7R	100	1000pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPER72A102K2□□A03□	X7R	100	1000pF ±10%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPER72A152K2□□A03□	X7R	100	1500pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPER72A152K2□□A03□	X7R	100	1500pF ±10%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPER72A222K2□□A03□	X7R	100	2200pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPER72A222K2□□A03□	X7R	100	2200pF ±10%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPER72A332K2□□A03□	X7R	100	3300pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPER72A332K2□□A03□	X7R	100	3300pF ±10%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPER72A472K2□□A03□	X7R	100	4700pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPER72A472K2□□A03□	X7R	100	4700pF ±10%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPER72A682K2□□A03□	X7R	100	6800pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPER72A682K2 A03	X7R	100	6800pF ±10%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPER72A103K2 A03	X7R	100	10000pF ±10%	5.0 x 3.5	3.15	2.5	P1	S1	S2
RPER72A103K2 A03	X7R	100	10000pF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPER72A153K2 \Backslash A03 \Backslash	X7R	100	15000pF ±10%	5.0 x 3.5	3.15	2.5	P1	S1	S2
RPER72A153K2 \Backslash A03 \Backslash	X7R	100	15000pF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	M2
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Part Number	Temp. Char.	Rated Voltage (Vdc)	Capacitance	Dimensions LxW (mm)	Dimension T (mm)	Lead Space F (mm)	Lead Style Code Bulk	Lead Style Code Taping (1)	Lead Style Code Taping (2)
RPER72A223K2□□A03□	X7R	100	22000pF ±10%	5.0 x 3.5	3.15	2.5	P1	S1	S2
RPER72A223K2□□A03□	X7R	100	22000pF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPER72A333K2□□C03□	X7R	100	33000pF ±10%	5.0 x 3.5	3.15	2.5	P1	S1	S2
RPER72A333K2□□C03□	X7R	100	33000pF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPER72A473K3□□C07□	X7R	100	47000pF ±10%	5.0 x 4.5	3.15	2.5	P1	S1	S2
RPER72A473K3□□C07□	X7R	100	47000pF ±10%	5.0 x 4.5	3.15	5.0	K1	M1	M2
RPER72A683K3□□C07□	X7R	100	68000pF ±10%	5.0 x 4.5	3.15	2.5	P1	S1	S2
RPER72A683K3□□C07□	X7R	100	68000pF ±10%	5.0 x 4.5	3.15	5.0	K1	M1	M2
RPER72A104K3□□C07□	X7R	100	0.10μF ±10%	5.0 x 4.5	3.15	2.5	P1	S1	S2
RPER72A104K3□□C07□	X7R	100	0.10μF ±10%	5.0 x 4.5	3.15	5.0	K1	M1	M2
RPER72A154K8□□C03□	X7R	100	0.15μF ±10%	7.5 x 5.5	4.0	5.0	K1	M1	M2
RPER72A224K8□□C03□	X7R	100	0.22μF ±10%	7.5 x 5.5	4.0	5.0	K1	M1	M2
RPER72A334K5□□C03□	X7R	100	0.33μF ±10%	7.5 x 7.5	4.0	5.0	B1	E1	E2
RPER72A474K8□□C03□	X7R	100	0.47μF ±10%	7.5 x 5.5	4.0	5.0	K1	M1	M2
RPER72A684K6□□F14□	X7R	100	0.68μF ±10%	10.0 x 10.0	4.0	5.0	B1	E1	E2
RPER72A105K5□□C03□	X7R	100	1.0μF ±10%	7.5 x 7.5	4.0	5.0	B1	E1	E2
RPER72A155K7□□F03□	X7R	100	1.5μF ±10%	12.5 x 12.5	5.0	10.0	C1	-	-
RPER72A225K7□□F03□	X7R	100	2.2μF ±10%	12.5 x 12.5	5.0	10.0	C1	-	-

Two blank columns are filled with the lead style code. Please refer to the 3 columns on the right for the appropriate code.

The last blank column is filled with the packaging code. (B: bulk, A: ammo pack)

## **High Dielectric Constant Type, Z5U Characteristics**

Part Number	Temp. Char.	Rated Voltage (Vdc)	Capacitance	Dimensions LxW (mm)	Dimension T (mm)	Lead Space F (mm)	Lead Style Code Bulk	Lead Style Code Taping (1)	Lead Style Code Taping (2)
RPEE41E105M3□□C03□	Z5U	25	1.0μF ±20%	5.0 x 4.5	2.5	2.5	P1	S1	S2
RPEE41E105M3□□C03□	Z5U	25	1.0μF ±20%	5.0 x 4.5	2.5	5.0	K1	M1	M2
RPEE41H102M2□□A03□	Z5U	50	1000pF ±20%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPEE41H102M2□□A03□	Z5U	50	1000pF ±20%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPEE41H222M2□□A03□	Z5U	50	2200pF ±20%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPEE41H222M2□□A03□	Z5U	50	2200pF ±20%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPEE41H472M2□□A03□	Z5U	50	4700pF ±20%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPEE41H472M2□□A03□	Z5U	50	4700pF ±20%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPEE41H103M2□□A03□	Z5U	50	10000pF ±20%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPEE41H103M2□□A03□	Z5U	50	10000pF ±20%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPEE41H223M2□□A03□	Z5U	50	22000pF ±20%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPEE41H223M2□□A03□	Z5U	50	22000pF ±20%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPEE41H473M2□□A03□	Z5U	50	47000pF ±20%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPEE41H473M2□□A03□	Z5U	50	47000pF ±20%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPEE41H104M2□□A03□	Z5U	50	$0.10\mu F \pm 20\%$	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPEE41H104M2□□A03□	Z5U	50	$0.10\mu F \pm 20\%$	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPEE41H224M3□□C03□	Z5U	50	0.22μF ±20%	5.0 x 4.5	2.5	2.5	P1	S1	S2
RPEE41H224M3□□C03□	Z5U	50	$0.22\mu F \pm 20\%$	5.0 x 4.5	2.5	5.0	K1	M1	M2
RPEE41H474M3□□C03□	Z5U	50	$0.47\mu F \pm 20\%$	5.0 x 4.5	3.15	2.5	P1	S1	S2
RPEE41H474M3□□C03□	Z5U	50	$0.47\mu F \pm 20\%$	5.0 x 4.5	3.15	5.0	K1	M1	M2
RPEE41H105M4□□E12□	Z5U	50	1.0μF ±20%	7.5 x 5.0	3.15	5.0	K1	M1	M2
RPEE41H225M6□□F14□	Z5U	50	2.2μF ±20%	10.0 x 10.0	4.0	5.0	B1	E1	E2
RPEE41H475M7□□F03□	Z5U	50	4.7μF ±20%	12.5 x 12.5	5.0	10.0	C1	-	-
RPEE42A102M2□□B03□	Z5U	100	1000pF ±20%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPEE42A102M2□□B03□	Z5U	100	1000pF ±20%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPEE42A222M2□□B03□	Z5U	100	2200pF ±20%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPEE42A222M2□□B03□	Z5U	100	2200pF ±20%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPEE42A472M2□□B03□	Z5U	100	4700pF ±20%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPEE42A472M2□□B03□	Z5U	100	4700pF ±20%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPEE42A103M2□□B03□	Z5U	100	10000pF ±20%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPEE42A103M2□□B03□	Z5U	100	10000pF ±20%	5.0 x 3.5	2.5	5.0	K1	M1	M2



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Continued from the preceding page.

