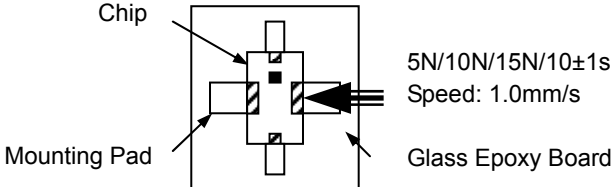
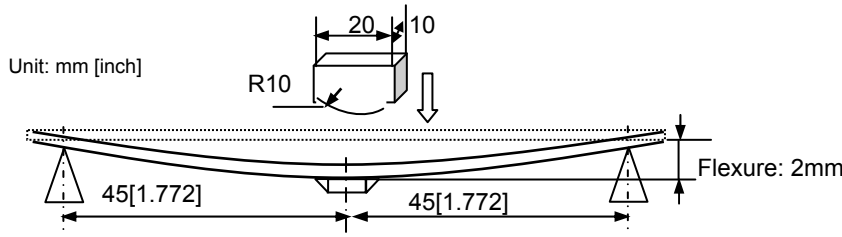
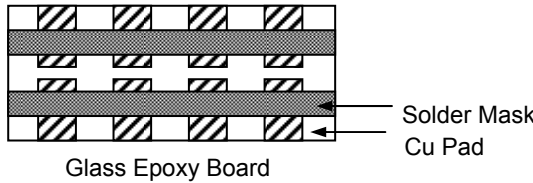


# RELIABILITY AND TEST CONDITIONS

## RF Component (SLFB/SLFL/SLFH/SLBL/SLFBF/SLFD/SLFT Series)

Items	Requirements	Test Methods and Remarks
1. Operating Temperature Range		-40°C to +85°C
2. Storage Temperature Range		-40°C to +85°C
3. Terminal Strength	No visible mechanical damage.	<ol style="list-style-type: none"> <li>Solder the inductor to the testing jig (glass epoxy board shown as the following figure) using eutectic solder. Then apply a force in the direction of the arrow.</li> <li>5N force for 1005 and 1608 series.</li> <li>10N force for 2012, 2520 and 3216 series.</li> <li>15N force for 3225 series and others.</li> <li>Keep time: 10±1sec.</li> </ol> 
4. Resistance to Flexure	No visible mechanical damage.	<ol style="list-style-type: none"> <li>Solder the chip to the test jig (glass epoxy board) using a eutectic solder. Then apply a force in the direction shown as the following figure. Solder the chip to the test jig (glass epoxy board) using eutectic solder. Then apply a force in the direction.</li> <li>Flexure: 2mm.</li> <li>Pressurizing Speed: 0.5mm/sec.</li> <li>Keep time: ≥30 sec.</li> </ol> 
5. Vibration	No visible mechanical damage.	<ol style="list-style-type: none"> <li>Solder the chip to the testing jig (glass epoxy board shown as the following figure) using eutectic solder.</li> <li>The chip shall be subjected to a simple harmonic motion having total amplitude of 1.5mm, the frequency being varied uniformly between the approximate limits of 10 and 55 Hz.</li> <li>The frequency range from 10 to 55 Hz and return to 10 Hz shall be traversed in approximately 1 minute. This motion shall be applied for a period of 2 hours in each 3 mutually perpendicular directions (total of 6 hours).</li> </ol> 
6. Dropping	No visible mechanical damage.	Drop the chip 10 times on a concrete floor from a height of 100 cm.

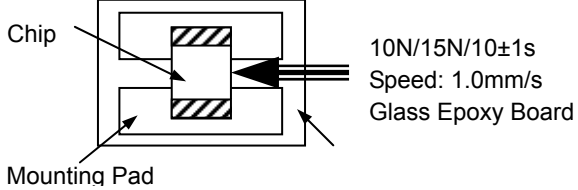
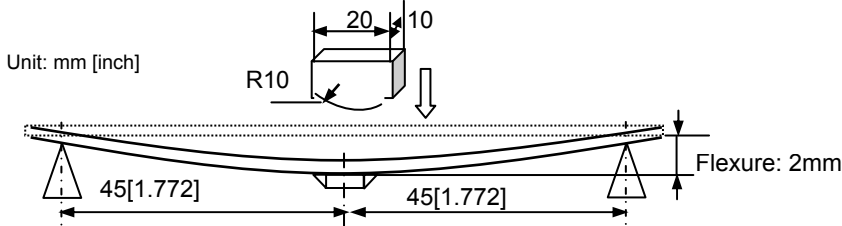
## RELIABILITY AND TEST CONDITIONS

