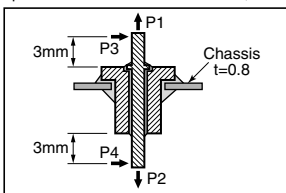
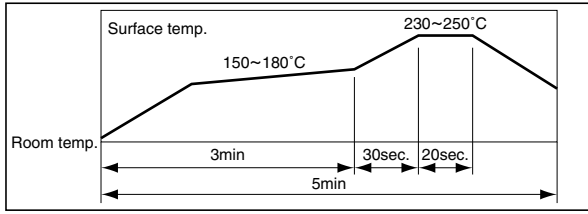


PERFORMANCE AND TEST METHOD

Item		Performance	Test method and conditions																						
Withstanding voltage		No damage	Class 1(SL,YN) : 300% of rated voltage applied for 5sec. Class 2(YE,X7R,YF) : 250% of rated voltage applied for 5sec. Charging and discharging current : 50 mA max. * Class1 SL, YN Char Class2 YE, X7R, YF Char																						
Insulation resistance		5000 MΩ min	Rated voltage applied for 60 ±5sec. Charging and discharging current : 50 mA max.																						
Capacitance temperature characteristics		Class 1 (Temperature coefficient) SL : +350~1000ppm/°C YN : -800~5800ppm/°C Class 2 (Rate of capacitance change) X7R : Within ±15% YE : Within +20~-55% YF : Within +30~-80%	Preconditioning : Carry out heat treatment. Obtain the rate of change and the temperature coefficient from the capacitance at Step 3.																						
			<table border="1"> <tr> <td></td> <td>temp. (°C)</td> </tr> <tr> <td>Step 1</td> <td>20±2</td> </tr> <tr> <td>Step 2</td> <td>Minimum operating temp.</td> </tr> <tr> <td>Step 3</td> <td>20±2</td> </tr> <tr> <td>Step 4</td> <td>Maximum operating temp.</td> </tr> </table>		temp. (°C)	Step 1	20±2	Step 2	Minimum operating temp.	Step 3	20±2	Step 4	Maximum operating temp.												
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Solderability		90% or more the immersed area shall be covered with new solder.	Solder : H60A or H63A Flux : Methanol solution of rosin (25wt%) Depth of immersion into flux: Immerse whole of capacitor. Preheating before immersion into solder : Temperature ; 130 to 150°C for 1 min. Temperature of solder : 235±5°C Duration of immersion into solder : 2±0.5sec. Immerse continually after preheating.																						
Tensile strength of termination		No abnormalities such as serious flaws and cracks.	The body of specimen shall be fixed as followed, the tension shall be applied gradually in the lead out of termination.  <table border="1"> <tr> <th>Hole size</th> <th>P1, P2</th> <th>P3</th> <th>P4</th> </tr> <tr> <td>0.65</td> <td>2 kg</td> <td>1 kg</td> <td>0.75 kg</td> </tr> <tr> <td>0.80</td> <td>2 kg</td> <td>1 kg</td> <td>0.75 kg</td> </tr> <tr> <td>1.30</td> <td>5 kg</td> <td>3 kg</td> <td>2 kg</td> </tr> </table>	Hole size	P1, P2	P3	P4	0.65	2 kg	1 kg	0.75 kg	0.80	2 kg	1 kg	0.75 kg	1.30	5 kg	3 kg	2 kg						
Hole size	P1, P2	P3	P4																						
0.65	2 kg	1 kg	0.75 kg																						
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1.30	5 kg	3 kg	2 kg																						
Resistance to soldering heat	Visual	No abnormality	Preconditioning : Carry out heat treatment 1) Immersion into solder Immerse terminations to the position of 2mm from the body of the component at 260±5°C for 10±0.5 sec. 2) Reflow soldering After fixing in a chassis, follow the temperature profile below for soldering.  3) Manual soldering (limited for termination) Place a soldering iron on terminations to the position of 2mm from the body of the component at 350±10°C for 10±0.5 sec. Let stand at the standard conditions for 4~24hrs, then measure.																						
	Capacitance	Change in pretest value Class1: No more than ±10% or ±0.25pF whichever is larger. Class2 YE, X7R : ±15% YF : ±20%																							
