

Radial Lead Type Monolithic Ceramic Capacitors



muRata

*Innovator
in Electronics*

Murata
Manufacturing Co., Ltd.

● Part Numbering

Radial Lead Type Monolithic Ceramic Capacitors

(Part Number)

RP	E	R7	1H	104	K	2	M1	A03	A
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

① Product ID

② Series/Terminal

Product ID	Series/Terminal	
RP	E	Radial Lead Type Monolithic Ceramic Capacitors (DC25V-DC100V)
RH	E/D	Radial Lead Type Monolithic Ceramic Capacitors 150°C max. (for Automotive) (DC50V-DC100V)
RD	E	Radial Lead Type Monolithic Ceramic Capacitors (For Commercial Use Only) (DC25V-DC630V)

③ Temperature Characteristics

Code	Temperature Characteristics	Reference Temperature	Temperature Range	Capacitance Change or Temperature Coefficient	Operating Temperature Range
5C	C0G*	25°C	25 to 125°C	0±30ppm/°C	-55 to 125°C
5G	X8G*	25°C	25 to 150°C	0±30ppm/°C	-55 to 150°C
C7	X7S	25°C	-55 to 125°C	±22%	-55 to 125°C
D7	X7T	25°C	-55 to 125°C	+22, -33%	-55 to 125°C
F1	F	20°C	-25 to 85°C	+30, -80%	-25 to 85°C
F5	Y5V	25°C	-30 to 85°C	+22, -82%	-30 to 85°C
L8	X8L	25°C	-55 to 125°C	±15%	-55 to 150°C
			125 to 150°C	+15, -40%	
R7	X7R	25°C	-55 to 125°C	±15%	-55 to 125°C

* Please refer to table for Capacitance change under reference temperature.

• Capacitance change from each temperature

Char.	Nominal Values (ppm/°C) *1	Capacitance Change from 25°C (%)					
		-55°C		-30°C		-10°C	
		Max.	Min.	Max.	Min.	Max.	Min.
C0G	0±30	0.58	-0.24	0.40	-0.17	0.25	-0.11
X8G							

*1: Nominal values denote the temperature coefficient within a range of 25 to 125°C.

④ Rated Voltage

Code	Rated Voltage
1E	DC25V
1H	DC50V
2A	DC100V
2E	DC250V
2W	DC450V
2J	DC630V


⑤ 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 that 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
C	±0.25pF	C0G	≤5pF : 1pF Step
D	±0.5pF		6 to 9pF : 1pF Step
J	±5%	C0G/X8G	≥10 : E12 Series
K	±10%	X7S/X7T/X7R/X8L	E6 Series
M	±20%	X7S/X7T/X7R/X8L	E3 Series
Z	+80%, -20%	F/Y5V	E3 Series

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⑦ Dimensions (LxW)

Code	Dimensions (LxW)
0	4.0X3.5mm or 5.0X3.5mm (Depends on Part Number List)
1	4.0X3.5mm or 4.5X3.5mm or 5.0X3.5mm (Depends on Part Number List)
2	5.0X3.5mm or 5.5X4.0mm or 5.7X4.5mm (Depends on Part Number List)
3	5.0X4.5mm or 5.5X5.0mm or 6.0X5.5mm (Depends on Part Number List)
5	7.5X7.5mm*
6	10.0X10.0mm
7	12.5X12.5mm
8	7.5X5.5mm
U	7.7X12.5mm*
W	5.5X7.5mm

* DC630V: W+0.5mm

⑧ Lead Style

Code	Lead Style	Lead Spacing
A2	Straight Long	2.5mm
B1	Straight Long	5.0mm
C1	Straight Long	10.0mm
DB	Straight Taping	2.5mm
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: H₀ = 16.0±0.5mm

M2, S2: H₀ = 20.0±0.5mm

E1: H = 17.5±0.5mm

E2: H = 20.0±0.5mm

⑨ Individual Specification Code

Expressed by three-digit alphanumerics

⑩ Packaging

Code	Packaging
A	Ammo Pack
B	Bulk

Radial Lead Type Monolithic Ceramic Capacitors



RDE Series (For Commercial Use Only) (DC25V-DC630V)

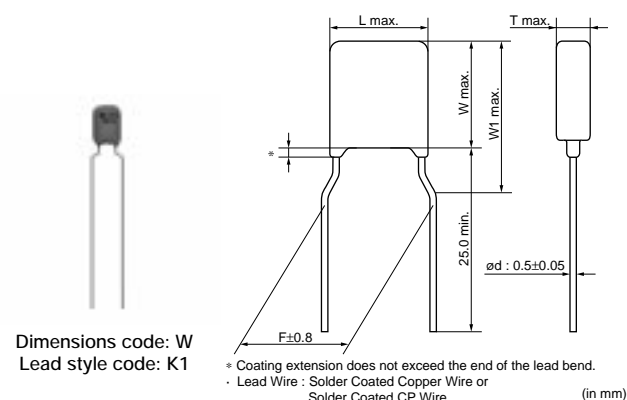
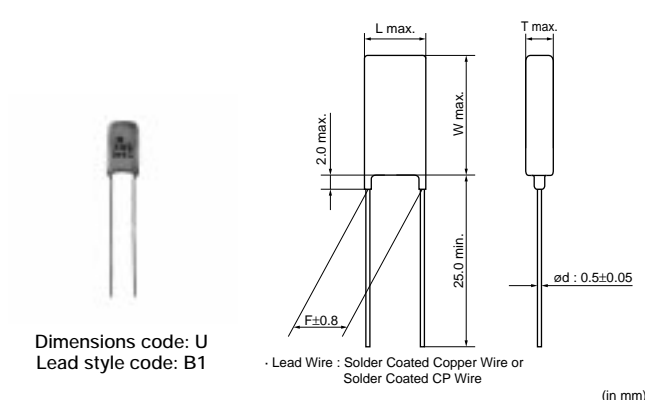
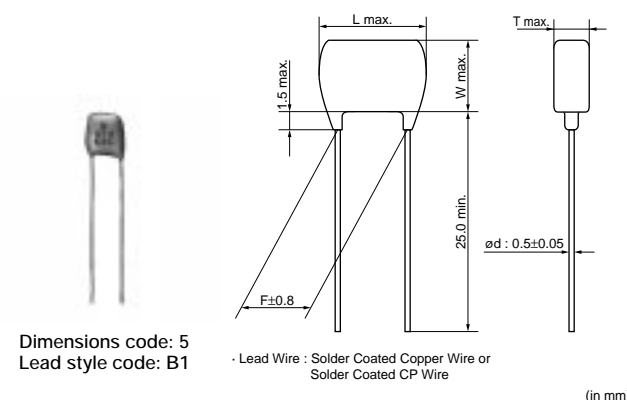
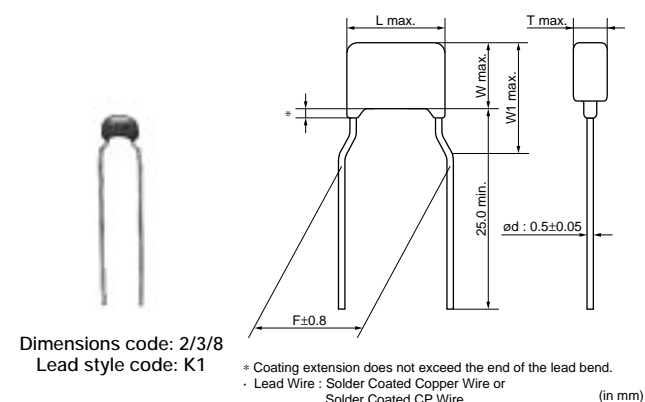
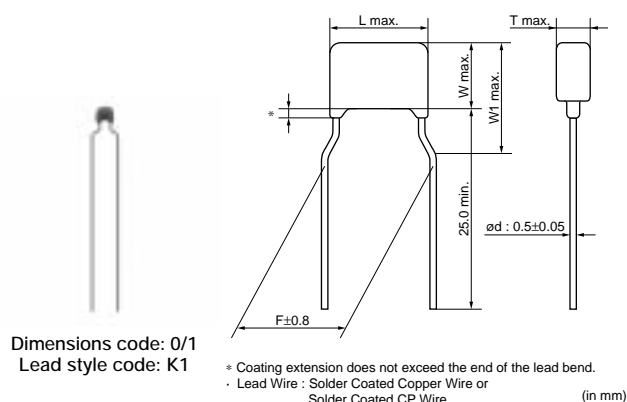
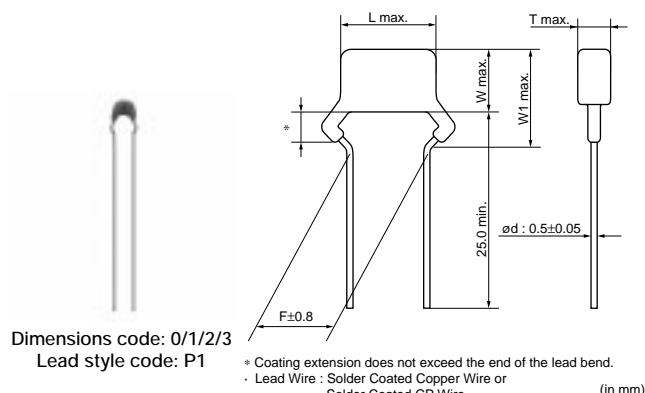
■ Features