Part Number	Temp. Char.	Rated Voltage (Vdc)	Capacitance	Dimensions LxW (mm)	Dimension T (mm)	Lead Space F (mm)	Lead Style Code Bulk	Lead Style Code Taping (1)	Lead Style Code Taping (2)
RPEE42A223M2□□D03□	Z5U	100	22000pF ±20%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPEE42A223M2□□D03□	Z5U	100	22000pF ±20%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPEE42A473M3□□D03□	Z5U	100	47000pF ±20%	5.0 x 4.5	2.5	2.5	P1	S1	S2
RPEE42A473M3□□D03□	Z5U	100	47000pF ±20%	5.0 x 4.5	2.5	5.0	K1	M1	M2
RPEE42A104M3□□C03□	Z5U	100	0.10μF ±20%	5.0 x 4.5	3.15	2.5	P1	S1	S2
RPEE42A104M3□□C03□	Z5U	100	0.10μF ±20%	5.0 x 4.5	3.15	5.0	K1	M1	M2

Two blank columns are filled with the lead style code. Please refer to the 3 columns on the right for the appropriate code.

The last blank column is filled with the packaging code. (B: bulk, A: ammo pack)

## **High Dielectric Constant Type, Y5V Characteristics**

Part Number	Temp. Char.	Rated Voltage (Vdc)	Capacitance	Dimensions LxW (mm)	Dimension T (mm)	Lead Space F (mm)	Lead Style Code Bulk	Lead Style Code Taping (1)	Lead Style Code Taping (2)
RPEF51E105Z3□□C03□	Y5V	25	1.0μF +80/-20%	5.0 x 4.5	2.5	2.5	P1	S1	S2
RPEF51E105Z3□□C03□	Y5V	25	1.0μF +80/-20%	5.0 x 4.5	2.5	5.0	K1	M1	M2
RPEF51H102Z2□□A03□	Y5V	50	1000pF +80/-20%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPEF51H102Z2□□A03□	Y5V	50	1000pF +80/-20%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPEF51H222Z2□□A03□	Y5V	50	2200pF +80/-20%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPEF51H222Z2□□A03□	Y5V	50	2200pF +80/-20%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPEF51H472Z2□□A03□	Y5V	50	4700pF +80/-20%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPEF51H472Z2□□A03□	Y5V	50	4700pF +80/-20%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPEF51H103Z2□□A03□	Y5V	50	10000pF +80/-20%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPEF51H103Z2□□A03□	Y5V	50	10000pF +80/-20%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPEF51H223Z2□□A03□	Y5V	50	22000pF +80/-20%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPEF51H223Z2□□A03□	Y5V	50	22000pF +80/-20%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPEF51H473Z2□□A03□	Y5V	50	47000pF +80/-20%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPEF51H473Z2□□A03□	Y5V	50	47000pF +80/-20%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPEF51H104Z2□□A03□	Y5V	50	0.10μF +80/-20%	5.0 x 3.5	2.5	2.5	P1	S1	S2
RPEF51H104Z2□□A03□	Y5V	50	0.10μF +80/-20%	5.0 x 3.5	2.5	5.0	K1	M1	M2
RPEF51H224Z2□□A03□	Y5V	50	0.22μF +80/-20%	5.0 x 3.5	3.15	2.5	P1	S1	S2
RPEF51H224Z2□□A03□	Y5V	50	0.22μF +80/-20%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPEF51H474Z2□□C03□	Y5V	50	0.47μF +80/-20%	5.0 x 3.5	3.15	2.5	P1	S1	S2
RPEF51H474Z2□□C03□	Y5V	50	0.47μF +80/-20%	5.0 x 3.5	3.15	5.0	K1	M1	M2
RPEF51H105Z4□□E12□	Y5V	50	1.0μF +80/-20%	7.5 x 5.0	2.5	5.0	K1	M1	M2
RPEF51H225Z6□□F14□	Y5V	50	2.2μF +80/-20%	10.0 x 10.0	4.0	5.0	B1	E1	E2
RPEF51H475Z6□□F03□	Y5V	50	4.7μF +80/-20%	10.0 x 10.0	4.0	5.0	B1	E1	E2

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## **Specifications and Test Methods**

