

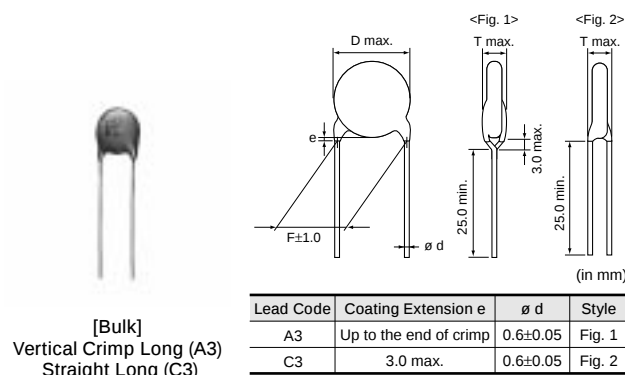
Safety Recognized Ceramic Capacitors

muRata

DEJ Series -Based on the Electrical Appliance and Material Safety Law of Japan-

■ Features

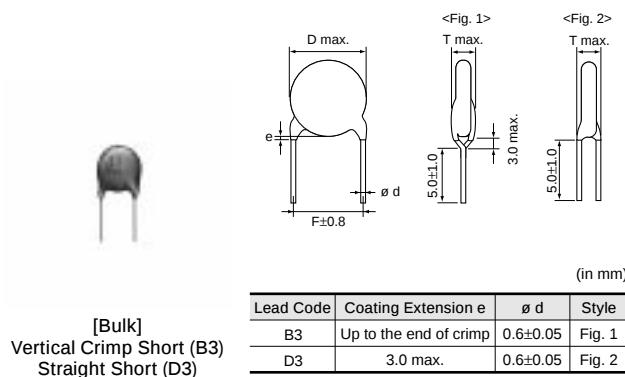
1. Coated with flame-ratardant epoxy resin (conforming to UL94V-0 standards).
2. Automatic insertion can be, and save costs.
3. This type are based on the electrical appliance and material safety law of Japan and JIS-C-5150 (general rules of AC mains supply capacitors of electronic equipment).



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■ Marking

Temp. Char.		E, F
Nominal Body Diameter	ø7~8mm	102Z 250~ 65
	ø9~11mm	332Z 250~ 65
Nominal Capacitance		Marked with 3 figures
Capacitance Tolerance		Marked with code
Rated Voltage		Marked with code
Manufacturer's Identification		Marked with (Omitted for nominal body diameter ø8mm and under)
Manufactured Date Code		Abbreviation



Part Number	AC Rated Voltage (Vac)	Temp. Char.	Capacitance (pF)	Body Dia. D (mm)	Lead Spacing F (mm)	Body Thickness T (mm)	Lead Package Long Bulk	Lead Package Short Bulk	Lead Package Taping (1)	Lead Package Taping (2)
DEJE3E2102Z□□□	250	E	1000 +80,-20%	7 max.	7.5	4.0 max.	C3B	D3B	N2A	P3A
DEJE3E2222Z□□□	250	E	2200 +80,-20%	8 max.	7.5	4.0 max.	A3B	B3B	N2A	N3A
DEJE3E2332Z□□□	250	E	3300 +80,-20%	9 max.	7.5	4.0 max.	A3B	B3B	N2A	N3A
DEJE3E2472Z□□□	250	E	4700 +80,-20%	11 max.	7.5	4.0 max.	A3B	B3B	N2A	N3A
DEJF3E2472Z□□□	250	F	4700 +80,-20%	8 max.	7.5	4.0 max.	A3B	B3B	N2A	N3A
DEJF3E2103Z□□□	250	F	10000 +80,-20%	11 max.	7.5	4.0 max.	A3B	B3B	N2A	N3A

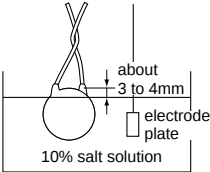
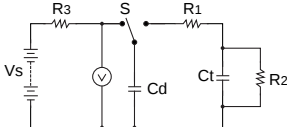
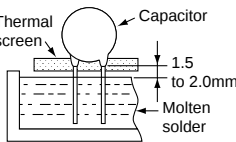
Three blank columns are filled with the lead and packaging codes. Please refer to each code which is shown in the right end.

Taping (1): Lead spacing F=5.0mm, Taping(2): Lead spacing F=7.5mm.