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

■ Applications

General electronic equipment

(Do not use for automotive-related power train and safety equipment.)



■ Dimensions

Dimensions and Lead Style Code	DC Rated Voltage	Dimensions (mm)				
		L	W	W1	T	F d
0P1/0S1	25V/50V/100V	5.0	3.5	6.0	See the individual product specifications	2.5 0.5
0K1/0M1	25V/50V/100V	4.0	3.5	6.0		5.0 0.5
1P1/1S1	25V/50V/100V	5.0	3.5	5.0		2.5 0.5
1K1/1M1	25V/50V/100V	4.5	3.5	5.0		5.0 0.5
2P1/2S1	25V/50V/100V	5.5	4.0	6.0		2.5 0.5
2K1/2M1	25V/50V/100V	5.5	4.0	6.0		5.0 0.5
	250V/630V	5.0	3.5	5.0		5.0 0.5
3P1/3S1	25V/50V/100V	5.5	5.0	7.5		2.5 0.5
3K1/3M1	25V/50V/100V	5.5	5.0	7.5		5.0 0.5
	250V/630V	5.0	4.5	6.3		5.0 0.5
5B1/5E1	250V/630V	7.5	7.5*	-		5.0 0.5
8K1/8M1	250V/630V	7.5	5.5	8.0		5.0 0.5
UB1/UE1	250V/630V	7.7	12.5*	-		5.0 0.5
WK1/WM1	25V/100V	5.5	7.5	10.0		5.0 0.5

*DC630V: W+0.5mm

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Marking

Dimensions Code	Type	Temperature Compensating Type	High Dielectric Constant Type									
	Rated Voltage	DC50V, DC100V	DC25V		DC50V				DC100V		DC250V	DC630V
	Temp. Char.	C0G	X7S	X7R	X7S	X7R	F	Y5V	X7S	X7R	X7R	
0	Individual Specification Code A□□	A 102J		104K	—		473	103Z	—		—	—
			224K			224K				224K		
1		—		—	—		—	—	—		—	—
2	Individual Specification Code A□□	—									103K	—
	Individual Specification Code C□□	—	M 475 K2C	—	M 475 K5C	M 105 K5C	—	—	—	M 105 K1C	M 153 K4C	M 153 K7C
3, 8, W		—	M 226 K2C	—	—	M 335 K5C	—	—	M 225 K1C	—	M 104 K4C	M 104 K7C
5, U		—	—	—	—	—	—	—	—	—	M 474 K4C	M 474 M7C
Temperature Characteristics		Marked with code (C0G char.: A, X7S/X7R char.: C, F/Y5V char.: F) A part is omitted (Please refer to the marking example.)										
Nominal Capacitance		Under 100pF: Actual value 100pF and over: Marked with 3 figures										
Capacitance Tolerance		Marked with code A part is omitted (Please refer to the marking example.)										
Rated Voltage		Marked with code (DC25V: 2, DC50V: 5, DC100V: 1, DC250V: 4, DC630V: 7) Lower horizontal line for F char. A part is omitted (Please refer to the marking example.)										
Manufacturer's Identification		Marked with M A part is omitted (Please refer to the marking example.)										


Temperature Compensating Type, C0G Characteristics

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)
RDE5C1H100J0□□C03□	C0G	50	10 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	—
RDE5C1H100J0□□C03□	C0G	50	10 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	—
RDE5C1H120J0□□C03□	C0G	50	12 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	—
RDE5C1H120J0□□C03□	C0G	50	12 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	—
RDE5C1H150J0□□C03□	C0G	50	15 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	—
RDE5C1H150J0□□C03□	C0G	50	15 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	—
RDE5C1H180J0□□C03□	C0G	50	18 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	—
RDE5C1H180J0□□C03□	C0G	50	18 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	—
RDE5C1H220J0□□C03□	C0G	50	22 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	—
RDE5C1H220J0□□C03□	C0G	50	22 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	—
RDE5C1H270J0□□C03□	C0G	50	27 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	—
RDE5C1H270J0□□C03□	C0G	50	27 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	—
RDE5C1H330J0□□C03□	C0G	50	33 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	—
RDE5C1H330J0□□C03□	C0G	50	33 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	—
RDE5C1H390J0□□C03□	C0G	50	39 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	—
RDE5C1H390J0□□C03□	C0G	50	39 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	—
RDE5C1H470J0□□C03□	C0G	50	47 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	—
RDE5C1H470J0□□C03□	C0G	50	47 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	—
RDE5C1H560J0□□C03□	C0G	50	56 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	—
RDE5C1H560J0□□C03□	C0G	50	56 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	—

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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)
RDE5C1H680J0□□C03□	C0G	50	68 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C1H680J0□□C03□	C0G	50	68 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C1H820J0□□C03□	C0G	50	82 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C1H820J0□□C03□	C0G	50	82 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C1H101J0□□C03□	C0G	50	100 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C1H101J0□□C03□	C0G	50	100 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C1H121J0□□C03□	C0G	50	120 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C1H121J0□□C03□	C0G	50	120 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C1H151J0□□C03□	C0G	50	150 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C1H151J0□□C03□	C0G	50	150 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C1H181J0□□C03□	C0G	50	180 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C1H181J0□□C03□	C0G	50	180 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C1H221J0□□C03□	C0G	50	220 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C1H221J0□□C03□	C0G	50	220 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C1H271J0□□C03□	C0G	50	270 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C1H271J0□□C03□	C0G	50	270 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C1H331J0□□C03□	C0G	50	330 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C1H331J0□□C03□	C0G	50	330 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C1H391J0□□C03□	C0G	50	390 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C1H391J0□□C03□	C0G	50	390 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C1H471J0□□C03□	C0G	50	470 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C1H471J0□□C03□	C0G	50	470 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C1H561J0□□C03□	C0G	50	560 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C1H561J0□□C03□	C0G	50	560 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C1H681J0□□C03□	C0G	50	680 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C1H681J0□□C03□	C0G	50	680 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C1H821J0□□C03□	C0G	50	820 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C1H821J0□□C03□	C0G	50	820 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C1H102J0□□C03□	C0G	50	1000 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C1H102J0□□C03□	C0G	50	1000 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C2A100J0□□C03□	C0G	100	10 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C2A100J0□□C03□	C0G	100	10 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C2A120J0□□C03□	C0G	100	12 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C2A120J0□□C03□	C0G	100	12 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C2A150J0□□C03□	C0G	100	15 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C2A150J0□□C03□	C0G	100	15 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C2A180J0□□C03□	C0G	100	18 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C2A180J0□□C03□	C0G	100	18 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C2A220J0□□C03□	C0G	100	22 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C2A220J0□□C03□	C0G	100	22 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C2A270J0□□C03□	C0G	100	27 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C2A270J0□□C03□	C0G	100	27 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C2A330J0□□C03□	C0G	100	33 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C2A330J0□□C03□	C0G	100	33 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C2A390J0□□C03□	C0G	100	39 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C2A390J0□□C03□	C0G	100	39 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C2A470J0□□C03□	C0G	100	47 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C2A470J0□□C03□	C0G	100	47 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C2A560J0□□C03□	C0G	100	56 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C2A560J0□□C03□	C0G	100	56 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C2A680J0□□C03□	C0G	100	68 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C2A680J0□□C03□	C0G	100	68 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C2A820J0□□C03□	C0G	100	82 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C2A820J0□□C03□	C0G	100	82 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C2A101J0□□C03□	C0G	100	100 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C2A101J0□□C03□	C0G	100	100 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C2A121J0□□C03□	C0G	100	120 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-