NI -			Specifi	cations		Took Making d		
No.	Iter	n	Temperature Compensating Type	High Dielectric Constant Type		Test Method		
1	Operating Tem Range	nperature	-55 to +125°C	Char. X7R: -55 to +125°C Char. Z5U: +10 to + 85°C Char. Y5V: -30 to + 85°C		-		
2	Rated Voltage		See previous pages		which may be applied When AC voltage is	defined as the maxing ded continuously to the superimposed on DC slarger, should be mage range.	capacitor. C voltage, VP-P	
3	Appearance		No defects or abnormalities		Visual inspection			
4	Dimension and	d Marking	See previous pages		Visual inspection, Vo	Vernier Caliper		
		Between Terminals	No defects or abnormalities	ıbnormalities		The capacitors should not be damaged when DC voltages of 300%* of the rated voltage are applied between the terminals for 1 to 5 sec. (Charge/Discharge current ≦ 50mA) *250% for char. X7R, Z5U, Y5V		
5	Dielectric Strength	Body Insulation	No defects or abnormalities		The capacitor is place container with metal diameter so that each short-circuited, is ke approximately 2mm as shown in the figure of the rated DC voltaimpressed for 1 to 5 capacitor terminals aballs. (Charge/Disch ≤ 50mA)	balls of 1mm ch terminal, pt from the balls re, and 250% age is sec. between and metal	Approx. 2mm	
6	Insulation Resistance	Between Terminals	100,000MΩ min. or 1000Ω • F min. (whichever is smaller)	$\label{eq:continuous}  \begin{array}{ll} \text{Char. X7R: } 100,000M\Omega \text{ min. or } 1000\Omega \bullet \text{F min.} \\ \text{(whichever is smaller)} \\ \text{Char. Z5U} \\ \text{1} & 10,000M\Omega \text{ min. or } 500\Omega \bullet \text{F min.} \\ \text{Char. Y5V} \\ \end{array}$	The insulation resistance should be measured with a DC voltage not exceeding the rated voltage at norma temperature and humidity and within 2 min. of chargi (Charge/Discharge current ≤ 50mA)			
7	Capacitance		Within the specified tolerance			D.F. should be meas		
8	Q/Dissipation	Factor (D.F.)	30pF min. : Q ≥ 1000 30pF max. : Q ≥ 400+20C C : Nominal capacitance (pF)	Char. X7R Char. Z5U : 0.025 max. Char. Y5V : 0.05 max.	Char. (10 ltem and Frequency 1±0	COG COG (more than 1000pF) below) X7R, Y5V	Z5U 1±0.1kHz	
						5 to 5V AC1±0.2V (r.m.s.)	AC0.5±0.05V (r.m.s.)	
		Capacitance Change	Within the specified tolerance (Table A on last column)	Within the specified tolerance (Table B on last column)	min. at each specifie (1) Temperature Co. The temperature co. capacitance measur cycling the temperat through 5 (-55 to +1 within the specified to the control of the contr	efficient is determined red in step 3 as a refe ture sequentially from 25°C) the capacitance tolerance for the temp	d using the erence. When step 1 e should be perature	
9	Capacitance Temperature Characteristics Coefficient		Within the specified tolerance (Table A on last column)		A. The capacitance differences between measured values in step 3.	citance change as sh drift is calculated by on the maximum and m step 1, 3 and 5 by the	dividing the inimum	
					Step 1	Temperature 25±2	(°C)	
					2	-55±3		
					3 4	25±2		
					5	125±3 25±2		
		Unit (whichever is larger)		(2) High Dielectric Constant Type The ranges of capacitance change compared with the 25°C value over the temperature ranges as shown in Table B should be within the specified ranges.				

Continued on the following page.





## **Specifications and Test Methods**

Continued from the preceding page.

	Continued from tr	procoding pay		inations					
No.	Ite	m		cations	Test Method				
10	Terminal Strength	Tensile Strength	Temperature Compensating Type  Termination not to be broken or	, ,	As in the figure, fix the capacitor body, apply the force gradually to each lead in the radial direction of the capacitor until reaching 10N and then keep the force applied for 10±1 sec.				
		Bending Strength	Termination not to be broken or	loosened	Each lead wire should be subjected to a force of 2.51 and then bent 90° at the point of egress in one direction. Each wire is then returned to the original position and bent 90° in the opposite direction at the rate of one bend per 2 to 3 sec.				
		Appearance	No defects or abnormalities		The capacitor is soldered securely to a supporting				
	Vibration	Capacitance	Within the specified tolerance		terminal and a 10 to 55Hz vibration of 1.5mm peak-				
11	Resistance	Q/D.F.	30pF min. : Q ≥ 1000 30pF max. : Q ≥ 400+20C C : Nominal capacitance (pF)	Char. X7R : 0.025 max. Char. Z5U : 0.05 max.	peak amplitude is applied for 6 hrs. total, 2 hrs. in each mutually perpendicular direction. Allow 1 min. to cycle the frequency from 10Hz to 55Hz and the converse.				
12	Solderability o	f Leads	Lead wire should be soldered wi direction over 3/4 of the circumfe		The terminal of a capacitor is dipped into a 25% ethanol (JIS-K-8101) solution of rosin (JIS-K-5902) and then into molten solder for 2±0.5 sec. In both cases the depth of dipping is up to about 1.5mm to 2mm from the terminal body.  Temp. of solder:  245±5°C Lead Free Solder (Sn-3.0Ag-0.5Cu)  235±5°C H60A or H63A Eutectic Solder				
		Appearance	No defects or abnormalities		The lead wire is immersed in the melted solder 1.5mm				
13	Resistance to	Capacitance Change	Within ±2.5% or ±0.25pF (whichever is larger)	Char. X7R: Within ±7.5% Char. Z5U Char. Y5V: Within ±20%	to 2mm from the main body at 350±10°C for 3.5±0.5 sec. The specified items are measured after 24±2 hrs. (temperature compensating type) or 48±4 hrs. (high dielectric type).				
13	Soldering Heat	Dielectric Strength (Between Terminals)	No defects		• Initial measurement for high dielectric constant type  The capacitors are heat treated for 1 hr. at 150 <sup>+</sup> <sub>-10</sub> °C, allowed to set at room temperature for 48±4 hrs., and given an initial measurement.				
		Appearance	No defects or abnormalities		First, repeat the following temperature/time cycle 5				
		Capacitance Change	Within ±5% or ±0.5pF (whichever is larger)	Char. X7R: Within ±12.5% Char. Z5U Char. Y5V: Within ±30%	times:  lowest operating temperature ±3°C/30±3 min.  ⇒ ordinary temperature/3 min. max.  ⇒ highest operating temperature ±3°C/30±3 min.				
	Temperature	Q/D.F.	30pF min.: Q ≥ 350 10pF to 30pF: Q ≥ 275+ $\frac{5}{2}$ C 10pF max.: Q ≥ 200+10C C: Nominal capacitance (pF)	Char. X7R : 0.05 max. Char. Z5U Char. Y5V : 0.075 max.	<ul> <li>⇒ ordinary temperature/3 min. max.</li> <li>Next, repeat twice the successive cycles of immersion, each cycle consisting of immersion in a fresh water at 65<sup>±</sup>/<sub>6</sub>°C for 15 min. and immersion in a saturated</li> </ul>				
14	and Immersion Cycle	Insulation Resistance	10000MΩ or 500Ω • F min. (whichever is smaller)	$\begin{array}{c} \text{Char. X7R} : 10000M\Omega \text{ or } 500\Omega \bullet \text{F min.} \\ \text{ (whichever is smaller)} \\ \text{Char. Z5U } \\ \text{Char. Y5V } \\ \end{array} \begin{array}{c} 1000M\Omega \text{ or } 50\Omega \bullet \text{F min.} \\ \text{(whichever is smaller)} \end{array}$	aqueous solution of salt at 0±3°C for 15 min. The capacitor is then promptly washed in running water, dried with a drying cloth, and allowed to sit at room temperature for 24±2 hrs. (temperature compensating type) or 48±4 hrs. (high dielectric type).				
		Dielectric Strength (Between Terminals)	No defects or abnormalities		• Initial measurement for high dielectric constant type  The capacitors are heat treated for 1 hr. at  150±10 °C, allowed to sit at room temperature for 48  ±4 hrs., and given an initial measurement.				

