

Reliability and Test Condition

| Item | Performance | Test Condition |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Electrical Performance Test | | |
| Inductance | Refer to standard electrical characteristics list | HP4284A,CH11025,CH3302,CH1320,CH1320S LCR Meter |
| DCR | | CH16502,Agilent33420A Micro-Ohm Meter |
| Saturation Current (Isat) | Approximately $\Delta L30\%$. | Saturation DC Current (Isat) will cause L0 to drop $\Delta L(\%)$ |
| Heat Rated Current (Irms) | Approximately $\Delta T40^{\circ}\text{C}$ | Heat Rated Current (Irms) will cause the coil temperature rise $\Delta T(^{\circ}\text{C})$ without core loss. 1.Applied the allowed DC current 2.Temperature measured by digital surface thermometer |
| Operating Temperature | -40 $^{\circ}\text{C}$ ~+125 $^{\circ}\text{C}$ (Including self - temperature rise) | |
| Storage Temperature | 1.-10~+40 $^{\circ}\text{C}$,50~60% RH (Product without taping) 2.-40~+125 $^{\circ}\text{C}$ (on board) | |
| Reliability Test | | |
| Life Test | 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 $\pm 2^{\circ}\text{C}$ (Inductor) Applied current : rated current Duration : 1000 ± 12 hrs Measured at room temperature after placing for 24 ± 2 hrs |
| Load Humidity | | Preconditioning: Run through IR reflow for 2 times. (IPC/JEDEC J-STD-020D Classification Reflow Profiles) Humidity : 85 $\pm 2\%$ R.H Temperature : 85 $^{\circ}\text{C} \pm 2^{\circ}\text{C}$ Duration : 1000hrs Min. with 100% rated current Measured at room temperature after placing for 24 ± 2 hrs |
| Moisture Resistance | | Preconditioning: Run through IR reflow for 2 times. (IPC/JEDEC J-STD-020D Classification Reflow Profiles) 1. Baked at50 $^{\circ}\text{C}$ for 25hrs, measured at room temperature after placing for 4 hrs. 2. Raise temperature to 65 $\pm 2^{\circ}\text{C}$ 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25 $^{\circ}\text{C}$ in 2.5hrs. 3. Raise temperature to 65 $\pm 2^{\circ}\text{C}$ 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25 $^{\circ}\text{C}$ in 2.5hrs, keep at 25 $^{\circ}\text{C}$ for 2 hrs then keep at -10 $^{\circ}\text{C}$ for 3 hrs 4. Keep at 25 $^{\circ}\text{C}$ 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. |
| Thermal shock | | Preconditioning: Run through IR reflow for 2 times. (IPC/JEDEC J-STD-020D Classification Reflow Profiles) Condition for 1 cycle Step1 : -40 $\pm 2^{\circ}\text{C}$ 30 ± 5 min Step2 : 25 $\pm 2^{\circ}\text{C}$ ≤ 0.5 min Step3 : 125 $\pm 2^{\circ}\text{C}$ 30 ± 5 min Number of cycles : 500 Measured at room temperature after placing for 24 ± 2 hrs |
| Vibration | | Oscillation Frequency: 10~2K~10Hz for 20 minutes Equipment : Vibration checker Total Amplitude:1.52mm $\pm 10\%$ Testing Time : 12 hours(20 minutes, 12 cycles each of 3 orientations) |

