

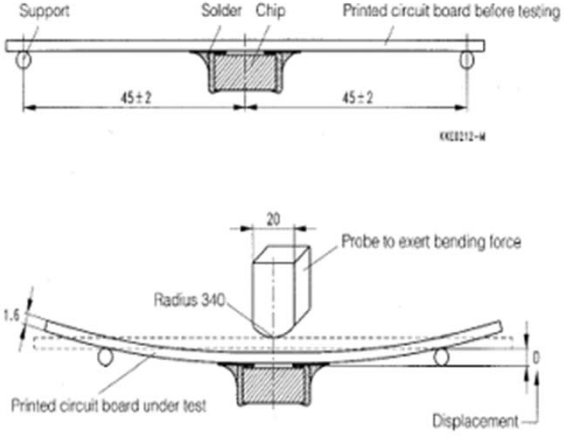
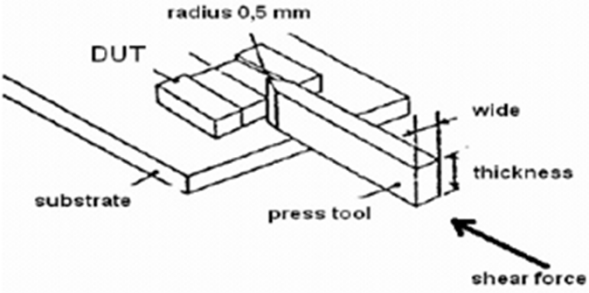
## Reliability and Test Condition

Item	Performance	Test Condition
Operating Temperature	-40°C~+125°C (Including self - temperature rise)	
Storage Temperature	-40°C~+125°C (on board)	
<b>Electrical Performance Test</b>		
Z(common mode)	Refer to standard electrical characteristics list.	Agilent-4291A+ Agilent -16197A
RDC		Agilent-4338B
I.R.		Agilent-4339
Temperature Rise Test	Rated Current $\geq$ 1A $\Delta$ T 40°C Max	1.Applied the allowed DC current. 2.Temperature measured by digital surface thermometer
<b>Reliability Test</b>		
High Temperature Exposure(Storage) AEC-Q200	Appearance : No damage Impedance : within $\pm$ 15% of initial value Inductance : within $\pm$ 10% of initial value Q : Shall not exceed the specification value RDC : within $\pm$ 15% of initial value and shall not exceed the specification value	Preconditioning: Run through IR reflow for 2 times. ( IPC/JEDEC J-STD-020D Classification Reflow Profiles) Temperature : 125 $\pm$ 2°C Duration : 1000hrs Min. Measured at room temperature after placing for 24 $\pm$ 2 hrs
Temperature Cycling AEC-Q200		Preconditioning: Run through IR reflow for 2 times. ( IPC/JEDEC J-STD-020D Classification Reflow Profiles) Condition for 1 cycle Step1 : -40 $\pm$ 2°C 30min Min. Step2 : 125 $\pm$ 2°C transition time 1min MAX. Step3 : 125 $\pm$ 2°C 30min Min. Step4 : Low temp. transition time 1min MAX. Number of cycles : 1000 Measured at room temperature after placing for 24 $\pm$ 2 hrs
Moisture Resistance		Preconditioning: Run through IR reflow for 2 times. ( IPC/JEDEC J-STD-020D Classification Reflow Profiles) 1.Baked at50°C for 25hrs, measured at room temperature after placing for 4 hrs. 2.Raise temperature to 65 $\pm$ 2°C 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25°C in 2.5hrs. 3.Raise temperature to 65 $\pm$ 2°C 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25°C in 2.5hrs,keep at 25°C for 2hrs then keep at -10°C for 3hrs 4.Keep at 25°C 80-100%RH for 15min and vibrate at the frequency of 10 to 55 Hz to 10 Hz, measure at room temperature after placing for 1~2 hrs.
Biased Humidity (AEC-Q200)		Preconditioning: Run through IR reflow for 2 times. ( IPC/JEDEC J-STD-020DClassification Reflow Profiles) Humidity : 85 $\pm$ 3% R.H, Temperature : 85°C $\pm$ 2°C Duration : 1000hrs Min with 100% rated current. Measured at room temperature after placing for 24 $\pm$ 2hrs
High Temperature Operational Life (AEC-Q200)		Preconditioning: Run through IR reflow for 2 times. ( IPC/JEDEC J-STD-020D Classification Reflow Profiles) Temperature : 125 $\pm$ 2°C Duration : 1000hrs Min. with 100% rated current. Measured at room temperature after placing for 24 $\pm$ 2hrs
External Visual		Appearance : No damage

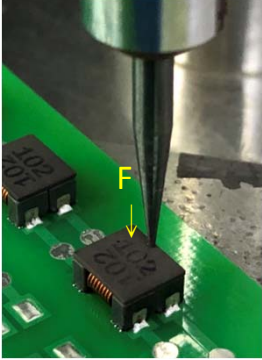
## Reliability and Test Condition

Item	Performance	Test Condition															
<b>Reliability Test</b>																	
Physical Dimension	According to the product specification size measurement	According to the product specification size measurement															
Resistance to Solvents	Appearance : No damage.	Add aqueous wash chemical - OKEM clean or equivalent.															
Mechanical Shock	Appearance : No damage Impedance : within±15% of initial value Inductance : within±10% of initial value Q : Shall not exceed the specification value RDC : within ±15% of initial value and shall not exceed the specification value	<table border="1"> <thead> <tr> <th>Type</th> <th>Peak value (g's)</th> <th>Normal duration (D) (ms)</th> <th>Wave form</th> <th>Velocity change (Vi)ft/sec</th> </tr> </thead> <tbody> <tr> <td>SMD</td> <td>100</td> <td>6</td> <td>Half-sine</td> <td>12.3</td> </tr> <tr> <td>Lead</td> <td>100</td> <td>6</td> <td>Half-sine</td> <td>12.3</td> </tr> </tbody> </table> <p>shocks in each direction along 3 perpendicular axes.</p>	Type	Peak value (g's)	Normal duration (D) (ms)	Wave form	Velocity change (Vi)ft/sec	SMD	100	6	Half-sine	12.3	Lead	100	6	Half-sine	12.3
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SMD	100	6	Half-sine	12.3													
Lead	100	6	Half-sine	12.3													
Vibration		IPC/JEDEC J-STD-020D Classification Reflow Profiles Oscillation Frequency: 10~2K~10Hz for 20 minute Equipment : Vibration checker Total Amplitude:1.52mm±10% Testing Time : 12 hours (20 minutes, 12 cycles each of 3 orientations) ◦															
Resistance to Soldering Heat	Appearance : No damage Impedance : within±15% of initial value Inductance : within±10% of initial value Q : Shall not exceed the specification value RDC : within ±15% of initial value and shall not exceed the specification value	<p>Test condition :</p> <table border="1"> <thead> <tr> <th>Temperature(°C)</th> <th>Time(s)</th> <th>Temperature ramp/immersion and emersion rate</th> <th>Number of heat cycles</th> </tr> </thead> <tbody> <tr> <td>260±5 (solder temp)</td> <td>10±1</td> <td>25mm/s ±6 mm/s</td> <td>1</td> </tr> </tbody> </table>	Temperature(°C)	Time(s)	Temperature ramp/immersion and emersion rate	Number of heat cycles	260±5 (solder temp)	10±1	25mm/s ±6 mm/s	1							
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260±5 (solder temp)	10±1	25mm/s ±6 mm/s	1														
Thermal shock (AEC-Q200)		Preconditioning: Run through IR reflow for 2 times. ( IPC/JEDEC J-STD-020D Classification Reflow Profiles) Condition for 1 cycle Step1 : -40±2°C 15±1min Step2 : 125±2°C within 20Sec. Step3 : 125±2°C 15±1min Number of cycles : 300 Measured at room fempraturc after placing fo24±2hrs															
ESD	Appearance : No damage																
Solderability	More than 95% of the terminal electrode should be covered with solder	<p>a. Method B, 4 hrs @155°C dry heat @235°C±5°C b. Method B @ 215°C±5°C category 3.(8hours ± 15 min) c. Method D category 3. (8hours ± 15 min)@ 260°C±°C Preheat: 150°C,60sec. Solder: Sn96.5% Ag3% Cu0. 5% Temperature: 245±5°C ◦ Flux for lead free: Rosin. 9.5% ◦ Dip time: 4±1sec. Depth: completely cover the termination</p>															