Continued on the following page.





## **Specifications and Test Methods**

Continued from the preceding page

	Continued from th	e preceding pag	ge.		
No.	Itei	m	Specifi	cations	Test Method
INO.	itei		Temperature Compensating Type	High Dielectric Constant Type	Test Wethou
		Appearance	No defects or abnormalities		
		Capacitance Change	Within ±5% or ±0.5pF (whichever is larger)	Char. X7R : Within ±12.5% Char. Z5U Char. Y5V : Within ±30%	Set the capacitor for 500 $^{+24}_{0}$ hrs. at 40±2°C in 90 to 95% humidity. Remove and set for 24±2 hrs. (temperature compensating type) and 48±4 hrs. (high
15	Humidity (Steady State)	Q/D.F.	30pF min.: Q ≥ 350 10pF to 30pF : Q ≥ 275+ $\frac{5}{2}$ C 10pF max. : Q ≥ 200+10C C : Nominal capacitance (pF)	Char. X7R : 0.05 max. Char. Z5U Char. Y5V : 0.075 max.	dielectric constant type) at room temperature, then measure.  • Initial measurement for high dielectric constant type
		Insulation Resistance	10000MΩ or 500Ω • F min. (whichever is smaller)	$ \begin{array}{ll} \text{Char. X7R} &: 10000M\Omega \text{ or } 500\Omega \bullet \text{F min.} \\ & \text{(whichever is smaller)} \\ \text{Char. Z5U} & 1000M\Omega \text{ or } 50\Omega \bullet \text{F min.} \\ \text{Char. Y5V} & \text{(whichever is smaller)} \\ \end{array} $	The capacitors are heat treated for 1 hr. at 150 $^+_{-10}^{0}$ °C, allowed to sit at room temperature for 48 $\pm$ 4 hrs. and given an initial measurement.
		Appearance	No defects or abnormalities		
	6 Humidity Load	Capacitance Change	Within ±5% or ±0.5pF (whichever is larger)	Char. X7R : Within ±12.5% Char. Z5U Char. Y5V : Within ±30%	Apply the rated voltage for $500 \pm \frac{24}{0}$ hrs. at $40 \pm 2^{\circ}$ C and
16		Q/D.F.	30pF min. : Q ≥ 350 10pF to 30pF : Q ≥ 275+ $\frac{5}{2}$ C 10pF max. : Q ≥ 200+10C C : Nominal capacitance (pF)	Char. X7R : 0.05 max. Char. Z5U Char. Y5V : 0.075 max.	in 90 to 95% humidity. Remove and set for 24±2 hrs. (temperature compensating type) and 48±4 hrs. (high dielectric constant type) at room temperature, then measure.
		Insulation Resistance	10000MΩ or 500Ω • F min. (whichever is smaller)		- (Charge/Discharge current ≦ 50mA)
		Appearance	No defects or abnormalities		Apply 200% of the rated voltage for 1000 $\pm ^{48}_{0}$ hrs. at
		Capacitance Change	Within ±3% or ±0.3pF (whichever is larger)	Char. X7R : Within ±12.5% Char. Z5U Char. Y5V : Within ±30%	the maximum operating temperature. Remove and set for 24±2 hrs. (temperature compensating type) and 48 ±4 hrs. (high dielectric constant type) at room temperature, then measure.
17	High Temperature Load	Q/D.F.	30pF min. : Q ≥ 350 10pF to 30pF : Q ≥ 275+ $\frac{5}{2}$ C 10pF max. : Q ≥ 200+10C C : Nominal capacitance (pF)	Char. X7R : 0.04 max. Char. Z5U Char. Y5V : 0.075 max.	(Charge/Discharge current ≤ 50mA)  • Initial measurement for high dielectric constant type A voltage treatment should be given to the capacitor in
		Insulation Resistance	10000MΩ or 500Ω • F min. (whichever is smaller)	Char. X7R : 10000MΩ or 500Ω • F min. (whichever is smaller) Char. Z5U \ 1000MΩ or 50Ω • F min. Char. Y5V \ (whichever is smaller)	which a DC voltage of 200% of the rated voltage is applied for 1 hr. at the maximum operating temperature ±3°C. Then set for 48±4 hrs. at room temperature and conduct initial measurement.
		Appearance	No defects or abnormalities		The capacitor should be fully immersed, unagitated, in
18	Solvent Resistance	Marking	Legible		reagent at 20 to 25°C for 30±5 sec. and then remove gently. Marking on the surface of the capacitor should immediately be visually examined.  Reagent:  Isopropyl alcohol

#### Table A

		_			_			
	NI! I M - I	C	apacitar	nce Chai	nge from	from 25°C (%)		
Char.	Nominal Values (ppm/°C) *1	-55	2.C	-30	).C	-10	0.C	
	(ppiii/ C) i	Max.	Min.	Max.	Min.	Max.	Min.	
C0G	0±30	0.58	-0.24	0.40	-0.17	0.25	-0.11	

<sup>\*1:</sup> Nominal values denote the temperature coefficient within a range of 25 to 125°C

#### Table B

Char.	Temp. Range	Reference Temp.	Cap. Change Rate
X7R	-55 to +125°C		Within ± 15%
Z5U	+10 to + 85°C	25°C	Within $^{+22}_{-56}$ %
Y5V	-30 to + 85°C		Within +22 %



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## **Radial Lead Type Monolithic Ceramic Capacitors**



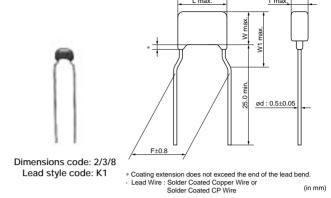
## RDE Series (Only for Commercial Use) (DC250V-DC630V)

#### ■ Features

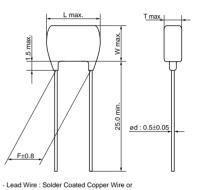
- 1. Small size and large capacitance
- 2. Low ESR characteristics for high frequency
- 3. Coated with epoxy resin whose flammability is equivalent to UL94V-0
- 4. Available product for RoHS Restriction (EU Directive 2002/95/EC)

#### ■ Applications

General electronic equipment (Do not use for Automotive related Power train and Safety Equipment.)





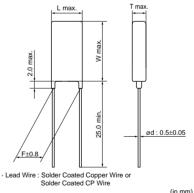


#### ■ Dimensions

Dimensions and			Dime	nsions (mm)		
Lead Style Code	L	W	W1	Т	F	d
2K1/2M1	5.0	3.5	5.0	_	5.0	0.5
3K1/3M1	5.0	4.5	6.3	See	5.0	0.5
5B1/5E1	7.5	7.5*	-	the individual product	5.0	0.5
8K1/8M1	7.5	5.5	8.0	specifications	5.0	0.5
UB1/UE1	7.7	12.5*	-		5.0	0.5

\*DC630V: W+0.5mm





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Continued from the preceding page.