### RF Component (SLFB/SLFL/SLFH/SLBL/SLFBF/SLFD/SLFT Series)

Items	Requirements	Test Methods and Remarks
7. Solderability	① No visible mechanical damage. ② Wetting shall be exceeded 75% coverage.	① Solder temperature: $240\pm 2^{\circ}\text{C}$ . ② Duration: 3sec. ③ Solder: Sn/3.0Ag/0.5Cu. ④ Flux: 25% Resin and 75% ethanol in weight.
8. Resistance to Soldering Heat	No visible mechanical damage.	① Solder temperature: $260\pm 5^{\circ}\text{C}$ . ② Duration: 5 sec. ③ Solder: Sn/3.0Ag/0.5Cu. ④ Flux: 25% Resin and 75% ethanol in weight. ⑤ The chip shall be stabilized at normal condition for 1~2 hours before measuring.
9. Thermal Shock	① No visible mechanical damage. ② Satisfy electrical characteristic.	① Temperature and time: $-40^{\circ}\text{C}$ for $30\pm 3$ min $\rightarrow$ $85^{\circ}\text{C}$ for $30\pm 3$ min. ② Transforming interval: Max. 20 sec. ③ Tested cycle: 100 cycles. ④ The chip shall be stabilized at normal condition for 1~2 hours before measuring.
		<p>The diagram illustrates a thermal shock test cycle. The vertical axis is labeled 'Temperature' and the horizontal axis represents time. The cycle starts at 'Ambient' temperature, rises to <math>85^{\circ}\text{C}</math>, and remains constant for 30 minutes. It then drops to <math>-40^{\circ}\text{C}</math> and remains constant for 30 minutes. The transition between <math>85^{\circ}\text{C}</math> and <math>-40^{\circ}\text{C}</math> is labeled '30 min.' and the transition back to <math>85^{\circ}\text{C}</math> is labeled '20sec. (max.)'. A second cycle is shown, starting from <math>-40^{\circ}\text{C}</math>, rising to <math>85^{\circ}\text{C}</math> for 30 minutes, and then returning to <math>-40^{\circ}\text{C}</math> for 30 minutes.</p>
10. Damp Heat (Steady States)	① No visible mechanical damage. ② Satisfy electrical characteristic.	① Temperature: $60\pm 2^{\circ}\text{C}$ . ② Humidity: 90% to 95% RH. ③ Duration: $500^{+24}$ hours. ④ The chip shall be stabilized at normal condition for 1~2 hours before measuring.
11. Resistance to High Temperature	① No visible mechanical damage. ② Satisfy electrical characteristic.	① Temperature: $85\pm 2^{\circ}\text{C}$ . ② Duration: $500^{+24}$ hours. ③ The chip shall be stabilized at normal condition for 1~2 hours before measuring.

# RELIABILITY AND TEST CONDITIONS

## RF Component (SLDA Series)

Items	Requirements	Test Methods and Remarks
1. Operating Temperature Range		-40°C to +85°C
2. Storage Temperature Range		-40°C to +85°C
3. Terminal Strength	No visible mechanical damage.	<ol style="list-style-type: none"> <li>① Solder the inductor to the testing jig (glass epoxy board shown as the following figure) using eutectic solder. Then apply a force in the direction of the arrow.</li> <li>② 10N force for 2012 and 3216 series.</li> <li>③ 15N force for others.</li> <li>④ Keep time: 10±1sec.</li> </ol> 
4. Resistance to Flexure	No visible mechanical damage.	<ol style="list-style-type: none"> <li>① Solder the chip to the test jig (glass epoxy board) using a eutectic solder. Then apply a force in the direction shown as the following figure. Solder the chip to the test jig (glass epoxy board) using eutectic solder. Then apply a force in the direction.</li> <li>② Flexure: 2mm.</li> <li>③ Pressurizing Speed: 0.5mm/sec.</li> <li>④ Keep time: ≥30 sec.</li> </ol>
		
5. Dropping	No visible mechanical damage.	Drop the chip 5 times on a wood floor from a height of 50 cm.
6. Solderability	<ol style="list-style-type: none"> <li>① No visible mechanical damage.</li> <li>② Wetting shall be exceeded 75% coverage.</li> </ol>	<ol style="list-style-type: none"> <li>① Solder temperature: 240±2°C.</li> <li>② Duration: 3sec.</li> <li>③ Solder: Sn/3.0Ag/0.5Cu.</li> <li>④ Flux: 25% Resin and 75% ethanol in weight.</li> </ol>
7. Resistance to Soldering Heat	No visible mechanical damage.	<ol style="list-style-type: none"> <li>① Solder temperature: 260±5°C.</li> <li>② Duration: 5 sec.</li> <li>③ Solder: Sn/3.0Ag/0.5Cu.</li> <li>④ Flux: 25% Resin and 75% ethanol in weight.</li> <li>⑤ The chip shall be stabilized at normal condition for 1~2 hours before measuring.</li> </ol>