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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)
RDE5C2A121J0□□C03□	C0G	100	120 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C2A151J0□□C03□	C0G	100	150 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C2A151J0□□C03□	C0G	100	150 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C2A181J0□□C03□	C0G	100	180 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C2A181J0□□C03□	C0G	100	180 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C2A221J0□□C03□	C0G	100	220 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C2A221J0□□C03□	C0G	100	220 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C2A271J0□□C03□	C0G	100	270 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C2A271J0□□C03□	C0G	100	270 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C2A331J0□□C03□	C0G	100	330 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C2A331J0□□C03□	C0G	100	330 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C2A391J0□□C03□	C0G	100	390 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C2A391J0□□C03□	C0G	100	390 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C2A471J0□□C03□	C0G	100	470 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C2A471J0□□C03□	C0G	100	470 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C2A561J0□□C03□	C0G	100	560 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C2A561J0□□C03□	C0G	100	560 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C2A681J0□□C03□	C0G	100	680 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C2A681J0□□C03□	C0G	100	680 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C2A821J0□□C03□	C0G	100	820 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C2A821J0□□C03□	C0G	100	820 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDE5C2A102J0□□C03□	C0G	100	1000 ±5%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDE5C2A102J0□□C03□	C0G	100	1000 ±5%	5.0 x 3.5	2.5	2.5	P1	S1	-

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, X7R/X7S 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)
RDER71E104K0□□C03□	X7R	25	0.10μF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDER71E104K0□□C03□	X7R	25	0.10μF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDEC71E224K0□□C03□	X7S	25	0.22μF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDEC71E224K0□□C03□	X7S	25	0.22μF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDEC71E474K0□□C03□	X7S	25	0.47μF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDEC71E474K0□□C03□	X7S	25	0.47μF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDEC71E105K0□□C03□	X7S	25	1.0μF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDEC71E105K0□□C03□	X7S	25	1.0μF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDEC71E225K1□□C03□	X7S	25	2.2μF ±10%	4.5 x 3.5	3.15	5.0	K1	M1	-
RDEC71E225K1□□C03□	X7S	25	2.2μF ±10%	5.0 x 3.5	3.15	2.5	P1	S1	-
RDEC71E475K2□□C03□	X7S	25	4.7μF ±10%	5.5 x 4.0	3.15	2.5	P1	S1	-
RDEC71E475K2□□C03□	X7S	25	4.7μF ±10%	5.5 x 4.0	3.15	5.0	K1	M1	-
RDEC71E106K2□□C03□	X7S	25	10.0μF ±10%	5.5 x 4.0	3.15	2.5	P1	S1	-
RDEC71E106K2□□C03□	X7S	25	10.0μF ±10%	5.5 x 4.0	3.15	5.0	K1	M1	-
RDEC71E226K3□□C03□	X7S	25	22.0μF ±10%	5.5 x 5.0	4.0	2.5	P1	S1	-
RDEC71E226K3□□C03□	X7S	25	22.0μF ±10%	5.5 x 5.0	4.0	5.0	K1	M1	-
RDEC71E476MW□□C03□	X7S	25	47.0μF ±20%	5.5 x 7.5	4.0	5.0	K1	M1	-
RDER71H221K0□□C03□	X7R	50	220pF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDER71H221K0□□C03□	X7R	50	220pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDER71H331K0□□C03□	X7R	50	330pF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDER71H331K0□□C03□	X7R	50	330pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDER71H471K0□□C03□	X7R	50	470pF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDER71H471K0□□C03□	X7R	50	470pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDER71H681K0□□C03□	X7R	50	680pF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDER71H681K0□□C03□	X7R	50	680pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDER71H102K0□□C03□	X7R	50	1000pF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-

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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)
RDER71H102K0□□C03□	X7R	50	1000pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDER71H152K0□□C03□	X7R	50	1500pF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDER71H152K0□□C03□	X7R	50	1500pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDER71H222K0□□C03□	X7R	50	2200pF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDER71H222K0□□C03□	X7R	50	2200pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDER71H332K0□□C03□	X7R	50	3300pF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDER71H332K0□□C03□	X7R	50	3300pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDER71H472K0□□C03□	X7R	50	4700pF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDER71H472K0□□C03□	X7R	50	4700pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDER71H682K0□□C03□	X7R	50	6800pF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDER71H682K0□□C03□	X7R	50	6800pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDER71H103K0□□C03□	X7R	50	10000pF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDER71H103K0□□C03□	X7R	50	10000pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDER71H153K0□□C03□	X7R	50	15000pF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDER71H153K0□□C03□	X7R	50	15000pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDER71H223K0□□C03□	X7R	50	22000pF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDER71H223K0□□C03□	X7R	50	22000pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDER71H333K0□□C03□	X7R	50	33000pF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDER71H333K0□□C03□	X7R	50	33000pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDER71H473K0□□C03□	X7R	50	47000pF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDER71H473K0□□C03□	X7R	50	47000pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDER71H683K0□□C03□	X7R	50	68000pF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDER71H683K0□□C03□	X7R	50	68000pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDER71H104K0□□C03□	X7R	50	0.10μF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDER71H104K0□□C03□	X7R	50	0.10μF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDER71H154K1□□C03□	X7R	50	0.15μF ±10%	4.5 x 3.5	3.15	5.0	K1	M1	-
RDER71H154K1□□C03□	X7R	50	0.15μF ±10%	5.0 x 3.5	3.15	2.5	P1	S1	-
RDER71H224K1□□C03□	X7R	50	0.22μF ±10%	4.5 x 3.5	3.15	5.0	K1	M1	-
RDER71H224K1□□C03□	X7R	50	0.22μF ±10%	5.0 x 3.5	3.15	2.5	P1	S1	-
RDER71H334K1□□C03□	X7R	50	0.33μF ±10%	4.5 x 3.5	3.15	5.0	K1	M1	-
RDER71H334K1□□C03□	X7R	50	0.33μF ±10%	5.0 x 3.5	3.15	2.5	P1	S1	-
RDER71H474K1□□C03□	X7R	50	0.47μF ±10%	4.5 x 3.5	3.15	5.0	K1	M1	-
RDER71H474K1□□C03□	X7R	50	0.47μF ±10%	5.0 x 3.5	3.15	2.5	P1	S1	-
RDER71H684K2□□C03□	X7R	50	0.68μF ±10%	5.5 x 4.0	3.15	2.5	P1	S1	-
RDER71H684K2□□C03□	X7R	50	0.68μF ±10%	5.5 x 4.0	3.15	5.0	K1	M1	-
RDER71H105K2□□C03□	X7R	50	1.0μF ±10%	5.5 x 4.0	3.15	2.5	P1	S1	-
RDER71H105K2□□C03□	X7R	50	1.0μF ±10%	5.5 x 4.0	3.15	5.0	K1	M1	-
RDER71H155K2□□C03□	X7R	50	1.5μF ±10%	5.5 x 4.0	3.15	2.5	P1	S1	-
RDER71H155K2□□C03□	X7R	50	1.5μF ±10%	5.5 x 4.0	3.15	5.0	K1	M1	-
RDER71H225K2□□C03□	X7R	50	2.2μF ±10%	5.5 x 4.0	3.15	2.5	P1	S1	-
RDER71H225K2□□C03□	X7R	50	2.2μF ±10%	5.5 x 4.0	3.15	5.0	K1	M1	-
RDER71H335K3□□C03□	X7R	50	3.3μF ±10%	5.5 x 5.0	4.0	2.5	P1	S1	-
RDER71H335K3□□C03□	X7R	50	3.3μF ±10%	5.5 x 5.0	4.0	5.0	K1	M1	-
RDEC71H475K2□□C03□	X7S	50	4.7μF ±10%	5.5 x 4.0	3.15	2.5	P1	S1	-
RDEC71H475K2□□C03□	X7S	50	4.7μF ±10%	5.5 x 4.0	3.15	5.0	K1	M1	-
RDER72A102K0□□C03□	X7R	100	1000pF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDER72A102K0□□C03□	X7R	100	1000pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDER72A152K0□□C03□	X7R	100	1500pF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDER72A152K0□□C03□	X7R	100	1500pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDER72A222K0□□C03□	X7R	100	2200pF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDER72A222K0□□C03□	X7R	100	2200pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDER72A332K0□□C03□	X7R	100	3300pF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDER72A332K0□□C03□	X7R	100	3300pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDER72A472K0□□C03□	X7R	100	4700pF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDER72A472K0□□C03□	X7R	100	4700pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDER72A682K0□□C03□	X7R	100	6800pF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDER72A682K0□□C03□	X7R	100	6800pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-