#### ■ Marking

■ Iviai Kiriy				
Dimension	Rated Voltage	DC250V	DC630V	
Dimensions Code Temp. Char.		X7R		
2	Individual Specification Code A	(103K)	-	
2	Individual Specification Code	(M 153 K4C)	(M K7C)	
3, 8		(M104) K4C	(M104) K7C	
5, U		(M) 474 K4C	(M) 474 M7C	
Temperature Charac	teristics	Marked with code (X7R char.: C)		
Nominal Capacit	ance	Marked with 3 figures		
Capacitance Tole	rance	Marked with code		
Rated Voltag	e	Marked with code (DC250V: 4, DC630V: 7) A part is omitted (Please refer to the marking example.)		
Manufacturer's Iden	tification	Marked with M A part is omitted (Please refer to the marking example.)		



Part Number	Temp. Char.	Rated Voltage (Vdc)	Capacitance	Dimensions LxW (mm)	Dimension T (mm)	Lead Space F (mm)	Lead Style Code Bulk	Lead Style Code Taping (1)	Lead Style Code Taping (2)
RDER72E102K2□□A11□	X7R	250	1000pF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	-
RDER72E152K2□□A11□	X7R	250	1500pF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	-
RDER72E222K2□□A11□	X7R	250	2200pF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	-
RDER72E332K2□□A11□	X7R	250	3300pF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	-
RDER72E472K2□□A11□	X7R	250	4700pF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	-
RDER72E682K2□□A11□	X7R	250	6800pF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	-
RDER72E103K2□□A11□	X7R	250	10000pF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	-
RDER72E153K2□□C11□	X7R	250	15000pF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	-
RDER72E223K2□□C11□	X7R	250	22000pF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	-
RDER72E333K2□□C11□	X7R	250	33000pF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	-
RDER72E473K2□□C11□	X7R	250	47000pF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	-
RDER72E683K3□□C11□	X7R	250	68000pF ±10%	5.0 x 4.5	3.15	5.0	K1	M1	-
RDER72E104K3□□C11□	X7R	250	0.10μF ±10%	5.0 x 4.5	3.15	5.0	K1	B1	-
RDER72E154K8□□C11□	X7R	250	0.15μF ±10%	7.5 x 5.5	3.15	5.0	K1	M1	-
RDER72E224K8□□C11□	X7R	250	0.22μF ±10%	7.5 x 5.5	3.15	5.0	K1	M1	-
RDER72E334K5□□C13□	X7R	250	0.33μF ±10%	7.5 x 7.5	4.0	5.0	B1	E1	-
RDER72E474K5□□C13□	X7R	250	0.47μF ±10%	7.5 x 7.5	4.0	5.0	B1	E1	-
RDER72E105MU□□C13□	X7R	250	1.0μF ±20%	7.7 x 12.5	4.0	5.0	B1	E1	-
RDER72J102K2□□C11□	X7R	630	1000pF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	-
RDER72J152K2□□C11□	X7R	630	1500pF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	-
RDER72J222K2□□C11□	X7R	630	2200pF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	-
RDER72J332K2□□C11□	X7R	630	3300pF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	-
RDER72J472K2□□C11□	X7R	630	4700pF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	-
RDER72J682K2□□C11□	X7R	630	6800pF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	-
RDER72J103K2□□C11□	X7R	630	10000pF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	-
RDER72J153K2□□C11□	X7R	630	15000pF ±10%	5.0 x 3.5	3.15	5.0	K1	M1	-
RDER72J223K3□□C11□	X7R	630	22000pF ±10%	5.0 x 4.5	3.15	5.0	K1	M1	-
RDER72J333K3□□C11□	X7R	630	33000pF ±10%	5.0 x 4.5	3.15	5.0	K1	M1	-
RDER72J473K3□□C11□	X7R	630	47000pF ±10%	5.0 x 4.5	3.15	5.0	K1	M1	-
RDER72J683K8□□C11□	X7R	630	68000pF ±10%	7.5 x 5.5	3.15	5.0	K1	M1	-
RDER72J104K8□□C11□	X7R	630	0.10μF ±10%	7.5 x 5.5	3.15	5.0	K1	M1	-
RDER72J154K5□□C13□	X7R	630	0.15μF ±10%	7.5 x 8.0	4.0	5.0	B1	E1	-
RDER72J224K5□□C13□	X7R	630	0.22μF ±10%	7.5 x 8.0	4.0	5.0	B1	E1	-
RDER72J474MU□□C13□	X7R	630	0.47μF ±20%	7.7 x 13.0	4.0	5.0	B1	E1	-

Two blank columns are filled with the lead style code. Please refer to the 3 columns on the right for the appropriate code.

The last blank column is filled with the packaging code. (B: bulk, A: ammo pack)

No.	o. Item		Specifications		Test Method
1	Operating Ten Range	nperature	-55 to +125°C		-
2	2 Appearance		No defects or abnormalities	Visual inspection	
3	Dimension and	d Marking	See previous pages	Visual inspection, V	'ernier Caliper
		Between Terminals	No defects or abnormalities	Table is applied be	Id not be damaged when voltage in tween the terminations for 1 to 5 arge current ≤ 50mA)  Test Voltage 200% of the rated voltage 150% of the rated voltage
4	Dielectric Strength  Body Insulation		No defects or abnormalities	The capacitor is place container with metadiameter so that east of the short-circuit, is kept 2mm from the balls the figure, and 200 DC voltage is impresec. between capaciand metal balls. (Charge/Discharge ≤ 50mA)	al balls of 1mm ch terminal, approximately as shown in % of the rated essed for 1 to 5 citor terminals
5	Insulation Between Resistance Terminals		C<0.01μF : 10000M $\Omega$ min. C≥0.01μF : 100M $\Omega$ · μF min. C : Nominal capacitance	The insulation resistance should be measured with DC500±50V (DC250±25V in case of rated voltage: DC250V) at normal temperature and humidity and within 2 min. of charging. (Charge/Discharge current ≤ 50mA)	
6	Capacitance		Within the specified tolerance		F. should be measured at the
7	Dissipation Factor (D.F.)		0.025 max.	frequency of 1±0.1kHz and a voltage of AC1±0.2V(r.m.s.)	
8	Capacitance 8 Temperature Characteristics		Within ±15%	Step 1 2 3 4 5  Pretreatment Perform a heat trea	re stage.  Temperature (°C)  25±2  -55±3  25±2  125±3  25±2  trment at 150+0/-10°C for 1 hr., and temperature for 24±2 hrs.
9	Tensile Strength Terminal Strength		Termination not to be broken or loosened	As in the figure, fix gradually to each le capacitor until reach applied for 10±1 se	the capacitor body, apply the force ad in the radial direction of the ning 10N and then keep the force
		Bending Strength	Termination not to be broken or loosened	Each lead wire should be subjected to a force of 2.5N and then bent 90° at the point of egress in one direction. Each wire is then returned to the original position and bent 90° in the opposite direction at the rate of one bend per 2 to 3 sec.	
		Appearance	No defects or abnormalities		ld be firmly soldered to the
10	Vibration	Capacitance	Within the specified tolerance		e and vibrated at a frequency range im in total amplitude, with about a 1
10	Resistance	D.F.	0.025 max.	minute rate of vibra	tion change from 10Hz to 55Hz and y for a total of 6 hrs., 2 hrs. each in 3