Specifications and Test Methods

■Apply to DEJ Series (Products which are based on the electrical appliance and material safety law of Japan)

Operating Temperature Range : -25 to +85°C

No.	Item		Specification	Testing Method																		
1	Appearance and Dimensions		No marked defect on appearance form and dimensions are within specified range.	The capacitor shall be inspected by naked eyes for visible evidence of defect. Dimensions shall be measured with slide calipers.																		
2	Marking		To be easily legible	The capacitor shall be inspected by naked eyes.																		
3	Capacitance		Within specified tolerance.	The capacitance shall be measured at 20°C with 1±0.1kHz and AC5V (r.m.s.) max.																		
4	Dissipation Factor (D.F.)		<table><tr><th>Char.</th><th>Specification</th></tr><tr><td>E</td><td>D.F.≤2.5%</td></tr><tr><td>F</td><td>D.F.≤5.0%</td></tr></table>	Char.	Specification	E	D.F.≤2.5%	F	D.F.≤5.0%	The dissipation factor shall be measured at 20°C with 1±0.1kHz and AC5V (r.m.s.) max.												
Char.	Specification																					
E	D.F.≤2.5%																					
F	D.F.≤5.0%																					
5	Insulation Resistance (I.R.)		10000MΩ min.	The insulation resistance shall be measured with DC500±50V within 60±5 s of charging.																		
6	Dielectric Strength	Between Lead Wires	No failure.	The capacitor shall not be damage when AC1500V (r.m.s.) are applied between the lead wires for 60 s. (Charge / discharge current≤50mA) First, the terminals of the capacitor shall be connected together. Then, as shown in Figure right, the capacitor shall be immersed into 10% salt solution up to a position of about 3 to 4mm apart from the terminals. Finally, AC1500V (r.m.s.) is applied for 60 s between the capacitor lead wires and electrode plate. (Charge / discharge current≤50mA) 																		
		Body Insulation	No failure.																			
7	Temperature Characteristics		<table><tr><th>Char.</th><th>Capacitance Change</th></tr><tr><td>E</td><td>Within $+20\%$ -65%</td></tr><tr><td>F</td><td>Within $+30\%$ -80%</td></tr></table>	Char.	Capacitance Change	E	Within $+20\%$ -65%	F	Within $+30\%$ -80%	The capacitance measurement shall be made at each step specified in Table 1. <Table.1> <table><tr><th>Step</th><th>Temperature (°C)</th></tr><tr><td>1</td><td>+20±2</td></tr><tr><td>2</td><td>-25±2</td></tr><tr><td>3</td><td>+20±2</td></tr><tr><td>4</td><td>+85±2</td></tr><tr><td>5</td><td>+20±2</td></tr></table>	Step	Temperature (°C)	1	+20±2	2	-25±2	3	+20±2	4	+85±2	5	+20±2
Char.	Capacitance Change																					
E	Within $+20\%$ -65%																					
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8	Discharge Test	Appearance	No marked defect.	As in Figure 1, discharge is made 50 times at 5 s intervals from the capacitor (Cd) charged at DC voltage of specified.  Fig.1 Ct : Capacitor under test R2 : 100MΩ S : High-voltage switch R3 : Surge resistance R1 : 1000Ω <table><tr><td>Cd</td><td>0.001μF</td></tr><tr><td>Vs</td><td>DC10kV</td></tr></table>	Cd	0.001μF	Vs	DC10kV														
		Cd	0.001μF																			
		Vs	DC10kV																			
I.R.	1000MΩ min.																					
Dielectric Strength	Per Item 6.																					
9	Solderability of Leads		Lead wire shall be soldered with uniformly coated on the axial direction over 3/4 of the circumferential direction.	The lead wire of a capacitor shall be dipped into molten solder of 235±5°C for 2±0.5 s. The depth of immersion is up to about 1.5 to 2.0mm from the root of lead wires.																		
10	Soldering Effect	Appearance	No marked defect.	As in figure, the lead wires shall be immersed solder of 350±10°C up to 1.5 to 2.0mm from the root of terminal for 3.5±0.5 s. Pre-treatment: Capacitor shall be stored at 85±2°C for 1 h, then placed at "room condition for 24±2 h before initial measurements. Post-treatment: Capacitor shall be stored for 4 to 24 h at "room condition." 																		
		I.R.	1000MΩ min.																			
		Dielectric Strength	Per Item 6.																			