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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)
RDER72A103K0□□C03□	X7R	100	10000pF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDER72A103K0□□C03□	X7R	100	10000pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDER72A153K0□□C03□	X7R	100	15000pF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDER72A153K0□□C03□	X7R	100	15000pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDER72A223K0□□C03□	X7R	100	22000pF ±10%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDER72A223K0□□C03□	X7R	100	22000pF ±10%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDER72A333K1□□C03□	X7R	100	33000pF ±10%	4.5 x 3.5	3.15	5.0	K1	M1	-
RDER72A333K1□□C03□	X7R	100	33000pF ±10%	5.0 x 3.5	3.15	2.5	P1	S1	-
RDER72A473K1□□C03□	X7R	100	47000pF ±10%	4.5 x 3.5	3.15	5.0	K1	M1	-
RDER72A473K1□□C03□	X7R	100	47000pF ±10%	5.0 x 3.5	3.15	2.5	P1	S1	-
RDER72A683K1□□C03□	X7R	100	68000pF ±10%	4.5 x 3.5	3.15	5.0	K1	M1	-
RDER72A683K1□□C03□	X7R	100	68000pF ±10%	5.0 x 3.5	3.15	2.5	P1	S1	-
RDER72A104K1□□C03□	X7R	100	0.10μF ±10%	4.5 x 3.5	3.15	5.0	K1	M1	-
RDER72A104K1□□C03□	X7R	100	0.10μF ±10%	5.0 x 3.5	3.15	2.5	P1	S1	-
RDER72A154K2□□C03□	X7R	100	0.15μF ±10%	5.5 x 4.0	3.15	2.5	P1	S1	-
RDER72A154K2□□C03□	X7R	100	0.15μF ±10%	5.5 x 4.0	3.15	5.0	K1	M1	-
RDER72A224K1□□C03□	X7R	100	0.22μF ±10%	4.5 x 3.5	3.15	5.0	K1	M1	-
RDER72A224K1□□C03□	X7R	100	0.22μF ±10%	5.0 x 3.5	3.15	2.5	P1	S1	-
RDER72A334K1□□C03□	X7R	100	0.33μF ±10%	4.5 x 3.5	3.15	5.0	K1	M1	-
RDER72A334K1□□C03□	X7R	100	0.33μF ±10%	5.0 x 3.5	3.15	2.5	P1	S1	-
RDER72A474K1□□C03□	X7R	100	0.47μF ±10%	4.5 x 3.5	3.15	5.0	K1	M1	-
RDER72A474K1□□C03□	X7R	100	0.47μF ±10%	5.0 x 3.5	3.15	2.5	P1	S1	-
RDER72A684K2□□C03□	X7R	100	0.68μF ±10%	5.5 x 4.0	3.15	2.5	P1	S1	-
RDER72A684K2□□C03□	X7R	100	0.68μF ±10%	5.5 x 4.0	3.15	5.0	K1	M1	-
RDER72A105K2□□C03□	X7R	100	1.0μF ±10%	5.5 x 4.0	3.15	2.5	P1	S1	-
RDER72A105K2□□C03□	X7R	100	1.0μF ±10%	5.5 x 4.0	3.15	5.0	K1	M1	-
RDEC72A155K3□□C03□	X7S	100	1.5μF ±10%	5.5 x 5.0	4.0	2.5	P1	S1	-
RDEC72A155K3□□C03□	X7S	100	1.5μF ±10%	5.5 x 5.0	4.0	5.0	K1	M1	-
RDEC72A225K3□□C03□	X7S	100	2.2μF ±10%	5.5 x 5.0	4.0	2.5	P1	S1	-
RDEC72A225K3□□C03□	X7S	100	2.2μF ±10%	5.5 x 5.0	4.0	5.0	K1	M1	-
RDEC72A475MW□□C03□	X7S	100	4.7μF ±20%	5.5 x 7.5	4.0	5.0	K1	M1	-
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	-

Continued on the following page. ➤

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)
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)

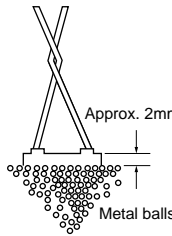
High Dielectric Constant Type, F/Y5V Characteristics


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)
RDEF11H103Z0□□C01□	F	50	10000pF +80/-20%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDEF11H103Z0□□C01□	F	50	10000pF +80/-20%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDEF51H103Z0□□C03□	Y5V	50	10000pF +80/-20%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDEF51H103Z0□□C03□	Y5V	50	10000pF +80/-20%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDEF11H223Z0□□C01□	F	50	22000pF +80/-20%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDEF11H223Z0□□C01□	F	50	22000pF +80/-20%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDEF51H223Z0□□C03□	Y5V	50	22000pF +80/-20%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDEF51H223Z0□□C03□	Y5V	50	22000pF +80/-20%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDEF11H473Z0□□C01□	F	50	47000pF +80/-20%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDEF11H473Z0□□C01□	F	50	47000pF +80/-20%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDEF51H473Z0□□C03□	Y5V	50	47000pF +80/-20%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDEF51H473Z0□□C03□	Y5V	50	47000pF +80/-20%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDEF11H104Z0□□C01□	F	50	0.10μF +80/-20%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDEF11H104Z0□□C01□	F	50	0.10μF +80/-20%	5.0 x 3.5	2.5	2.5	P1	S1	-
RDEF51H104Z0□□C03□	Y5V	50	0.10μF +80/-20%	4.0 x 3.5	2.5	5.0	K1	M1	-
RDEF51H104Z0□□C03□	Y5V	50	0.10μF +80/-20%	5.0 x 3.5	2.5	2.5	P1	S1	-

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)

