

# Metal Composite Power Inductor (Thin Film)

## Specification Sheet

### CIGT1608R6EH1R0MNC (1608 / EIA 0603)

#### APPLICATION

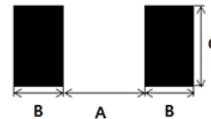
Smart phones, Tablet, Wearable devices, Power converter modules, etc.



#### FEATURES

Small power inductor for mobile devices  
 Low DCR structure and high efficiency inductor for power circuits.  
 Monolithic structure for high reliability  
 Free of all RoHS-regulated substances  
 Halogen free

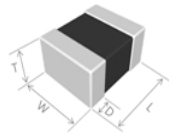
#### RECOMMENDED LAND PATTERN



Unit : mm

TYPE	1608
A	0.8
B	0.5
C	0.9

#### DIMENSION



TYPE	Dimension [mm]			
	L	W	T	D
1608	1.6±0.2	0.8±0.2	0.65 max	0.3±0.2

#### DESCRIPTION

Part no.	Size [inch/mm]	Thickness [mm] (max)	Inductance [uH]	Inductance tolerance (%)	DC Resistance [mΩ]		Rated DC Current (Isat) [A]		Rated DC Current (Irms) [A]	
					Max.	Typ.	Max.	Typ.	Max.	Typ.
CIGT1608R6EH1R0MNC	0603/1608	0.65mm	1.0	±20	160	135	1.7	2	1.5	1.7

- \* Inductance : Measured with a LCR meter 4991A(Agilent) or equivalent (Test Freq. 1MHz, Level 0.1V)
- \* DC Resistance : Measured with a Resistance HI-TESTER 3541(HIOKI) or equivalent
- \* Maximum allowable DC current : Value defined when DC current flows and the initial value of inductance has decreased by 30% or when current flows and temperature has risen to 40 °C whichever is smaller. (Reference: ambient temperature is 25 °C±10)
- (Isat) : Allowable current in DC saturation : The DC saturation allowable current value is specified when the decrease of the initial inductance value at 30% (Reference: ambient temperature is 25 °C±10)
- (Irms) : Allowable current of temperature rise : The temperature rise allowable current value is specified when temperature of the inductor is raised 40 °C by DC current. (Reference: ambient temperature is 25 °C±10)
- \* Absolute maximum voltage : Absolute maximum voltage DC 20V.
- \* Operating temperature range : -40 to +125°C (Including self-temperature rise)

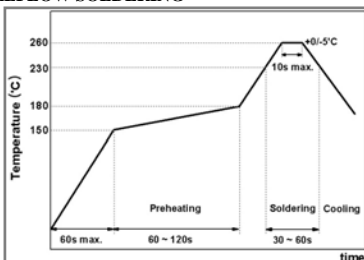
#### PRODUCT IDENTIFICATION

**CIG**    **I**    **1608**    **R6**    **EH**    **1R0**    **M**    **N**    **C**  
**(1)**    **(2)**    **(3)**    **(4)**    **(5)**    **(6)**    **(7)**    **(8)**    **(9)**

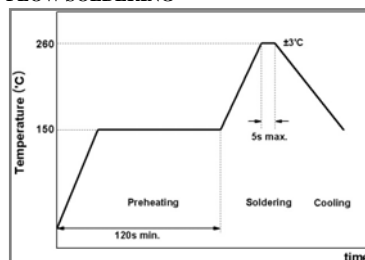
- (1) Power Inductor
- (2) Type (T: Metal Composite Thin Film Type)
- (3) Dimension (1608: 1.6mm x 0.8mm)
- (4) Thickness (0.65mm max)
- (5) Remark (Characterization Code)
- (6) Inductance (1R0: 1.0 uH)
- (7) Tolerance (M:±20%)
- (8) Internal Code
- (9) Packaging (C:paper tape, E:embossed tape)

#### RECOMMENDED SOLDERING CONDITION

##### REFLOW SOLDERING



##### FLOW SOLDERING



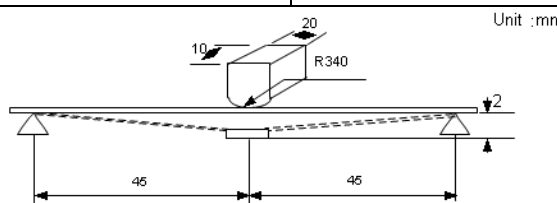
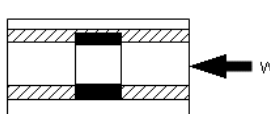
##### IRON SOLDERING

Temperature of Soldering Iron Tip	280 °C max.
Preheating Temperature	150 °C min.
Temperature Differential	ΔT ≤ 130 °C
Soldering Time	3sec max.
Wattage	50W max.

#### PACKAGING

Packaging Style	Quantity(pcs/reel)
Card Board Taping	4000 pcs

## Reliability Test

Item	Specified Value	Test Condition	
Solderability	More than 90% of terminal electrode should be soldered newly.	After being dipped in flux for 4±1 seconds, and preheated at 150 ~ 180 °C for 2 ~ 3 min, the specimen shall be immersed in solder at 245±5 °C for 4±1 seconds.	
Resistance to Soldering	No mechanical damage. Remaining terminal Electrode: 75% min. Inductance change to be within ±20% to the initial.	After being dipped in flux for 4±1 seconds, and preheated at 150 ~ 180 °C for 2 ~ 3 min, the specimen shall be immersed in solder at 260±5 °C for 10 ±0.5 seconds.	
Thermal Shock (Temperature Cycle test)	No mechanical damage Inductance change to be within ±20% to the initial.	Repeat 100 cycles under the following conditions. -40±3 °C for 30 min → 85±3 °C for 30 min	
High Temp. Humidity Resistance Test	No mechanical damage Inductance change to be within ±20% to the initial	85±2 °C, 85%RH, for 500±12 hours. Measure the test items after leaving at normal temperature and humidity for 24 hours.	
Low Temperature Test	No mechanical damage Inductance change to be within ±20% to the initial.	Solder the sample on PCB. Exposure at -55±2 °C for 500±12 hours. Measure the test items after leaving at normal temperature and humidity for 24hours.	
High Temperature Test	No mechanical damage Inductance change to be within ±20% to the initial.	Solder the sample on PCB. Exposure at 125±2 °C for 500±12 hours. Measure the test items after leaving at normal temperature and humidity for 24hours.	
High Temp. Humidity Resistance Loading Test	No mechanical damage Inductance change to be within ±20% to the initial	85±2 °C, 85%RH, Rated Current for 500±12 hours. Measure the test items after leaving at normal temperature and humidity for 24 hours.	
High Temperature Loading Test	No mechanical damage Inductance change to be within ±20% to the initial	85±2 °C, Rated Current for 500±12 hours. Measure the test items after leaving at normal temperature and humidity for 24 hours.	
Reflow Test	No mechanical damage Inductance change to be within ±20% to the initial	Peak 260±5 °C, 3 times	
Vibration Test	No mechanical damage Inductance change to be within ±20% to the initial.	Solder the sample on PCB. Vibrate as apply 10~55Hz, 1.5mm amplitude for 2 hours in each of three(X,Y,Z) axis (total 6 hours).	
Bending Test	No mechanical damage	Bending Limit; 2mm Test Speed; 1.0mm/sec. Keep the test board at the limit point in 5 sec. PCB thickness : 1.6mm	
			
Terminal Adhesion Test	No indication of peeling shall occur on the terminal electrode.	W(kgf)	TIME(sec)
			0.5
Drop Test	No mechanical damage Inductance change to be within ±20% to the initial.	Random Free Fall test on concrete plate. 1 meter, 10 drops	