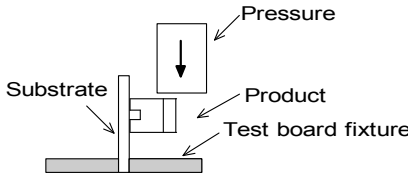
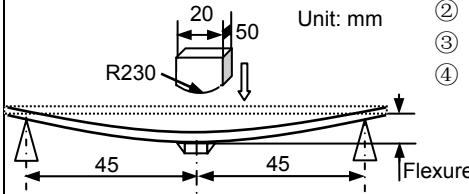
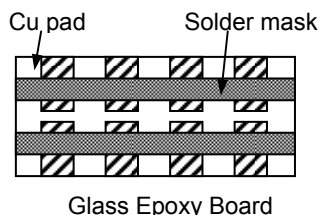
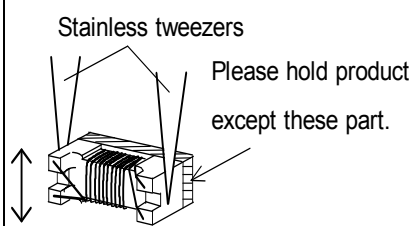
## RELIABILITY AND TEST CONDITIONS

### RF Component (SLDA Series)

Items	Requirements	Test Methods and Remarks
8. Thermal Shock	<ul style="list-style-type: none"> <li>① No visible mechanical damage.</li> <li>② Satisfy electrical characteristic.</li> </ul>	<ul style="list-style-type: none"> <li>① Temperature and time: <math>-40^{\circ}\text{C}</math> for <math>30\pm 3</math> min <math>\rightarrow</math> <math>85^{\circ}\text{C}</math> for <math>30\pm 3</math> min.</li> <li>② Transforming interval: Max. 20 sec.</li> <li>③ Tested cycle: 10 cycles.</li> <li>④ The chip shall be stabilized at normal condition for 1~2 hours before measuring.</li> </ul> <p>The diagram illustrates a thermal shock test cycle. It starts at an ambient temperature, rises to <math>85^{\circ}\text{C}</math> and holds for 30 minutes. It then falls to <math>-40^{\circ}\text{C}</math> and holds for 30 minutes. After a transition interval of up to 20 seconds, it rises back to <math>85^{\circ}\text{C}</math> and holds for another 30 minutes. The y-axis is labeled 'Temperature' and the x-axis represents time.</p>
9. Damp Heat (Steady States)	<ul style="list-style-type: none"> <li>① No visible mechanical damage.</li> <li>② Satisfy electrical characteristic.</li> </ul>	<ul style="list-style-type: none"> <li>① Temperature: <math>60\pm 2^{\circ}\text{C}</math>.</li> <li>② Humidity: 90% to 95% RH.</li> <li>③ Duration: <math>96^{+24}</math> hours.</li> <li>④ The chip shall be stabilized at normal condition for 1~2 hours before measuring.</li> </ul>
10. Resistance to High Temperature	<ul style="list-style-type: none"> <li>① No visible mechanical damage.</li> <li>② Satisfy electrical characteristic.</li> </ul>	<ul style="list-style-type: none"> <li>① Temperature: <math>85\pm 2^{\circ}\text{C}</math>.</li> <li>② Duration: <math>96^{+24}</math> hours.</li> <li>③ The chip shall be stabilized at normal condition for 1~2 hours before measuring.</li> </ul>

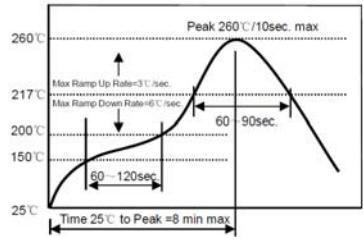
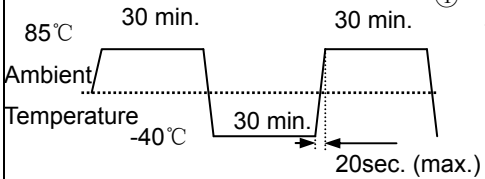
# RELIABILITY AND TEST CONDITIONS