Continued on the following page.  $\begin{tabular}{|c|c|c|c|} \hline \end{tabular}$ 



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## **Specifications and Test Methods**

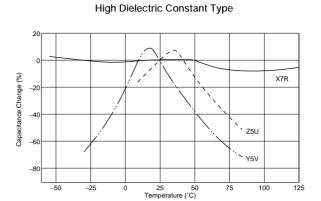
Continued from the preceding page.

No.	Ite	m	Specifications	Test Method			
11	1 Solderability of Leads		Lead wire should be soldered with uniform coating on the axial direction over 3/4 of the circumferential direction.	The terminal of a capacitor is dipped into a solution ethanol (JIS-K-8101) and rosin (JIS-K-5902) (25% in weight proportion) and then into molten solder for 2±0.5 sec. In both cases the depth of dipping is up about 1.5 to 2mm from the terminal body.  Temp. of solder:  245±5°C Lead Free Solder (Sn-3.0Ag-0.5Cu)  235±5°C H60A or H63A Eutectic Solder			
		Appearance	No defects or abnormalities	The lead wire is immersed in the melted solder 1.5 to			
	Resistance to	Capacitance Change	Within ±10%	2mm from the main body at 350±10°C for 3.5±0.5 sec. The specified items are measured after 24±2 hrs.			
12	Soldering Heat	Dielectric Strength (Between Terminals)	No defects	Pretreatment     Perform a heat treatment at 150+0/-10°C for 1 hr., and then let sit at room temperature for 24±2 hrs.			
		Appearance	No defects or abnormalities	First, repeat 5 cycles according to the 4 heat			
		Capacitance Change	Within ±12.5%	treatments listed in the following table. Next, repeat twice the successive cycles of immersion, each cycle consisting of immersion in fresh water at 65+5/-0°C for			
		D.F.	0.05 max.	15 min. and immersion in a saturated aqueous solution			
	Temperature	Insulation Resistance	C<0.01μF : 1000MΩ min. C≥0.01μF : 10MΩ · μF min.	of salt at 0±3°C for 15 min. The capacitor is then promptly washed in running water, dried with a drying cloth, and allowed to sit at room temperature for 24±2			
13	and Immersion Cycle	nersion		Step         1         2         3         4           Temp.         Min. Operating Temp.         Room Temp.         Max. Operating Temp.         Room Temp.           Time (min.)         30±3         3 max.         30±3         3 max.           • Pretreatment           Perform a heat treatment at 150+0/-10°C for 1 hr., and then let sit at room temperature for 24±2 hrs.			
		Appearance	No defects or abnormalities				
14	Humidity	Capacitance Change	Within ±15%	Set the capacitor at 40±2°C and relative humidity of 90			
14	(Steady State)	D.F.	0.05 max.	to 95% for 500 ±20 hrs. Remove and set for 24±2 hrs. at room temperature, then measure.			
		Insulation Resistance	$C$ <0.01μF : 1000M $\Omega$ min. C≥0.01μF : 10M $\Omega$ ⋅ μF min.				
		Appearance	No defects or abnormalities				
15	Humidity	Capacitance Change	Within ±15%	Apply the rated voltage at 40±2°C and relative humidity of 90 to 95% for 500 $^{+24}_{0}$ hrs. Remove and set for			
13	Load	D.F.	0.05 max.	24±2 hrs. at room temperature, then measure.  (Charge/Discharge current ≤ 50mA)			
		Insulation Resistance	C<0.01μF : 1000MΩ min. C≥0.01μF : 10MΩ · μF min.	(			
		Appearance	No defects or abnormalities	Apply voltage in Table for 1000 $^{+48}_{0}$ hrs. at the maximum operating temperature. Remove and set for			
	High	Capacitance Change	Within ±15%	24±2 hrs. at room temperature, then measure.  (Charge/Discharge current ≤ 50mA)			
.,		D.F.	0.05 max.	Rated Voltage Test Voltage			
16	Temperature Load			DC250V 150% of the rated voltage			
		Insulation Resistance C<0.01μF : 1000MΩ min. C≥0.01μF : 10MΩ ⋅ μF min.		DC630V   120% of the rated voltage      Pretreatment Apply test voltage for 1 hr., at test temperature. Removand set for 24±2 hrs. at room temperature.			
		Appearance	No defects or abnormalities	The capacitor should be fully immersed, unagitated, in			
17	Solvent Resistance	Marking	Legible	reagent at 20 to 25°C for 30±5 sec. and then remove gently. Marking on the surface of the capacitor should immediately be visually examined.  Reagent:  • Isopropyl alcohol			

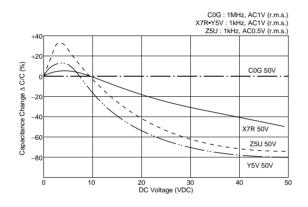
## **RPE Series Characteristics Data (Typical Example)**

#### ■ Capacitance - Temperature Characteristics

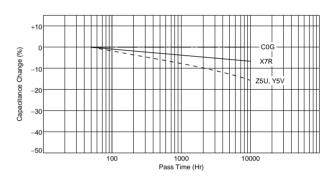
**Temperature Compensating Type** Capacitance Change (%) COG -60 -40 -20 80 100 120 Temperature (°C)



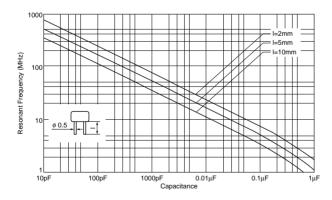
#### ■ Capacitance - DC Voltage Characteristics