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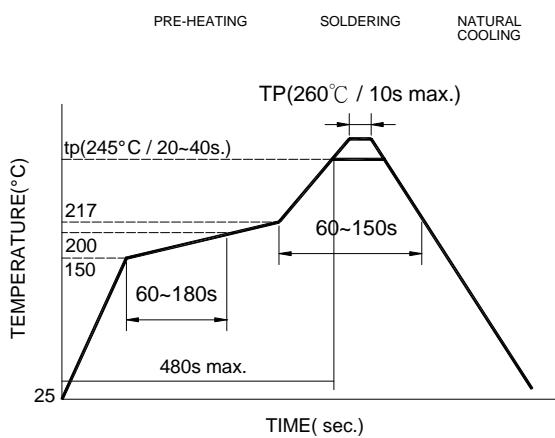
| Item | Performance | Test Condition | | | | | | | | | | | | | | | |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----------------------------|----------------------------------------------|-----------------------|----------------------------|-------|----------------|----|-----------|------|------|----|----|-----------|------|
| Reliability Test | | | | | | | | | | | | | | | | | |
| Shock | Appearance : No damage. Impedance : within±15% of initial value Inductance : within±10% of initial value Q : 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>50</td> <td>11</td> <td>Half-sine</td> <td>11.3</td> </tr> <tr> <td>Lead</td> <td>50</td> <td>11</td> <td>Half-sine</td> <td>11.3</td> </tr> </tbody> </table> | Type | Peak value (g's) | Normal duration (D) (ms) | Wave form | Velocity change (Vi)ft/sec | SMD | 50 | 11 | Half-sine | 11.3 | Lead | 50 | 11 | Half-sine | 11.3 |
| Type | Peak value (g's) | Normal duration (D) (ms) | Wave form | Velocity change (Vi)ft/sec | | | | | | | | | | | | | |
| SMD | 50 | 11 | Half-sine | 11.3 | | | | | | | | | | | | | |
| Lead | 50 | 11 | Half-sine | 11.3 | | | | | | | | | | | | | |
| Bending | RDC : within ±15% of initial value and shall not exceed the specification value | Shall be mounted on a FR4 substrate of the following dimensions: >=0805 inch(2012mm):40x100x1.2mm <0805 inch(2012mm):40x100x0.8mm Bending depth: >=0805 inch(2012mm):1.2mm <0805 inch(2012mm):0.8mm duration of 10 sec. | | | | | | | | | | | | | | | |
| Soderability | More than 95% of the terminal electrode should be covered with solder | 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 | | | | | | | | | | | | | | | |
| Resistance to Soldering Heat | | Depth: completely cover the termination <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 | | | | | | | | | | | | | | |
| Terminal Strength | 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 | 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 force (>0805:1kg , <=0805:0.5kg)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. | | | | | | | | | | | | | | | |

Note : When there are questions concerning measurement result measurement shall be made after 48 ± 2 hours Of recovery under the standard condition.

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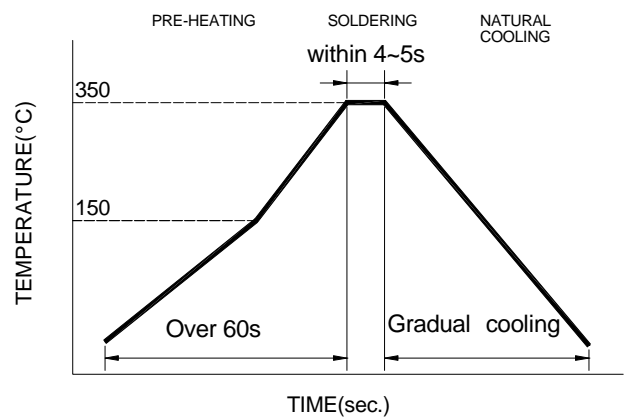
| Item | Performance | Test Condition |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| Soldering and Mounting | | |
| 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: | <p>Products attachment with a soldering iron is discouraged due to the inherent process control limitations. If a soldering iron must be employed the following precautions are recommended. for Iron Soldering in Figure 2.</p> <p>Note :</p> <ul style="list-style-type: none"> • Preheat circuit and products to 150°C • Never contact the ceramic with the iron tip • Use a 20 watt soldering iron with tip diameter of 1.0mm • 355°C tip temperature (max) • 1.0mm tip diameter (max) • Limit soldering time to 4~5 sec | |

Reflow Soldering



Reflow times: 3 times max
Fig.1

Iron Soldering



Iron Soldering times : 1 times max
Fig.2