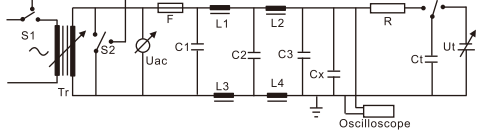
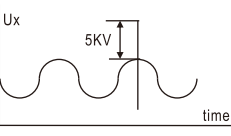
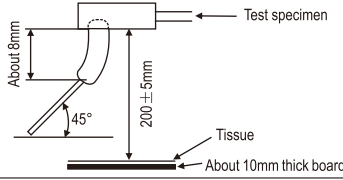


# Safety recognized ceramic capacitors

## Specifications test methods

### Specifications Test Methods

Continued from the preceding page.

No.	Item	Specifications	Testing Method																																																				
17	Active Flammability	The cheese-cloth should not be on fire.	<p>The capacitor should be individually wrapped in at least one but not more than two complete layers of cheesecloth. The capacitor should be subjected to 20 discharges. The interval between successive discharges should be 5 sec. The UAC should be maintained for 2 min. after the last discharge.</p>  <p> <math>C_{1,2} : 1\mu F \pm 10\%</math>                      <math>C_3 : 0.033\mu F \pm 5\% \text{ } 10\text{kV}</math>  <math>L_{1 \text{ to } 4} : 1.5\text{mH} \pm 20\% \text{ } 16\text{A Rod core choke}</math>  <math>C_t : 3\mu F \pm 5\% \text{ } 10\text{kV}</math>                      <math>R : 100\Omega \pm 2\%</math>  <math>C_x</math> : Capacitor under test                      <math>U_{AC} : U_R \pm 5\%</math>  <math>F</math> : Fuse, Rated 10A                      <math>U_R</math> : Rated Voltage  <math>U_t</math> : Voltage applied to <math>C_t</math> </p> 																																																				
18	Passive Flammability	The burning time should not exceed 30 sec. The tissue paper should not ignite.	<p>The capacitor under test should be held in the flame in the position which best promotes burning. Each specimen should only be exposed once to the flame. Time of exposure to flame: 30 sec.</p> <p>           Length of flame : <math>12 \pm 1\text{mm}</math>            Gas burner : Length 35mm min.                              : Inside Dia. <math>0.5 \pm 0.1\text{mm}</math>                              : Outside Dia. 0.9mm max.            Gas : Butane gas Purity 95% min.         </p> 																																																				
19	Temperature and Immersion Cycle	<table border="1"> <tr> <td>Appearance</td> <td>No marked defect.</td> </tr> <tr> <td>Capacitance Change</td> <td>C: Within <math>\pm 2.5\%</math> L: Within <math>\pm 5.0\%</math> X, B, E: Within <math>\pm 10\%</math> F: Within <math>\pm 15\%</math></td> </tr> <tr> <td rowspan="4">tan<math>\delta</math> or Q</td> <td> <table border="1"> <thead> <tr> <th>Char.</th> <th>Specifications</th> </tr> </thead> <tbody> <tr> <td>C, L</td> <td><math>Q \geq 400 + 20C_r</math> (<math>C_r &lt; 30\text{pF}</math>) <math>Q \geq 1000</math> (<math>C_r \geq 30\text{pF}</math>)</td> </tr> <tr> <td>X, B, E</td> <td><math>\tan\delta \leq 0.025</math></td> </tr> <tr> <td>F</td> <td><math>\tan\delta \leq 0.050</math></td> </tr> </tbody> </table> </td> </tr> <tr> <td>I. R.</td> <td>3000M<math>\Omega</math> min.</td> </tr> <tr> <td>Dielectric Strength</td> <td>Per Item 6.</td> </tr> </table>	Appearance	No marked defect.	Capacitance Change	C: Within $\pm 2.5\%$ L: Within $\pm 5.0\%$ X, B, E: Within $\pm 10\%$ F: Within $\pm 15\%$	tan $\delta$ or Q	<table border="1"> <thead> <tr> <th>Char.</th> <th>Specifications</th> </tr> </thead> <tbody> <tr> <td>C, L</td> <td><math>Q \geq 400 + 20C_r</math> (<math>C_r &lt; 30\text{pF}</math>) <math>Q \geq 1000</math> (<math>C_r \geq 30\text{pF}</math>)</td> </tr> <tr> <td>X, B, E</td> <td><math>\tan\delta \leq 0.025</math></td> </tr> <tr> <td>F</td> <td><math>\tan\delta \leq 0.050</math></td> </tr> </tbody> </table>	Char.	Specifications	C, L	$Q \geq 400 + 20C_r$ ( $C_r < 30\text{pF}$ ) $Q \geq 1000$ ( $C_r \geq 30\text{pF}$ )	X, B, E	$\tan\delta \leq 0.025$	F	$\tan\delta \leq 0.050$	I. R.	3000M $\Omega$ min.	Dielectric Strength	Per Item 6.	