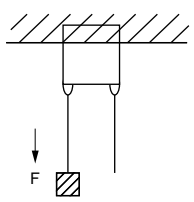
Specifications and Test Methods

No.	Item		Specifications		Test Method												
			Temperature Compensating Type	High Dielectric Constant Type													
1	Operating Temperature Range		-55 to +125°C	Char. X7R, X7S: -55 to +125°C Char. F: -25 to +85°C Char. Y5V: -30 to +85°C	—												
2	Appearance		No defects or abnormalities		Visual inspection												
3	Dimension and Marking		See previous pages		Visual inspection, Vernier Caliper												
4	Dielectric Strength	Between Terminals	No defects or abnormalities		<p>The capacitors should not be damaged when test voltages of Table are applied between the terminals for 1 to 5 sec. (Charge/Discharge current ≤ 50mA)</p> <p>Temperature Compensating Type</p> <table><tr><th>Rated Voltage</th><th>Test Voltage</th></tr><tr><td>DC50V, DC100V</td><td>300% of the rated voltage</td></tr></table> <p>High Dielectric Constant Type</p> <table><tr><th>Rated Voltage</th><th>Test Voltage</th></tr><tr><td>DC25V, DC50V</td><td>250% of the rated voltage</td></tr><tr><td>DC100V, DC250V</td><td>200% of the rated voltage</td></tr><tr><td>DC630V</td><td>150% of the rated voltage</td></tr></table>	Rated Voltage	Test Voltage	DC50V, DC100V	300% of the rated voltage	Rated Voltage	Test Voltage	DC25V, DC50V	250% of the rated voltage	DC100V, DC250V	200% of the rated voltage	DC630V	150% of the rated voltage
		Rated Voltage	Test Voltage														
DC50V, DC100V	300% of the rated voltage																
Rated Voltage	Test Voltage																
DC25V, DC50V	250% of the rated voltage																
DC100V, DC250V	200% of the rated voltage																
DC630V	150% of the rated voltage																
		Body Insulation	No defects or abnormalities	<p>The capacitor is placed in a container with metal balls of 1mm diameter so that each terminal, short-circuited, is kept approximately 2mm from the balls as shown in the figure, and 250% of the rated voltage (200% of the rated voltage in case of rated voltage: DC100V, DC250V, DC630V) is impressed for 1 to 5 sec. between capacitor terminals and metal balls. (Charge/Discharge current ≤ 50mA)</p> 													
5	Insulation Resistance	Between Terminals	Rated Voltage: DC25V, DC50V, DC100V 10,000MΩ min. or 500MΩ • μF min. whichever is smaller Rated Voltage: DC250V, DC630V 10,000MΩ min. or 100MΩ • μF min. whichever is smaller		The insulation resistance should be measured with a DC voltage not exceeding the rated voltage (DC500±50V in case of rated vlotage: DC630V) at normal temperature and humidity and within 2 min. of charging. (Charge/Discharge current ≤ 50mA)												
6	Capacitance		Within the specified tolerance		The capacitance, Q/D.F. should be measured at 25°C at the frequency and voltage shown in the table.												
7	Q/Dissipation Factor (D.F.)		30pF min.: Q≥1,000 30pF max.: Q≥400+20C C: Nominal capacitance (pF)	Char. X7R: 0.025 max. Char. F, Y5V: 0.05 max. Char. X7S: 0.125 max.	<p>Temperature Compensating Type</p> <table><tr><th>Capacitance Item</th><th>C≤1000pF</th><th>C>1000pF</th></tr><tr><th>Frequency</th><td>1±0.1MHz</td><td>1±0.1kHz</td></tr><tr><th>Voltage</th><td>AC0.5 to 5V (r.m.s.)</td><td>AC1±0.2V (r.m.s.)</td></tr></table>	Capacitance Item	C≤1000pF	C>1000pF	Frequency	1±0.1MHz	1±0.1kHz	Voltage	AC0.5 to 5V (r.m.s.)	AC1±0.2V (r.m.s.)			
					Capacitance Item	C≤1000pF	C>1000pF										
Frequency	1±0.1MHz	1±0.1kHz															
Voltage	AC0.5 to 5V (r.m.s.)	AC1±0.2V (r.m.s.)															
	<p>High Dielectric Constant Type</p> <table><tr><th>Capacitance Item</th><th>C≤10μF</th><th>C>10μF</th></tr><tr><th>Frequency</th><td>1±0.1kHz</td><td>120±24Hz</td></tr><tr><th>Voltage</th><td>AC1±0.2V (r.m.s.)</td><td>AC0.5±0.1V (r.m.s.)</td></tr></table>	Capacitance Item	C≤10μF	C>10μF	Frequency	1±0.1kHz	120±24Hz	Voltage	AC1±0.2V (r.m.s.)	AC0.5±0.1V (r.m.s.)							
Capacitance Item	C≤10μF	C>10μF															
Frequency	1±0.1kHz	120±24Hz															
Voltage	AC1±0.2V (r.m.s.)	AC0.5±0.1V (r.m.s.)															

Continued on the following page. 

Specifications and Test Methods

Continued from the preceding page.

No.	Item		Specifications		Test Method												
			Temperature Compensating Type	High Dielectric Constant Type													
8	Capacitance Temperature Characteristics	Capacitance Change	Within the specified tolerance (Table A on last column)	Within the specified tolerance (Table B on last column)	<p>The capacitance change should be measured after 5 min. at each specified temperature stage.</p> <p>(1) Temperature Compensating Type</p> <p>The temperature coefficient is determined using the capacitance measured in step 3 as a reference. When cycling the temperature sequentially from step 1 through 5 (-55 to +125°C) the capacitance should be within the specified tolerance for the temperature coefficient and capacitance change as shown in Table A. The capacitance drift is calculated by dividing the differences between the maximum and minimum measured values in step 1, 3 and 5 by the cap. value in step 3.</p> <table><tr><th>Step</th><th>Temperature (°C)</th></tr><tr><td>1</td><td>25±2</td></tr><tr><td>2</td><td>-55±3</td></tr><tr><td>3</td><td>25±2</td></tr><tr><td>4</td><td>125±3</td></tr><tr><td>5</td><td>25±2</td></tr></table> <p>(2) High Dielectric Constant Type</p> <p>The ranges of capacitance change compared with the 25°C (Char. F: 20°C) value over the temperature ranges as shown in Table B should be within the specified ranges.</p> <p>• Pretreatment (for high dielectric constant type)</p> <p>Perform a heat treatment at 150+0/-10°C for 1 hr., and then let sit at room temperature for 24±2 hrs.</p>	Step	Temperature (°C)	1	25±2	2	-55±3	3	25±2	4	125±3	5	25±2
		Step	Temperature (°C)														
		1	25±2														
2	-55±3																
3	25±2																
4	125±3																
5	25±2																
Temperature Coefficient	Within the specified tolerance (Table A on last column)																
Capacitance Drift	Within ±0.2% or ±0.05pF, whichever is larger																
9	Terminal Strength	Tensile Strength	Termination not to be broken or loosened		<p>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.</p> 												
		Bending Strength	Termination not to be broken or loosened														
10	Vibration Resistance	Appearance	No defects or abnormalities		<p>The capacitor is soldered securely to a supporting terminal and a 10 to 55Hz vibration of 1.5mm peak-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.</p>												
		Capacitance	Within the specified tolerance														
		Q/D.F.	30pF min.: Q≥1,000 30pF max.: Q≥400+20C C: Nominal capacitance (pF)	Char. X7R: 0.025 max. Char. F, Y5V: 0.05 max. Char. X7S: 0.125 max.													
11	Solderability of Leads		Lead wire should be soldered with uniform coating on the axial direction over 3/4 of the circumferential direction.		<p>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.</p> <p>Temp. of solder: 245±5°C Lead Free Solder (Sn-3.0Ag-0.5Cu) 235±5°C H60A or H63A Eutectic Solder</p>												
12	Resistance to Soldering Heat	Appearance	No defects or abnormalities		<p>The lead wire is immersed in the melted solder 1.5mm to 2mm from the main body at 350±10°C for 3.5±0.5 sec.</p> <p>The specified items are measured after 24±2 hrs.</p> <p>• Pretreatment (for high dielectric constant type)</p> <p>Perform a heat treatment at 150+0/-10°C for 1 hr., and then let sit at room temperature for 24±2 hrs.</p>												
		Capacitance Change	Within ±2.5% or ±0.25pF (whichever is larger)	Char. X7R, X7S: Within ±10% Char. F, Y5V: Within ±20%													
		Dielectric Strength (Between Terminals)	No defects														

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Specifications and Test Methods

Continued from the preceding page.