### 1. Model : CIGT1608R6EH1R0MNC

### 2. Description

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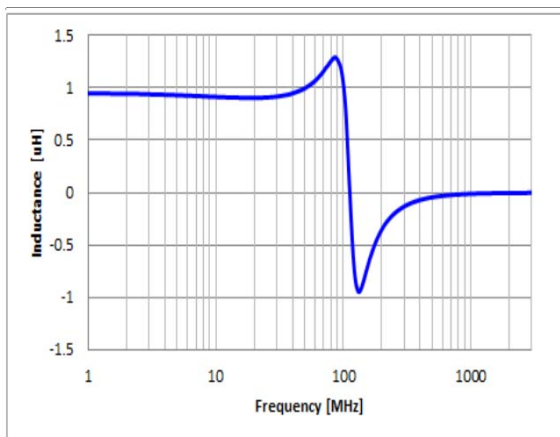
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\* Operating temperature range : -40 to +125°C (Including self-temperature rise)

### 3. Characteristics data

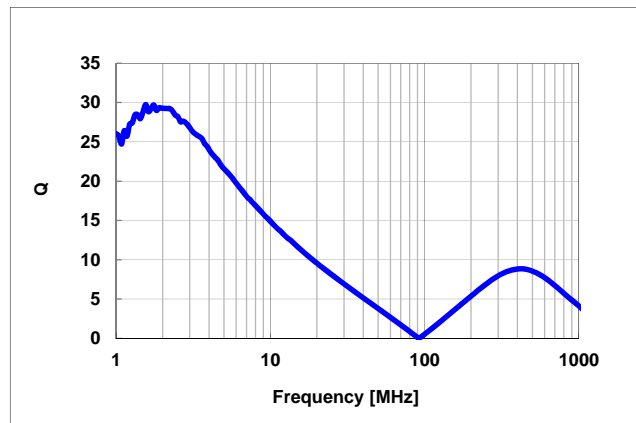
#### 1) Frequency characteristics (Ls)

Agilent E4294A +E4991A , 1MHz to 1,000MHz

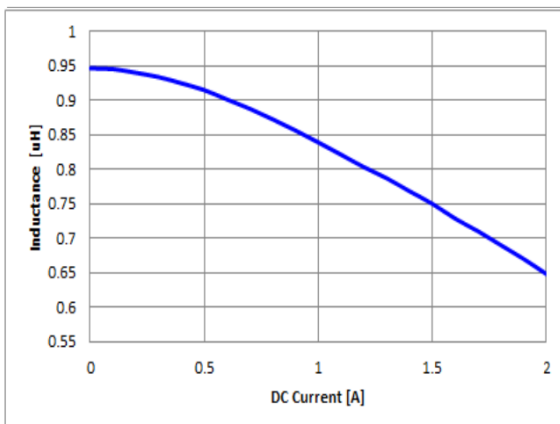


#### 2) Frequency characteristics (Q)

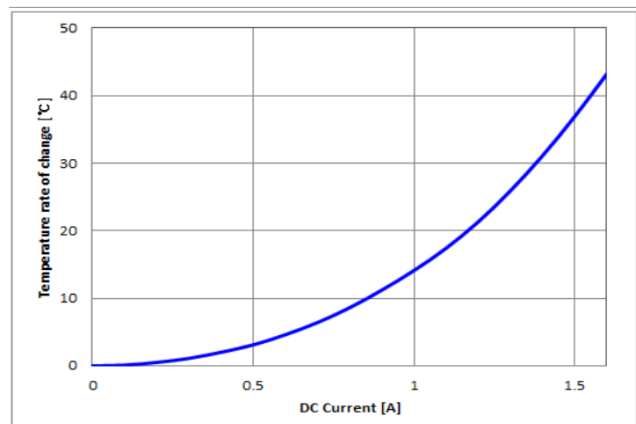
Agilent E4294A +E4991A , 1MHz to 1,000MHz



#### 3) DC Bias characteristics (Typ.)



#### 4) Temperature characteristics (Typ.)



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The data sheets include the typical data for design reference only. If there is any question regarding the data sheets, please contact our sales personnel or application engineers