<p>The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.</p> <table border="1"> <thead> <tr> <th colspan="3">&lt;Temperature Cycle&gt;</th> </tr> <tr> <th>Step</th> <th>Temperature (deg)</th> <th>Time (min)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-25+0/-3</td> <td>30</td> </tr> <tr> <td>2</td> <td>Room temp.</td> <td>3</td> </tr> <tr> <td>3</td> <td>125+3/-0</td> <td>30</td> </tr> <tr> <td>4</td> <td>Room temp.</td> <td>3</td> </tr> </tbody> </table> <p>Cycle time: 5 cycle</p> <table border="1"> <thead> <tr> <th colspan="4">&lt;Immersion Cycle&gt;</th> </tr> <tr> <th>Step</th> <th>Temperature (deg)</th> <th>Time (min)</th> <th>Immersion Water</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>65+5/-0</td> <td>15</td> <td>Clean water</td> </tr> <tr> <td>2</td> <td>0<math>\pm</math>3</td> <td>15</td> <td>Salt water</td> </tr> </tbody> </table> <p>Cycle time: 2 cycle</p> <p>Pre-treatment: Capacitor should be stored at <math>85 \pm 2^\circ\text{C}</math> for 1 hr., then placed at room condition<sup>1)</sup> for <math>24 \pm 2</math> hrs.</p> <p>Post-treatment: Capacitor should be stored for <math>24 \pm 2</math> hrs. at room condition<sup>1)</sup>.</p>	<Temperature Cycle>			Step	Temperature (deg)	Time (min)	1	-25+0/-3	30	2	Room temp.	3	3	125+3/-0	30	4	Room temp.	3	<Immersion Cycle>				Step	Temperature (deg)	Time (min)	Immersion Water	1	65+5/-0	15	Clean water	2	0 $\pm$ 3	15	Salt water
Appearance	No marked defect.																																																						
Capacitance Change	C: Within $\pm 2.5\%$ L: Within $\pm 5.0\%$ X, B, E: Within $\pm 10\%$ F: Within $\pm 15\%$																																																						
tan $\delta$ or Q	<table border="1"> <thead> <tr> <th>Char.</th> <th>Specifications</th> </tr> </thead> <tbody> <tr> <td>C, L</td> <td><math>Q \geq 400 + 20C_r</math> (<math>C_r &lt; 30\text{pF}</math>) <math>Q \geq 1000</math> (<math>C_r \geq 30\text{pF}</math>)</td> </tr> <tr> <td>X, B, E</td> <td><math>\tan\delta \leq 0.025</math></td> </tr> <tr> <td>F</td> <td><math>\tan\delta \leq 0.050</math></td> </tr> </tbody> </table>	Char.	Specifications	C, L	$Q \geq 400 + 20C_r$ ( $C_r < 30\text{pF}$ ) $Q \geq 1000$ ( $C_r \geq 30\text{pF}$ )	X, B, E		$\tan\delta \leq 0.025$	F	$\tan\delta \leq 0.050$																																													
	Char.	Specifications																																																					
	C, L	$Q \geq 400 + 20C_r$ ( $C_r < 30\text{pF}$ ) $Q \geq 1000$ ( $C_r \geq 30\text{pF}$ )																																																					
	X, B, E	$\tan\delta \leq 0.025$																																																					
F	$\tan\delta \leq 0.050$																																																						
I. R.	3000M $\Omega$ min.																																																						
Dielectric Strength	Per Item 6.																																																						
<Temperature Cycle>																																																							
Step	Temperature (deg)	Time (min)																																																					
1	-25+0/-3	30																																																					
2	Room temp.	3																																																					
3	125+3/-0	30																																																					
4	Room temp.	3																																																					
<Immersion Cycle>																																																							
Step	Temperature (deg)	Time (min)	Immersion Water																																																				
1	65+5/-0	15	Clean water																																																				
2	0 $\pm$ 3	15	Salt water																																																				

<sup>1)</sup> "room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa