

Performance and Test Methods

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Item		Performance	Test Methods and Conditions (In accordance with JIS C 5101-1)						
		X5R Characteristics							
Capacitance		Within the tolerance	Class 2						
Dissipation Factor		10% or less	<table border="1" style="width: 100%;"> <tr> <th>Capacitance Value</th> <th>Measurement Frequency</th> <th>Measurement Voltage</th> </tr> <tr> <td>$C \leq 10\mu\text{F}$</td> <td>1kHz\pm10%</td> <td>1.0\pm0.2Vrms</td> </tr> </table>	Capacitance Value	Measurement Frequency	Measurement Voltage	$C \leq 10\mu\text{F}$	1kHz \pm 10%	1.0 \pm 0.2Vrms
Capacitance Value	Measurement Frequency	Measurement Voltage							
$C \leq 10\mu\text{F}$	1kHz \pm 10%	1.0 \pm 0.2Vrms							
Withstanding Voltage		No insulation breakdown and no failure.	Heat-treated before measuring Applied Voltage : 1~5sec. Applied in silicon oil (W.V.630V or more) Charging & Discharging Current : 50mA max Test Voltage: Rated Voltage \times 250%						
Insulation Resistance		No less than 10,000M Ω or 500M Ω · μF , whichever is smaller. (*)	Applied Voltage : Rated Voltage Applied Time : 1min.						
Adhesion Strength of Termination	Wire-Bonding	0.03N or more	Wire-bonded by $\phi 25\mu$ wire, then pull the wire in order to measure the strength						
Temp. Cycle	Visual	No serious mechanical damage.	Room Temp. \rightarrow Minimum Operation Temp. \rightarrow Room Temp. \rightarrow Maximum Operation Temp. 3min. \rightarrow 30min. \rightarrow 3min. \rightarrow 30min. Leaving a sample under the temperature of step 1~4 above in order to complete 1 cycle. The cycle is repeated 5 times.						
	Capacitance Change	$\pm 7.5\%$ or less							
	Dissipation Factor (or Q)	Initial standard values must be satisfied.							
	Insulation Resistance	Initial standard values must be satisfied.							
Humidity Load Test	Visual	No serious mechanical damage.	Voltage Treatment Test Temperature : 40 \pm 2 $^{\circ}\text{C}$ Relative Humidity : 90~95%RH Test Voltage : Rated Voltage Test Time : 500hours						
	Capacitance Change	$\pm 12.5\%$ or less							
	Dissipation Factor (or Q)	Less than double of the initial value							
	Insulation Resistance	10M Ω or more							
Life Test (at Elevated Ambient Temp.)	Visual	No serious mechanical damage.	Voltage Treatment Test Temp. : 85 $^{\circ}\text{C} \pm 3^{\circ}\text{C}$ Test Voltage: Rated Voltage \times 150% of DC Voltage Test Time : 1,000hours Test condition is different for each product. Please check the individual specification sheets.						
	Capacitance Change	$\pm 12.5\%$ or less							
	Dissipation Factor (or Q)	Less than double of the initial value							
	Withstanding Voltage	10M Ω or more							

Note1 : Specifications differ depending on the product. Please check the individual specification sheets.

Note2 : Heat Treatment: The capacitor is heat-treated at 150 \pm 0/-10 $^{\circ}\text{C}$ for 1 hour, then is left at room temperature for 48 \pm 4 hours.

Note3 : Voltage Treatment : The capacitor is processed under the prescribed examination condition for 1 hour, then is left at room temperature for 48 \pm 4 hours.