

# CHIP INDUCTOR SPECIFICATIONS

## 1. Scope

This specification applies to fixed inductors of the following types used in electronic equipment :

- Ceramic Type : For lower inductance with high Q factor at high frequency and stable circuit requirement.  
Ferrite Type : For higher inductance at lower frequency circuit requirement.

## 2. Construction

Configuration

& Dimension : Please refer to the attached figures and tables.

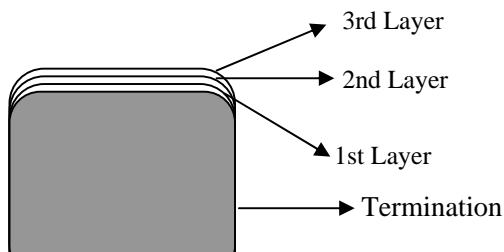
Terminals : **SWI** series terminals shall consist of MoMn alloy or PdAg alloy followed by Nickel, then Au or solder plating for easier soldering  
**SMI/FBM** series shall consist of Ag followed by Nickel, then solder plating.  
**SCI/SAI** series shall consist of copper wire followed by solder plating.

## 3. Operating Temperature Range

Operating Temperature Range is the scope of ambient temperature at which the inductor can be operated continuously at rated current.

- Temp. Range : Ceramic Material : - 40°C to + 125°C  
: Ferrite Material : - 40°C to + 85°C

## 4. Ingredient of terminals electrode.



	<u>Ceramic Type</u>	<u>Ferrite Type</u>
a) 1st layer	: Mo/Mn or W or Ag/Pd	Ag/Pd
b) 2nd layer	: Nickel	Nickel
c) 3rd layer	: Gold	Sn

## 5. Characteristics

### Standard Atmospheric Conditions

Unless otherwise specified, the standard range of atmospheric conditions for making measurements and tests are as follows :

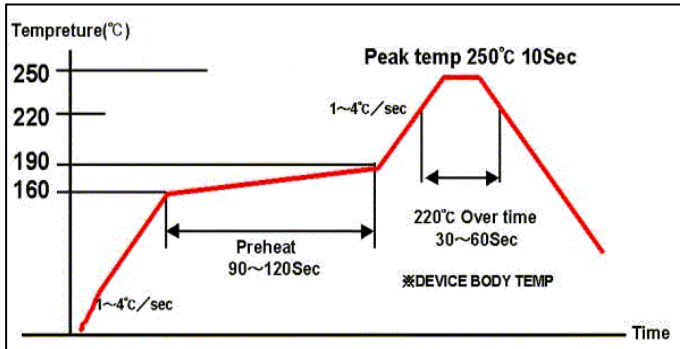
- Ambient Temperature : 25 °C ( 20 °C ) ± 2 °C  
Relative Humidity : 60% to 70%  
Air Pressure : 86 Kpa to 106 Kpa

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## Temperature profile

### a. Reflow temperature profile

(Temperature of the mounted parts surface on the printed circuit board)



Recommended Peak Temperature : 250°C Max  
250°C up /within 10secs

Max. Reflow temperature : 260°C.

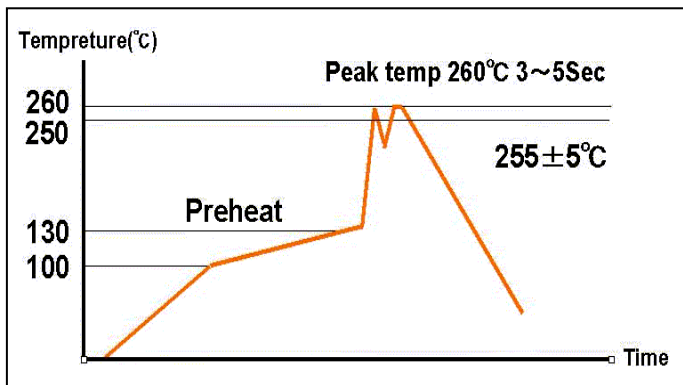
Gradient of temperature rise : av 1-4°C/sec