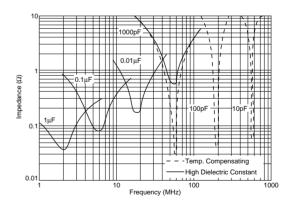
#### ■ Capacitance Change - Aging



#### ■ Capacitance - Resonant Frequency



#### ■ Impedance - Frequency Characteristics

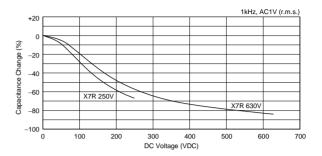


## **RDE Series Characteristics Data (Typical Example)**

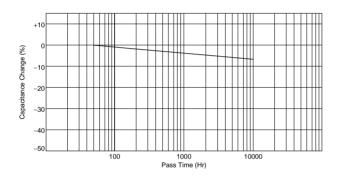
#### ■ Capacitance - Temperature Characteristics

#### 30 Capacitance Change (%) 20 10 -10 -30 120 -20 40 60 100 -60 -40

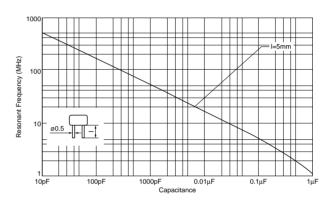
### ■ Capacitance - DC Voltage Characteristics



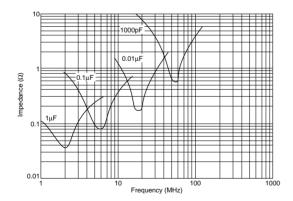
#### ■ Capacitance Change - Aging



#### ■ Capacitance - Resonant Frequency



#### ■ Impedance - Frequency Characteristics



## **Packaging**

#### Packaging

Two types of packaging for epoxy coated monolithic ceramic capacitors are available.

#### 1. Bulk Packaging

Minimum Quantity\*1

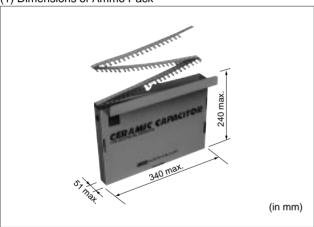
William Qualitity					
Dimensions code	Dimensions (LXW)	Minimum Quantity (pcs./Bag)			
2	5.0×3.5mm				
3	5.0×4.5mm				
4	7.5×5.0mm	500			
5	7.5×7.5mm*	500			
6	10.0×10.0mm				
8	7.5×5.5mm				
7	12.5×12.5mm	100			
U	7.7×12.5mm*	200			

<sup>\*</sup> DC630V : W+0.5mm

Please order with an integral multiple of the minimum quantity above.

#### 2. Tape Carrier Packaging

### (1) Dimensions of Ammo Pack



#### (2) Minimum Quantity\*1

(					
Dimensions Code	Dimensions (LXW)	Minimum Quantity (pcs./Ammo Pack)			
2	5.0×3.5mm				
3	5.0×4.5mm	2000			
4	7.5×5.0mm				
5	7.5×7.5mm*	2000*2			
8	7.5×5.5mm	1500			
6	10.0×10.0mm	1500			
U	7.7×12.5mm*	1000			

<sup>\*</sup> DC630V : W+0.5mm

Please order with an integral multiple of the minimum quantity above.

\*2 1500 pcs. for RPER71H335K5 C03A, RPER71H475K5 C03A,

RPER72A334K5 CO3A, RPER72A105K5 CO3A and RDE Series

(Two blank columns are filled with the lead style code.)

Continued on the following page.





<sup>\*1 &</sup>quot;Minimum Quantity" means the numbers of units of each delivery or order. The quantity should be an integral multiple of the "minimum quantity". (Please note that the actual delivery quantity in a package may change sometimes.)

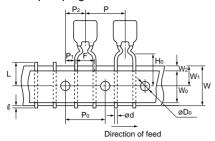
## **Packaging**



Continued from the preceding page.

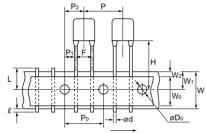
#### ■ Taping Dimensions

#### Inside Crimp Taping



Dimensions and Lead style code	Dimensions (LXW)	
2M1	5.0×3.5mm	
2M2	5.0\3.5\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	
3M1	5.0×4.5mm	
3M2	5.024.511111	
4M1	7.5×5.0mm	
4M2	7.585.000	
8M1	7.5×5.5mm	
8M2	7.5\5.5\1	

#### Straight Taping

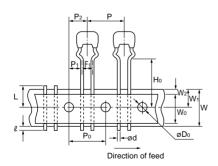


Direction of feed

Dimensions and Lead style code	Dimensions (LXW)	
5E1	7.5×7.5mm*	
5E2	7.5\7.5\1.5\1.5\1.5\1.5\1.5\1.5\1.5\1.5\1.5\1	
6E1	10.0×10.0mm	
6E2	10.0×10.011111	
UE1	7.7×12.5mm*	

<sup>\*</sup> DC630V : W+0.5mm

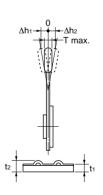
#### Outside Crimp Taping



Dimensions and Lead style code	Dimensions (LXW)	
2S1	5.0×3.5mm	
2S2	5.0/3.511111	
3S1	5.0×4.5mm	
3S2	5.0^4.511111	

Item	Code	Dimensions (mm)
Pitch of Component	Р	12.7
Pitch of Sprocket Hole	P <sub>0</sub>	12.7±0.2
Load Cassina	F1	2.5 +0.4
Lead Spacing	F	5.0 +0.6
Length from Hole Center to Component Center	P <sub>2</sub>	6.35±1.3
Longth from Holo Contar to	P <sub>1</sub>	3.85±0.7
Length from Hole Center to Lead	FI	5.1±0.7 (S1) (S2)
Lead	254±1.	5 Total length of components pitch × 20
Body Dimension	See th	ne individual product specification
Deviation Along Tape, Left or Right Defect	ΔS	±2.0
Carrier Tape Width	W	18.0±0.5
Position of Sprocket Hole	W <sub>1</sub>	9.0+0
Lead Distance between	11.	16.0±0.5 (M1) (S1)
Reference and Bottom Plane	H <sub>0</sub>	20.0±0.5 (M2) (S2)
For Straight Lead Type	Н	20±0.5 (E2), 17.5±0.5 (E1)
Diameter of Sprocket Hole	D <sub>0</sub>	4.0±0.1
Lead Diameter	d	0.5±0.05
Total Tape Thickness	t1	0.6±0.3
Total Thickness of Tape and Lead Wire	t2	1.5 max.
Body Thickness	Т	See the individual product specification
Daviation Agrees Tone	∆h1	1.0 max.
Deviation Across Tape	∆h2	1.0 max.
Portion to Cut in Case of	L	11.0 +0
Defect	_	-1.0
Protrusion Length	l	0.5 max.
Hold Down Tape Width	Wo	9.5 min.
Hold Down Tape Position	W2	1.5±1.5
Coating Extension	See th	e individual product specification







### **1** Caution

#### ■ **①**Caution (Storage and Operating Condition)

Operating and storage environment

The insulating coating of capacitors does not form a perfect seal; therefore, do not use or store capacitors in a corrosive atmosphere, especially where chloride gas, sulfide gas, acid, alkali, salt or the like are present. And avoid exposure to moisture. Before cleaning, bonding or molding this product, verify that these processes do not affect product quality by testing the performance of a cleaned, bonded or molded product in the intended

equipment. Store the capacitors where the temperature and relative humidity do not exceed 5 to 40 degrees centigrade and 20 to 70%. Use capacitors within 6 months after delivered.