No.	Item		Specifications		Test Method															
			Temperature Compensating Type	High Dielectric Constant Type																
13	Temperature Cycle	Appearance	No defects or abnormalities		<p>The capacitor should be subjected to 5 temperature cycles. Remove and set for 24±2 hrs. at room temperature, then measure.</p> <table><tr><th>Step</th><th>Temperature (°C)</th><th>Time (min)</th></tr><tr><td>1</td><td>Min. Operating Temp. ±3</td><td>30±3</td></tr><tr><td>2</td><td>Room Temp.</td><td>3 max.</td></tr><tr><td>3</td><td>Max. Operating Temp. ±3</td><td>30±3</td></tr><tr><td>4</td><td>Room Temp.</td><td>3 max.</td></tr></table> <p>• Pretreatment (for high dielectric constant type) Perform a heat treatment at 150+0/-10°C for 1 hr., and then let sit at room temperature for 24±2 hrs.</p>	Step	Temperature (°C)	Time (min)	1	Min. Operating Temp. ±3	30±3	2	Room Temp.	3 max.	3	Max. Operating Temp. ±3	30±3	4	Room Temp.	3 max.
		Step	Temperature (°C)	Time (min)																
		1	Min. Operating Temp. ±3	30±3																
		2	Room Temp.	3 max.																
		3	Max. Operating Temp. ±3	30±3																
4	Room Temp.	3 max.																		
Capacitance Change	Within ±5% or ±0.5pF (whichever is larger)	Char. X7R, X7S: Within ±12.5% Char. F, Y5V: Within ±30%																		
Q/D.F.	30pF min.: Q≥350 10pF to 30pF: Q≥275+5C/2 10pF max.: Q≥200+10C C: Nominal capacitance (pF)	Char. X7R: 0.05 max. Char. F, Y5V: 0.075 max. Char. X7S: 0.2 max.																		
Insulation Resistance	Rated Voltage: DC25V, DC50V, DC100V 1,000MΩ, 50MΩ • μF min. (whichever is smaller) Rated Voltage: DC250V, DC630V 1,000MΩ, 10MΩ • μF min. (whichever is smaller)																			
Dielectric Strength (Between Terminals)	No defects or abnormalities																			
14	Humidity (Steady State)	Appearance	No defects or abnormalities		<p>Set the capacitor at 40±2°C and relative humidity of 90 to 95% for 500⁺²⁴₀ hrs. Remove and set for 24±2 hrs. at room temperature, then measure. • Pretreatment (for high dielectric constant type) Perform a heat treatment at 150+0/-10°C for 1 hr., and then let sit at room temperature for 24±2 hrs.</p>															
		Capacitance Change	Within ±5% or ±0.5pF (whichever is larger)	Char. X7R, X7S: Within ±15% Char. F, Y5V: Within ±30%																
		Q/D.F.	30pF min.: Q≥350 10pF to 30pF: Q≥275+5C/2 10pF max.: Q≥200+10C C: Nominal capacitance (pF)	Char. X7R: 0.05 max. Char. F, Y5V: 0.075 max. Char. X7S: 0.2 max.																
		Insulation Resistance	Rated Voltage: DC25V, DC50V, DC100V 1,000MΩ, 50MΩ • μF min. (whichever is smaller) Rated Voltage: DC250V, DC630V 1,000MΩ, 10MΩ • μF min. (whichever is smaller)																	
15	Humidity Load	Appearance	No defects or abnormalities		<p>Apply the rated voltage for 500⁺²⁴₀ hrs. at 40±2°C and in 90 to 95% humidity. Remove and set for 24±2 hrs. at room temperature, then measure. (Charge/Discharge current ≤50mA) • Pretreatment (for high dielectric constant type) Perform a heat treatment at 150+0/-10°C for 1 hr., and then let sit at room temperature for 24±2 hrs.</p>															
		Capacitance Change	Within ±7.5% or ±0.75pF (whichever is larger)	Char. X7R, X7S: Within ±15% Char. F, Y5V: Within ±30%																
		Q/D.F.	30pF min.: Q≥200 30pF max.: Q≥100+10C/3 C: Nominal capacitance (pF)	Char. X7R: 0.05 max. Char. F, Y5V: 0.075 max. Char. X7S: 0.2 max.																
		Insulation Resistance	Rated Voltage: DC25V, DC50V, DC100V 500MΩ or 25MΩ • μF min. (whichever is smaller) Rated Voltage: DC250V, DC630V 1,000MΩ or 10MΩ • μF min. (whichever is smaller)																	
16	High Temperature Load	Appearance	No defects or abnormalities		<p>Apply voltage in Table for 1000⁺⁴⁸₀ hrs. at the maximum operating temperature±3°C. Remove and set for 24±2 hrs. at room temperature, then measure. (Charge/Discharge current ≤50mA)</p> <table><tr><th>Rated Voltage</th><th>Test Voltage</th></tr><tr><td>DC25V, DC50V</td><td rowspan="2">150% of the rated voltage</td></tr><tr><td>DC100V, DC250V</td></tr><tr><td>DC630V</td><td>120% of the rated voltage</td></tr></table> <p>• Pretreatment (for high dielectric constant type) Appy test voltage for 1 hr., at test temperature. Remove and set for 24±2 hrs. at room temperature.</p>	Rated Voltage	Test Voltage	DC25V, DC50V	150% of the rated voltage	DC100V, DC250V	DC630V	120% of the rated voltage								
		Rated Voltage	Test Voltage																	
		DC25V, DC50V	150% of the rated voltage																	
		DC100V, DC250V																		
DC630V	120% of the rated voltage																			
Capacitance Change	Within ±3% or ±0.3pF (whichever is larger)	Char. X7R, X7S: Within ±15% Char. F, Y5V: Within ±30%																		
Q/D.F.	30pF min.: Q≥350 10pF to 30pF: Q≥275+5C/2 10pF max.: Q≥200+10C C: Nominal capacitance (pF)	Char. X7R: 0.05 max. Char. F, Y5V: 0.075 max. Char. X7S: 0.2 max.																		
Insulation Resistance	Rated Voltage: DC25V, DC50V, DC100V 1,000MΩ, 50MΩ • μF min. (whichever is smaller) Rated Voltage: DC250V, DC630V 1,000MΩ, 10MΩ • μF min. (whichever is smaller)																			
17	Solvent Resistance	Appearance	No defects or abnormalities		<p>The capacitor should be fully immersed, unagitated, in reagent at 20 to 25°C for 30±5 sec. and then removed gently. Marking on the surface of the capacitor should immediately be visually examined. Reagent: • Isopropyl alcohol</p>															
		Marking	Legible																	

Table A

Char.	Nominal Values (ppm/°C) *1	Capacitance Change from 25°C (%)					
		-55°C		-30°C		-10°C	
		Max.	Min.	Max.	Min.	Max.	Min.
C0G	0±30	0.58	-0.24	0.40	-0.17	0.25	-0.11

*1: 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	25°C	Within ±15%
X7S			Within ±22%
Y5V	-30 to + 85°C	20°C	Within ±33%
F	-25 to + 85°C		Within ±38%

Radial Lead Type Monolithic Ceramic Capacitors

muRata

RDE Series Large Capacitance and High Allowable Ripple Current (For Commercial Use Only) (DC250V-DC630V)

■ Features

- Higher capacitance with DC-Bias; approximately 40% higher than X7R under loaded rated voltage.
- Applicable for use as a DC smoothing capacitor in LED Bulb Lighting circuits after the bridge rectifier circuit
 AC100V input: 250V rating type
 maximum capacitance of X7T, 250V is 2.2 micro F
 though X7R, 630V is 0.47 micro F.
 AC200V input: 450V rating type
 maximum capacitance of X7T, 450V is 1.2 micro F
 though X7R, 630V is 0.47 micro F.
- Allowable higher ripple current
- Reduces acoustic noise
 Approximately 15dB reduction in comparison to leaded X7R characteristics parts.
 Approximately 30dB reduction in comparison to SMD X7T characteristics part because the contact area is smaller than a SMD.
- Maximum capacitance is doubled by the dual chip structure in the leaded component construction.

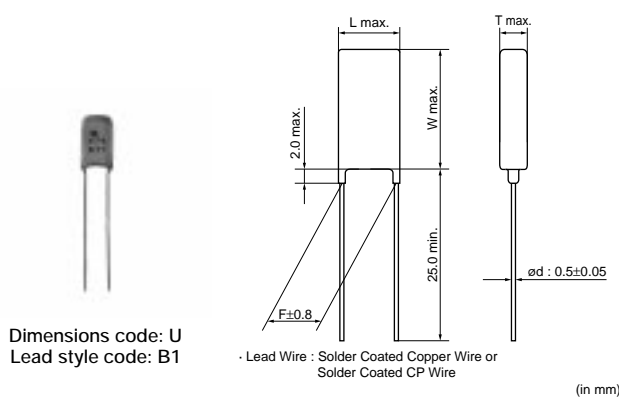
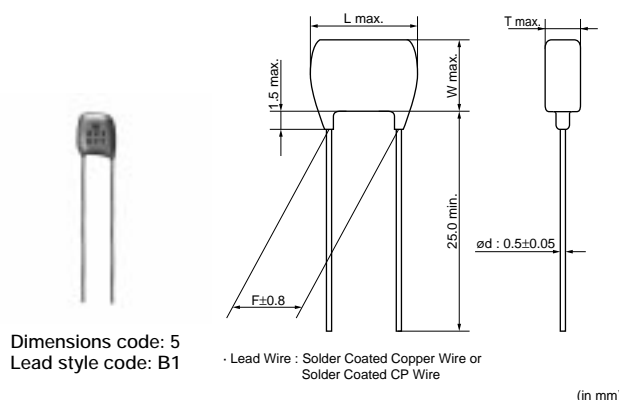
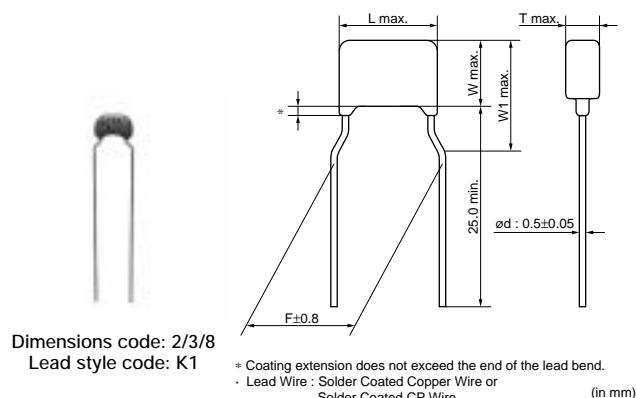
■ Applications

- DC smoothing capacitor for LED bulb
- PFC capacitor for general use SMPS
- Replace Al-E capacitor for long-life equipment

■ Dimensions

Dimensions and Lead Style Code	DC Rated Voltage	Dimensions (mm)					
		L	W	W1	T	F	d
2K1/2M1	250V/450V/630V	5.5	4.0	6.0	See the individual product specifications	5.0	0.5
3K1/3M1	250V/450V/630V	5.5	5.0	7.5		5.0	0.5
5B1/5E1	250V/450V/630V	7.5	7.5*	-		5.0	0.5
8K1/8M1	250V/450V/630V	7.5	5.5	8.0		5.0	0.5
UB1/UE1	250V/450V/630V	7.7	12.5*	-		5.0	0.5

*DC630V: W+0.5mm



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Marking

Dimensions Code	Rated Voltage	DC250V	DC450V	DC630V
	Temp. Char.	X7T		
2				
3, 8				
5, U				
Temperature Characteristics		Marked with code (X7T char.: 7)		
Nominal Capacitance		Marked with 3 figures		
Capacitance Tolerance		Marked with code		
Rated Voltage		Marked with code (DC250V: 4, DC450V: 9, DC630V: 7)		
Manufacturer's Identification		Marked with		

High Dielectric Constant Type, X7T 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)
RDED72E333K2□□C11□	X7T	250	33000pF ±10%	5.5 x 4.0	3.15	5.0	K1	M1	-
RDED72E473K2□□C11□	X7T	250	47000pF ±10%	5.5 x 4.0	3.15	5.0	K1	M1	-
RDED72E683K2□□C11□	X7T	250	68000pF ±10%	5.5 x 4.0	3.15	5.0	K1	M1	-
RDED72E104K3□□C11□	X7T	250	0.10μF ±10%	5.5 x 5.0	4.0	5.0	K1	M1	-
RDED72E154K3□□C11□	X7T	250	0.15μF ±10%	5.5 x 5.0	4.0	5.0	K1	M1	-
RDED72E224K8□□C11□	X7T	250	0.22μF ±10%	7.5 x 5.5	4.0	5.0	K1	M1	-
RDED72E334K8□□C11□	X7T	250	0.33μF ±10%	7.5 x 5.5	4.0	5.0	K1	M1	-
RDED72E474K5□□C13□	X7T	250	0.47μF ±10%	7.5 x 7.5	4.5	5.0	B1	E1	-
RDED72E684K5□□C13□	X7T	250	0.68μF ±10%	7.5 x 7.5	4.5	5.0	B1	E1	-
RDED72E105K5□□C13□	X7T	250	1.0μF ±10%	7.5 x 7.5	4.5	5.0	B1	E1	-
RDED72E225MU□□C13□	X7T	250	2.2μF ±20%	7.7 x 12.5	4.5	5.0	B1	E1	-
RDED72W103K2□□C11□	X7T	450	10000pF ±10%	5.5 x 4.0	3.15	5.0	K1	M1	-
RDED72W153K2□□C11□	X7T	450	15000pF ±10%	5.5 x 4.0	3.15	5.0	K1	M1	-
RDED72W223K2□□C11□	X7T	450	22000pF ±10%	5.5 x 4.0	3.15	5.0	K1	M1	-
RDED72W333K2□□C11□	X7T	450	33000pF ±10%	5.5 x 4.0	3.15	5.0	K1	M1	-
RDED72W473K2□□C11□	X7T	450	47000pF ±10%	5.5 x 4.0	3.15	5.0	K1	M1	-
RDED72W683K3□□C11□	X7T	450	68000pF ±10%	5.5 x 5.0	4.0	5.0	K1	M1	-
RDED72W104K3□□C11□	X7T	450	0.10μF ±10%	5.5 x 5.0	4.0	5.0	K1	M1	-
RDED72W154K8□□C11□	X7T	450	0.15μF ±10%	7.5 x 5.5	4.0	5.0	K1	M1	-
RDED72W224K5□□C13□	X7T	450	0.22μF ±10%	7.5 x 7.5	4.5	5.0	B1	E1	-
RDED72W334K5□□C13□	X7T	450	0.33μF ±10%	7.5 x 7.5	4.5	5.0	B1	E1	-
RDED72W474K5□□C13□	X7T	450	0.47μF ±10%	7.5 x 7.5	4.5	5.0	B1	E1	-
RDED72W564K5□□C13□	X7T	450	0.56μF ±10%	7.5 x 7.5	4.5	5.0	B1	E1	-
RDED72W105MU□□C13□	X7T	450	1.0μF ±20%	7.7 x 12.5	4.5	5.0	B1	E1	-
RDED72W125MU□□C13□	X7T	450	1.2μF ±20%	7.7 x 12.5	4.5	5.0	B1	E1	-
RDED72J103K2□□C11□	X7T	630	10000pF ±10%	5.5 x 4.0	3.15	5.0	K1	M1	-
RDED72J153K2□□C11□	X7T	630	15000pF ±10%	5.5 x 4.0	3.15	5.0	K1	M1	-
RDED72J223K3□□C11□	X7T	630	22000pF ±10%	5.5 x 5.0	4.0	5.0	K1	M1	-
RDED72J333K3□□C11□	X7T	630	33000pF ±10%	5.5 x 5.0	4.0	5.0	K1	M1	-
RDED72J473K3□□C11□	X7T	630	47000pF ±10%	5.5 x 5.0	4.0	5.0	K1	M1	-
RDED72J683K8□□C11□	X7T	630	68000pF ±10%	7.5 x 5.5	4.0	5.0	K1	M1	-
RDED72J104K5□□C13□	X7T	630	0.10μF ±10%	7.5 x 8.0	4.5	5.0	B1	E1	-
RDED72J154K5□□C13□	X7T	630	0.15μF ±10%	7.5 x 8.0	4.5	5.0	B1	E1	-
RDED72J224K5□□C13□	X7T	630	0.22μF ±10%	7.5 x 8.0	4.5	5.0	B1	E1	-

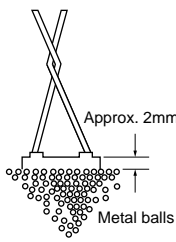
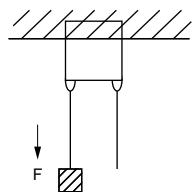
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Part Number	Temp. Char.	Rated Voltage (Vdc)	Capacitance	Dimensions LxW (mm)	Dimension T (mm)	Lead Space F (mm)	Lead Style Code Bulk	Lead Style Code Taping (1)	Lead Style Code Taping (2)
RDED72J274K5 <input type="checkbox"/> C13 <input type="checkbox"/>	X7T	630	0.27μF ±10%	7.5 x 8.0	4.5	5.0	B1	E1	-
RDED72J474MU <input type="checkbox"/> C13 <input type="checkbox"/>	X7T	630	0.47μF ±20%	7.7 x 13.0	4.5	5.0	B1	E1	-
RDED72J564MU <input type="checkbox"/> C13 <input type="checkbox"/>	X7T	630	0.56μF ±20%	7.7 x 13.0	4.5	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)

Specifications and Test Methods

No.	Item		Specifications	Test Method												
1	Operating Temperature Range		-55 to +125°C	—												
2	Appearance		No defects or abnormalities	Visual inspection												
3	Dimension and Marking		See previous pages	Visual inspection, Vernier Caliper												
4	Dielectric Strength	Between Terminals	No defects or abnormalities	<p>The capacitor should not be damaged when voltage in Table is applied between the terminations for 1 to 5 sec. (Charge/Discharge current $\leq 50\text{mA}$)</p> <table><tr><th>Rated Voltage</th><th>Test Voltage</th></tr><tr><td>DC250V</td><td>200% of the rated voltage</td></tr><tr><td>DC450V</td><td>150% of the rated voltage</td></tr><tr><td>DC630V</td><td>120% of the rated voltage</td></tr></table>	Rated Voltage	Test Voltage	DC250V	200% of the rated voltage	DC450V	150% of the rated voltage	DC630V	120% of the rated voltage				
		Rated Voltage	Test Voltage													
DC250V	200% of the rated voltage															
DC450V	150% of the rated voltage															
DC630V	120% of the rated voltage															
		Body Insulation	No defects or abnormalities	<p>The capacitor is placed in a container with metal balls of 1mm diameter so that each terminal, short-circuit, is kept approximately 2mm from the balls as shown in the figure, and 200% of the rated DC voltage is impressed for 1 to 5 sec. between capacitor terminals and metal balls. (Charge/Discharge current $\leq 50\text{mA}$)</p> 												
5	Insulation Resistance	Between Terminals	More than 10,000MΩ or 100MΩ · μF, Whichever is smaller	<p>The insulation resistance should be measured with DC500±50V (DC250±25V in case of rated voltage: DC250V, DC450V) at normal temperature and humidity and within 2 min. of charging. (Charge/Discharge current $\leq 50\text{mA}$)</p>												
6	Capacitance		Within the specified tolerance	<p>The capacitance/D.F. should be measured at the frequency of 1±0.1kHz and a voltage of AC1±0.2V(r.m.s.).</p>												
7	Dissipation Factor (D.F.)		0.01 max.													
8	Capacitance Temperature Characteristics		Within +22/-33%	<p>The capacitance change should be measured after 5 min. at each specified temperature stage.</p> <table><tr><th>Step</th><th>Temperature (°C)</th></tr><tr><td>1</td><td>25±2</td></tr><tr><td>2</td><td>-55±3</td></tr><tr><td>3</td><td>25±2</td></tr><tr><td>4</td><td>125±3</td></tr><tr><td>5</td><td>25±2</td></tr></table>	Step	Temperature (°C)	1	25±2	2	-55±3	3	25±2	4	125±3	5	25±2
Step	Temperature (°C)															
1	25±2															
2	-55±3															
3	25±2															
4	125±3															
5	25±2															
9	Terminal Strength	Tensile Strength	Termination not to be broken or loosened	<p>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.</p> 												
		Bending Strength	Termination not to be broken or loosened	<p>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.</p>												
10	Vibration Resistance	Appearance	No defects or abnormalities	<p>The capacitor should be firmly soldered to the supporting lead wire and vibrated at a frequency range of 10 to 55Hz, 1.5mm in total amplitude, with about a 1 minute rate of vibration change from 10Hz to 55Hz and back to 10Hz. Apply for a total of 6 hrs., 2 hrs. each in 3 mutually perpendicular directions.</p>												
		Capacitance	Within the specified tolerance													
		D.F.	0.01 max.													

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Specifications and Test Methods

Continued from the preceding page.

No.	Item		Specifications	Test Method															
11	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 of ethanol (JIS-K-8101) and rosin (JIS-K-5902) (25% rosin in weight proportion) and then into molten solder (JIS-Z-3282) for 2±0.5 sec. In both cases the depth of dipping is up to 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															
12	Resistance to Soldering Heat	Appearance	No defects or abnormalities	The lead wire is immersed in the melted solder 1.5 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. • Pretreatment Perform a heat treatment at 150+0/-10°C for 1 hr., and then let sit at room temperature for 24±2 hrs.															
		Capacitance Change	Within ±10%																
		Dielectric Strength (Between Terminals)	No defects																
13	Temperature Cycle	Appearance	No defects or abnormalities	The capacitor should be subjected to 5 temperature cycles. <table><tr><th>Step</th><th>Temperature (°C)</th><th>Time (min)</th></tr><tr><td>1</td><td>-55±3</td><td>30±3</td></tr><tr><td>2</td><td>Room Temp.</td><td>3 max.</td></tr><tr><td>3</td><td>125±3</td><td>30±3</td></tr><tr><td>4</td><td>Room Temp.</td><td>3 max.</td></tr></table> • Pretreatment Perform a heat treatment at 150+0/-10°C for 1 hr., and then let sit at room temperature for 24±2 hrs.	Step	Temperature (°C)	Time (min)	1	-55±3	30±3	2	Room Temp.	3 max.	3	125±3	30±3	4	Room Temp.	3 max.
		Step	Temperature (°C)		Time (min)														
		1	-55±3		30±3														
		2	Room Temp.		3 max.														
		3	125±3		30±3														
4	Room Temp.	3 max.																	
Capacitance Change	Within ±7.5%																		
D.F.	0.01 max.																		
Insulation Resistance	More than 10,000MΩ or 100MΩ · μF (Whichever is smaller)																		
Dielectric Strength (Between Terminals)	No defects or abnormalities																		
14	Humidity (Steady State)	Appearance	No defects or abnormalities	Set the capacitor at 40±2°C and relative humidity of 90 to 95% for 500 ± ²⁴ ₀ hrs. Remove and set for 24±2 hrs. at room temperature, then measure. • Pretreatment Perform a heat treatment at 150+0/-10°C for 1 hr., and then let sit at room temperature for 24±2 hrs.															
		Capacitance Change	Within ±12.5%																
		D.F.	0.02 max.																
		Insulation Resistance	More than 1,000MΩ or 10MΩ · μF (Whichever is smaller)																
15	Humidity Load	Appearance	No defects or abnormalities	Apply the rated voltage at 40±2°C and relative humidity of 90 to 95% for 500 ± ²⁴ ₀ hrs. Remove and set for 24±2 hrs. at room temperature, then measure. (Charge/Discharge current ≤ 50mA) • Pretreatment Perform a heat treatment at 150+0/-10°C for 1 hr., and then let sit at room temperature for 24±2 hrs.															
		Capacitance Change	Within ±12.5%																
		D.F.	0.02 max.																
		Insulation Resistance	More than 1,000MΩ or 10MΩ · μF (Whichever is smaller)																
16	High Temperature Load	Appearance	No defects or abnormalities	Apply voltage in Table for 1000 ± ⁴⁸ ₀ hrs. at the maximum operating temperature. Remove and set for 24±2 hrs. at room temperature, then measure. (Charge/Discharge current ≤ 50mA) <table><tr><th>Rated Voltage</th><th>Test Voltage</th></tr><tr><td>DC250V</td><td>150% of the rated voltage</td></tr><tr><td>DC450V</td><td>130% of the rated voltage</td></tr><tr><td>DC630V</td><td>120% of the rated voltage</td></tr></table> • Pretreatment Apply test voltage for 1 hr., at test temperature. Remove and set for 24±2 hrs. at room temperature.	Rated Voltage	Test Voltage	DC250V	150% of the rated voltage	DC450V	130% of the rated voltage	DC630V	120% of the rated voltage							
		Rated Voltage	Test Voltage																
		DC250V	150% of the rated voltage																
		DC450V	130% of the rated voltage																
DC630V	120% of the rated voltage																		
Capacitance Change	Within ±12.5%																		
D.F.	0.02 max.																		
Insulation Resistance	More than 1,000MΩ or 10MΩ · μF (Whichever is smaller)																		
17	Solvent Resistance	Appearance	No defects or abnormalities	The capacitor should be fully immersed, unagitated, in reagent at 20 to 25 °C for 30±5 sec. and then removed gently. Marking on the surface of the capacitor should immediately be visually examined. Reagent : • Isopropyl alcohol															
		Marking	Legible																