## Wire Wound Chip Balun Transformer (BW21S Series)

Item	Requirements	Test Methods and Remarks
1. Operating Temperature Range		-40°C to +85°C
2. Storage Temperature Range		-40°C to +85°C
3. Terminal strength	<p>No removal or split of the termination or other defects shall occur.</p> 	<ol style="list-style-type: none"> <li>Solder the chip to the testing jig (glass epoxy board shown as <b>the left figure</b>) using eutectic solder. Then apply a force in the direction of the arrow.</li> <li>5N force.</li> <li>Keep time: 5±1s.</li> </ol>
4. Resistance to Flexure	<p>No visible mechanical damage.</p> 	<ol style="list-style-type: none"> <li>Solder the chip to the test jig (glass epoxy board) using a eutectic solder. Then apply a force in the direction shown as <b>the left figure</b>.</li> <li>Flexure: 2.0mm.</li> <li>Pressurizing Speed: 0.5mm/s.</li> <li>Keep time: 5s.</li> </ol>
5. Vibration	<p>No visible mechanical damage.</p> 	<ol style="list-style-type: none"> <li>Solder the chip to the testing jig (glass epoxy board) using leadfree solder.</li> <li>The chip shall be subjected to a simple harmonic motion having total amplitude of 1.5mm, the frequency being varied uniformly between the approximate limits of 10 and 55 Hz.</li> <li>The frequency range from 10 to 55 Hz and return to 10 Hz shall be traversed in approximately 1 minute. This motion shall be applied for a period of 2 hours in each 3 mutually perpendicular directions (total of 6 hours)</li> </ol>
6. Dropping	<p>No visible mechanical damage.</p>	Drop the chip 3 times on a concrete floor from a height of 1m.
7. Solderability	<p>Wetting shall be exceeded 95% coverage, except welding points.</p> 	<ol style="list-style-type: none"> <li>Solder temperature: 240±2°C.</li> <li>Duration: 4±1sec.</li> <li>Solder: Sn/3.0Ag/0.5Cu.</li> <li>Flux: 25% Resin and 75% ethanol in weight.</li> <li>Velocity: 25mm/s</li> </ol>

## RELIABILITY AND TEST CONDITIONS

### Wire Wound Chip Balun Transformer (BW21S Series)

Item	Requirements	Test Methods and Remarks
8. Resistance to Soldering Heat	<ol style="list-style-type: none"> <li>No visible mechanical damage.</li> <li>Satisfy electrical characteristics.</li> </ol>	<ol style="list-style-type: none"> <li>Reflow soldering.</li> <li>The chip shall be stabilized at normal condition for 1~2 hours before measuring.</li> <li>Please reference the Re-flowing Profile in Soldering and Notice for RF Components</li> </ol> 
9. Thermal Shock	<ol style="list-style-type: none"> <li>No mechanical damage.</li> <li>Satisfy electrical characteristics.</li> </ol> 	<ol style="list-style-type: none"> <li>Temperature, time: <math>-40^{\circ}\text{C}</math> for <math>30\pm 3</math> min <math>\rightarrow</math> <math>85^{\circ}\text{C}</math> for <math>30\pm 3</math> min.</li> <li>Transforming interval: 20 s.(max.).</li> <li>Tested cycle: 10 cycles.</li> <li>The chip shall be stabilized at normal condition for 1~2 hours before measuring.</li> </ol>
10. Resistance to Low Temperature	<ol style="list-style-type: none"> <li>No mechanical damage.</li> <li>Satisfy electrical characteristics.</li> </ol>	<ol style="list-style-type: none"> <li>Temperature: <math>-40\pm 2^{\circ}\text{C}</math></li> <li>Duration: <math>1000^{+24}</math> hours.</li> <li>The chip shall be stabilized at normal condition for 1~2 hours before measuring.</li> </ol>
11. Damp Heat (Steady states)	<ol style="list-style-type: none"> <li>No visible mechanical damage.</li> <li>Satisfy electrical characteristics.</li> </ol>	<ol style="list-style-type: none"> <li>Temperature: <math>60\pm 2^{\circ}\text{C}</math>.</li> <li>Humidity: 90% to 95% RH.</li> <li>Duration: <math>1000^{+24}</math> hours.</li> <li>The chip shall be stabilized at normal condition for 1~2 hours before measuring.</li> </ol>
12. Loading at High Temperature (Life Test)	<ol style="list-style-type: none"> <li>No visible mechanical damage.</li> <li>Satisfy electrical characteristics.</li> </ol>	<ol style="list-style-type: none"> <li>Temperature: <math>85\pm 2^{\circ}\text{C}</math>.</li> <li>Duration: <math>1000^{+24}</math> hours.</li> <li>Applied voltage: 2 times for Rated Voltage.</li> <li>The chip shall be stabilized at normal condition for 1~2 hours before measuring.</li> </ol>