	Dissipation factor	Class1 SL : 1% or less YN : 1% or less Class2 YE, X7R : 5% or less YF : 5% or less																							
	Insulation resistance	5000 MΩ or more																							
	Withstanding voltage	No abnormality																							
Temperature cycle	Visual	No abnormality	Preconditioning : Carry out heat treatment, continually 25 cycles of the temperature cycle below. <table border="1"> <tr> <td>Step 1</td> <td>Minimum of operation temp.</td> <td>30 min.</td> <td rowspan="4">* Minimum</td> <td>R</td> <td>Other than R</td> </tr> <tr> <td>Step 2</td> <td>Room temp.</td> <td>5 min.</td> <td>-55°C</td> <td>-25°C</td> </tr> <tr> <td>Step 3</td> <td>Maximum of operation temp.</td> <td>30 min.</td> <td>Maximum</td> <td>+125°C</td> <td>+85°C</td> </tr> <tr> <td>Step 4</td> <td>Room temp.</td> <td>5 min.</td> <td></td> <td></td> </tr> </table> Let stand at the standard conditions out of the bath for 4~24hrs.	Step 1	Minimum of operation temp.	30 min.	* Minimum	R	Other than R	Step 2	Room temp.	5 min.	-55°C	-25°C	Step 3	Maximum of operation temp.	30 min.	Maximum	+125°C	+85°C	Step 4	Room temp.	5 min.		
	Step 1	Minimum of operation temp.		30 min.	* Minimum	R		Other than R																	
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Dissipation factor	Class1 SL : 1% or less N : 1% or less Class2 YE, X7R : 5% or less YF : 7.5% or less																								
Insulation resistance	1000 MΩ or more																								
Humidity load test	Visual	No remarkable abnormality	Preconditioning # : Carry out heat treatment Relative humidity : 90 to 95% Test temperature : 40±2°C Applied voltage : Rated voltage Duration of test : 500+24, -0h Charge and discharge current : 50mA max. Recovery : The specimen is taken out of the bath, washed lightly, and allowed to stand under the standard conditions for 12 to 24hrs.																						
	Capacitance	Change in pretest value Class1: No more than ±10% or ±0.25pF whichever is larger. Class2 YE, X7R : ±20% YF : ±30%																							
	Dissipation factor	Class1 SL : 1% or less N : 1% or less Class2 YE, X7R : 5% or less YF : 7.5% or less																							
	Insulation resistance	1000 MΩ or more																							
Life test at high temperature load	Visual	No abnormality	Preconditioning # : Carry out heat treatment Test temperature : Maximum of operation temp. ±2°C Applied voltage : 200% of Rated voltage Duration of test : 1000 +48, -0h Charging and discharging current : 50mA max. Recovery : The specimen is taken out of the bath and allowed to stand under the ordinary conditions for 12 to 24hrs.																						
	Capacitance	Change in pretest value Class1: No more than ±10% or ±0.25pF whichever is larger. Class2 YE, X7R : ±20% YF : ±30%																							
	Dissipation factor	Class1 SL : 1% or less YN : 1% or less Class2 YE, X7R : 5% or less YF : 7.5% or less																							
	Insulation resistance	1000 MΩ or more																							

When there is a provision of heat treatment in the treatment method of this table, the following preconditioning shall be carried out prior to the test.
Heat treatment : The capacitor shall be allowed to stand in air at 150 +0, -10°C for 1h, and then allowed to stand under the standard conditions for 24 ± 2h.
Unless particularly specified in this table, the test methods shall be as specified in JIS C 5101-1.

EMI FILTERS