FAILURE TO FOLLOW THE ABOVE CAUTIONS MAY RESULT, WORST CASE, IN A SHORT CIRCUIT AND CAUSE FUMING OR PARTIAL DISPERSION WHEN THE PRODUCT IS USED.



**△**Caution

#### ■ ①Caution (Rating)

#### 1. Operating Voltage

When DC-rated capacitors are to be used in AC or ripple current circuits, be sure to maintain the Vp-p value of the applied voltage or the V0-p which contains DC bias within the rated voltage range.

When the voltage is applied to the circuit, starting or stopping may generate irregular voltage for a transit period because of resonance or switching. Be sure to use a capacitor with a rated voltage range that includes these irregular voltages.

Voltage	DC Voltage	DC+AC Voltage	AC Voltage	Pulse Voltage (1)	Pulse Voltage (2)
Positional Measurement	V0-p	V0-p	Vp-p	Vp-p	Vp-p

2. Operating Temperature and Self-generated Heat Keep the surface temperature of a capacitor below the upper limit of its rated operating temperature range. Be sure to take into account the heat generated by the capacitor itself. When the capacitor is used in a highfrequency current, pulse current or similar current, it may have self-generated heat due to dielectric loss. In case of "High Dielectric Constant Type Capacitors (X7R/Y5V/Z5U char.)", applied voltage load should be such that selfgenerated heat is within 20 °C under the condition where the capacitor is subjected at an atmosphere temperature of 25 °C. Please contact us if self-generated heat occurs with "Temperature Compensating Type Capacitors (C0G char.)". When measuring, use a thermocouple of small thermal capacity -K of Ø0.1mm under conditions where the capacitor is not affected by radiant heat from other components or wind from surroundings. Excessive heat may lead to deterioration of the capacitor's characteristics and reliability. (Never attempt to perform measurement with the cooling fan running. Otherwise, accurate measurement cannot be ensured.)

#### 3. Fail-Safe

Be sure to provide an appropriate fail-safe function on your product to prevent a second damage that may be caused by the abnormal function or the failure of our product.

FAILURE TO FOLLOW THE ABOVE CAUTIONS MAY RESULT, WORST CASE, IN A SHORT CIRCUIT AND CAUSE FUMING OR PARTIAL DISPERSION WHEN THE PRODUCT IS USED.

### **⚠**Caution

#### ■ ①Caution (Soldering and Mounting)

Vibration and impact
 Do not expose a capacitor or its leads to excessive shock or vibration during use.

2. Soldering

When soldering this product to a PCB/PWB, do not exceed the solder heat resistance specification of the capacitor. Subjecting this product to excessive heating could melt the internal junction solder and may result in thermal shocks that can crack the ceramic element.

Bonding, resin molding and coating
Before bonding, molding or coating this product,
verify that these processes do not affect the
quality of capacitor by testing the performance of
the bonded, molded or coated product in the
intended equipment.

■ ①Caution (Handling)

Vibration and impact

Do not expose a capacitor or its leads to excessive shock or vibration during use.

FAILURE TO FOLLOW THE ABOVE CAUTIONS MAY RESULT, WORST CASE, IN A SHORT CIRCUIT AND CAUSE FUMING OR PARTIAL DISPERSION WHEN THE PRODUCT IS USED.

In case the amount of application, dryness/ hardening conditions of adhesives and molding resins containing organic solvents (ethyl acetate, methyl ethyl ketone, toluene, etc.) are unsuitable, the outer coating resin of a capacitor may be damaged by the organic solvents and may result, worst case, in a short circuit.

The variation in thickness of adhesive or molding resin or coating may cause an outer coating resin cracking and/or ceramic element cracking of a capacitor in a temperature cycling.

FAILURE TO FOLLOW THE ABOVE CAUTIONS MAY RESULT, WORST CASE, IN A SHORT CIRCUIT AND CAUSE FUMING OR PARTIAL DISPERSION WHEN THE PRODUCT IS USED.



**Notice** 

#### ■ Notice (Rating)

Capacitance change of capacitor In case of X7R/Y5V/Z5U char.

Capacitors have an aging characteristic, whereby the capacitor continually decreases its capacitance slightly if the capacitor is left on for a long time. Moreover, capacitance might change greatly depending on the surrounding temperature or an applied voltage.

#### ■ Notice (Soldering and Mounting)

#### 1. Cleaning (ultrasonic cleaning)

To perform ultrasonic cleaning, observe the following conditions.

Rinse bath capacity: Output of 20 watts per liter or less.

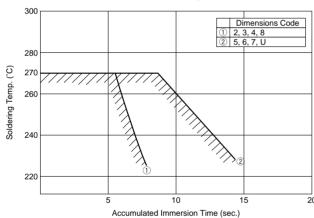
Rinsing time: 5 min. maximum.

Do not vibrate the PCB/PWB directly.

Excessive ultrasonic cleaning may lead to fatigue destruction of the lead wires.

#### 2. Soldering and Mounting

(1) Allowable Conditions for Soldering Temperature and Time



Perform soldering within tolerance range (shaded portion).

#### (2) Insertion of the Lead Wire

- · When soldering, insert the lead wire into the PCB without mechanically stressing the lead wire.
- $\cdot$  Insert the lead wire into the PCB with a distance appropriate to the lead space.



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• This PDF catalog has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

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  - 1 Aircraft equipment 3 Undersea equipment
- 2 Aerospace equipment 4 Power plant equipment
- (5) Medical equipment
- 6 Transportation equipment (vehicles, trains, ships, etc.)
- Traffic signal equipment
- 8 Disaster prevention / crime prevention equipment
- Data-processing equipment
- 10 Application of similar complexity and/or reliability requirements to the applications listed above
- 3. Product specifications in this catalog are as of July 2006. They are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering. If there are any questions, please contact our sales representatives or product
- 4. Please read rating and ACAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
- 5. This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.
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