*1 "room condition" temperature : 15 to 35°C, relative humidity : 45 to 75%, atmospheric pressure : 86 to 106kPa

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Specifications and Test Methods

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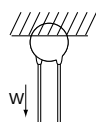
No.	Item		Specification		Testing Method
11	Vibration Resistance	Appearance	No marked defect.		The capacitor shall firmly be soldered to the supporting lead wire and vibration which is 10 to 55Hz in the vibration frequency range, 1.5mm in total amplitude, and about 1min in the rate of vibration change from 10Hz to 55Hz and back to 10Hz is applied for a total of 6 h; 2 h each in 3 mutually perpendicular directions.
		Capacitance	Within the specified tolerance.		
		D.F.	Char.	Specification	
			E	D.F.≤2.5%	
F	D.F.≤5.0%				
12	Solvent Resistance	Appearance	No marked defect.		The capacitor shall be immersed into a isopropyl alcohol for 30±5 s.
13	Humidity (Under Steady State)	Appearance	No marked defect.		Set the capacitor for 500±12 h at 40±2°C in 90 to 95% relative humidity. Pre-treatment : Capacitor shall be stored at 85±2°C for 1 h, then placed at °room condition for 24±2 h before initial measurements. Post-treatment : Capacitor shall be stored for 1 to 2 h at °room condition.
		Capacitance Change	Char.	Capacitance Change	
		D.F.	E	Within±20%	
			F	Within±30%	
			Char.	Specification	
E	D.F.≤5.0%				
F	D.F.≤7.5%				
I.R.	1000MΩ min.				
Dielectric Strength	Per Item 6.				
14	Humidity Insulation	Appearance	No marked defect.		The capacitor shall be subjected to 40±2°C, relative humidity of 90 to 98% for 8 h, and then removed in room temperature for 16 h until 5 cycles. Pre-treatment : Capacitor shall be stored at 85±2°C for 1 h, then placed at °room condition for 24±2 h before initial measurements. Post-treatment : Capacitor shall be stored for 1 to 2 h at °room condition.
		Capacitance Change	Char.	Capacitance Change	
		D.F.	E	Within±20%	
			F	Within±30%	
			Char.	Specification	
E	D.F.≤5.0%				
F	D.F.≤7.5%				
I.R.	1000MΩ min.				
Dielectric Strength	Per Item 6.				
15	Humidity Loading	Appearance	No marked defect.		Apply the rated voltage for 500±12 h at 40±2°C in 90 to 95% relative humidity. Pre-treatment : Capacitor shall be stored at 85±2°C for 1 h, then placed at °room condition for 24±2 h before initial measurements. Post-treatment : Capacitor shall be stored for 1 to 2 h at °room condition.
		Capacitance Change	Char.	Capacitance Change	
		D.F.	E	Within±20%	
			F	Within±30%	
			Char.	Specification	
E	D.F.≤5.0%				
F	D.F.≤7.5%				
I.R.	1000MΩ min.				
Dielectric Strength	Per Item 6.				
16	Life	Appearance	No marked defect.		Apply a voltage of table 2 for 1500 h at 85±2°C, relative humidity 50% max.

*1 "room condition" temperature : 15 to 35°C, relative humidity : 45 to 75%, atmospheric pressure : 86 to 106kPa

Continued on the following page. 

Specifications and Test Methods

 Continued from the preceding page.

No.	Item		Specification	Testing Method																											
18	Robustness of Terminations	Tensile	Lead wire shall not cut off. Capacitor shall not be broken.	As a figure, fix the body of capacitor, apply a tensile weight gradually to each lead wire in the radial direction of capacitor up to 10N and keep it for 10±1 s. 																											
		Bending		Each lead wire shall be subjected to 5N weight and then a 90° bend, at the point of egress, in one direction, return to original position, and then a 90° bend in the opposite direction at the rate of one bend in 2 to 3 s.																											
19	Temperature and Immersion cycle	Appearance	No marked defect.	The capacitor shall be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles. <Temperature cycle> <table><tr><th>Step</th><th>Temperature (°C)</th><th>Time</th></tr><tr><td>1</td><td>-25+0/-3</td><td>30 min</td></tr><tr><td>2</td><td>Room temp.</td><td>3 min</td></tr><tr><td>3</td><td>+85+3/-0</td><td>30 min</td></tr><tr><td>4</td><td>Room temp.</td><td>3 min</td></tr></table> Cycle time : 5 cycle <Immersion cycle> <table><tr><th>Step</th><th>Temperature (°C)</th><th>Time</th><th>Immersion water</th></tr><tr><td>1</td><td>+65+5/-0</td><td>15 min</td><td>Clean water</td></tr><tr><td>2</td><td>0±3</td><td>15 min</td><td>Salt water</td></tr></table> Cycle time : 2 cycle Pre-treatment : Capacitor shall be stored at 85±2°C for 1 h, then placed at °room condition for 24±2 h. Post-treatment : Capacitor shall be stored for 4 to 24 h at °room condition.	Step	Temperature (°C)	Time	1	-25+0/-3	30 min	2	Room temp.	3 min	3	+85+3/-0	30 min	4	Room temp.	3 min	Step	Temperature (°C)	Time	Immersion water	1	+65+5/-0	15 min	Clean water	2	0±3	15 min	Salt water
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