Preheat : 160-190°C/within 90-120secs

220°C up /within 30-60secs

Composition of solder Sn-3Ag-0.5Cu

### b. Dip temperature

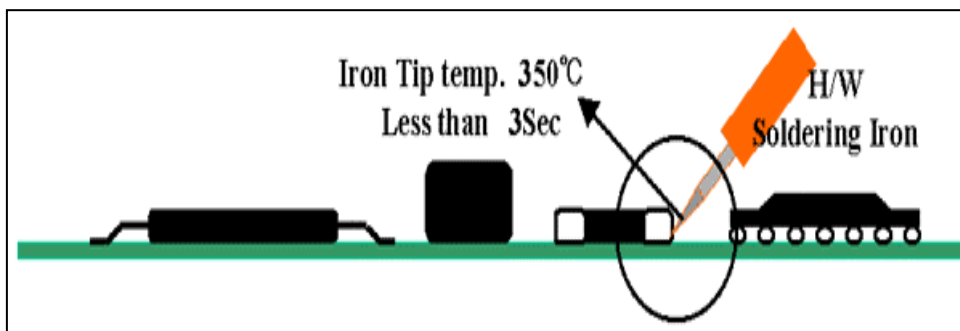


Solder bathtub temperature: 260°C max  
within 5secs.

Preheating temperature: 100~130°C  
deposit solder temperature.

Composition of solder Sn-3Ag-0.5Cu

### c. Soldering iron tip temperature : 350°C max / within 3 seconds.



	ITEM	CONDITION	SPECIFICATION
<b>Mechanical Characteristics</b>	Inductance and Tolerance	Measuring Frequency : As shown in Product Table	Within Specified Tolerance
	Quality Factor	Measuring Temperature : + 25 °C	
	Insulation Resistance	Measured at 100V DC between inductor terminals and center of case.	1000 mega ohms minimum
	Dielectric Withstanding Voltage	Measured at 500V AC between inductor terminals and center of case for a maximum of 1 minute.	No damage occurs when the test voltage is applied.
	Temperature Coefficient of Inductance (TCL)	Over - 40 °C to + 85°C at frequency specified in Product Table.	+ 25 to 500 ppm / °C  TCL = $\frac{L1 - L2}{L1(T1-T2)} \times 10^6$ (ppm / °C)
<b>Electrical Characteristics</b>	Component Adhesion (Push Test)	The component shall be reflow soldered onto a P. C. Board ( 240 °C ± 5°C for 20 seconds ). Then a dynamometer force gauge shall be applied to any side of the component.	0402 series - ≥350g 0603 series - ≥1.0Kg Other series - 0805 ~ 1812 Minimum 1Kg for Pd/Ag termination and 2Kg for Mo/Mn termination.
	Drop Test	The inductor shall be dropped two times on the concrete floor or the vinyl tile from 1M naturally.	Change In Inductance: No more than 5%
	Thermal Shock Test	Each cycle shall consist of 30 minutes at -40 °C followed by 30 minutes at +85 °C with a 20-second maximum transition time between temperature extremes. Test duration is 10 cycles.	Change In Q: No more than 10%  Change In Appearance: Without distinct damage

	ITEM	CONDITION	SPECIFICATION
<b>Endurance</b>  <b>Characteristics</b>	Solderability	Dip pads in flux and dip in solder pot containing lead free solder at $240\text{ }^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 5 seconds.	A minimum of 80% of the metalized area must be covered with solder.
	Resistance to Soldering Heat	Dip the components into flux and dip into solder pot containing lead free solder at $260\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ for $5 \pm 2$ seconds.	Change In Inductance: No more than 5%
	Vibration (Random)	Inductors shall be randomly vibrated at amplitude of 1.5mm and frequency of 10 - 55 Hz: 0.04 G / Hz for a minimum of 15 minutes per axis for each of the three axes.	Change In Q: No more than 10%
	Cold Temperature Storage	Inductors shall be stored at temperature of $-40\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ for 1000hrs (+ 48 -0 hrs.) Then inductors shall be subjected to standard atmospheric conditions for 1 hour. After that, measurement shall be made.	Change In Appearance : Without distinct damage
	High Temperature Storage	Inductors shall be stored at temperature of $85\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ for 1000hrs (+48 - 0hrs.) Then inductors shall be subjected to standard atmospheric conditions for 1 hour. After that, measurement shall be made.	
	Moisture Resistance	Inductors shall be stored in the chamber at $45\text{ }^{\circ}\text{C}$ at 90 - 95 R. H. for 1000 hours. Then inductors are to be tested after 2 hours at room temperature.	Inductors shall not have a shorted or open winding.
	High Temperature with Loaded	Inductors shall be stored in the chamber at $+85\text{ }^{\circ}\text{C}$ for 1000 hours with rated current applied. Inductors shall be tested at the beginning of test at 500 hours and 1000 hours. Then inductors are to be tested after 1 hour at room temperature.	