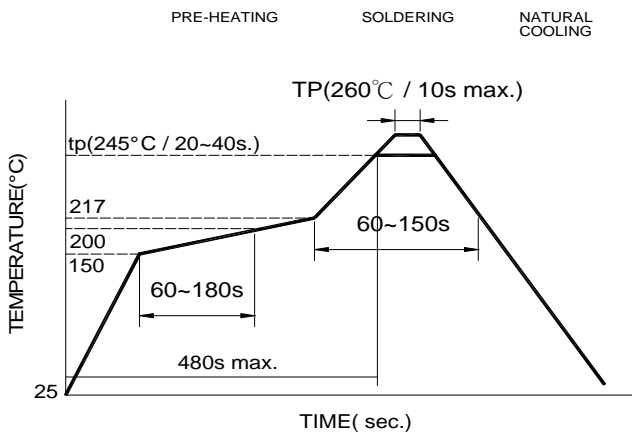
## Reliability and Test Condition

Item	Performance	Test Condition
<b>Reliability Test</b>		
Electrical Characterization	Refer Specification for Approval	Summary to show Min, Max, Mean and Standard deviation
Flammability	Electrical Test not required	V-0 or V-1 are acceptable.
Board Flex	Appearance : No damage	<p>Preconditioning: Run through IR reflow for 2 times. ( IPC/JEDEC J-STD-020D Classification Reflow Profiles) Place the 100mm X 40mm board into a fixture similar to the one shown in below Figure with the component facing down.</p> <p>The apparatus shall consist of mechanical means to apply a force which will bend the board (D) x = 2 mm minimum. The duration of the applied forces shall be 60 (+ 5) sec. The force is to be applied only once to the board.</p> 
Terminal Strength (SMD)	Appearance : No damage	<p>Preconditioning: Run through IR reflow for 2 times. ( IPC/JEDEC J-STD-020D Classification Reflow Profiles) With the component mounted on a PCB with the device to be tested, apply a 17.7 N (1.8 Kg) force to the side of a device being tested. This force shall be applied for 60 +1 seconds. Also the force shall be applied gradually as not to apply a shock to the component being tested.</p> 

## Reliability and Test Condition

Item	Performance	Test Condition
<b>Soldering and Mounting</b>		
Cover Strength	Appearance : No damage	$F \geq 10N$ With 0.5mm diameter push point 
Soldering	Mildly activated rosin fluxes are preferred. JANTEK terminations are suitable for all wave and re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.	
Lead Free Solder re-flow:	Recommended temperature profiles for re-flow soldering in Figure 1.	
Soldering Iron (Figure 2):	Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended. Note : <ul style="list-style-type: none"> <li>• Preheat circuit and products to 150°C</li> <li>• Never contact the ceramic with the iron tip</li> <li>• Use a 20 watt soldering iron with tip diameter of 1.0mm</li> <li>• 350°C tip temperature (max)</li> <li>• 1.0mm tip diameter (max)</li> <li>• Limit soldering time to 4~5 sec</li> </ul>	

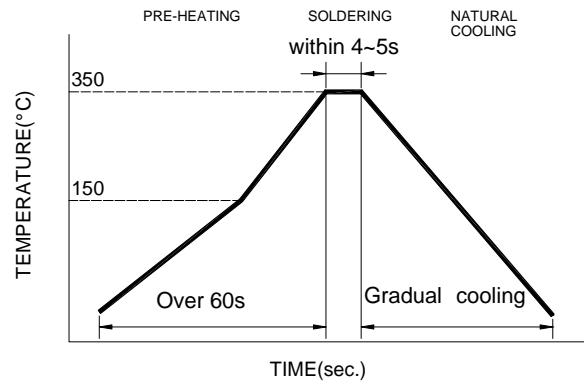
Reflow Soldering



Reflow times: 3 times max.

Fig.1

Iron Soldering



Iron Soldering times: 1 times max.

Fig.2