

## Specification Sheet

**CIGT201610LHR47MNE (2016 / EIA 0806)**



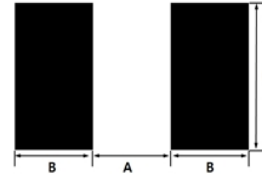
### APPLICATION

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

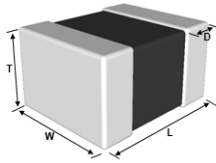
### RECOMMENDED LAND PATTERN



Unit : mm

| TYPE | 2016 |
|------|------|
| A    | 0.8  |
| B    | 0.8  |
| C    | 1.8  |

### DIMENSION



| TYPE | Dimension [mm] |         |         |         |
|------|----------------|---------|---------|---------|
|      | L              | W       | T       | D       |
| 2016 | 2.0±0.2        | 1.6±0.2 | 1.0 max | 0.5±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. |
| CIGT201610LHR47MNE | 0806/2016      | 1.0                  | 0.47            | ±20                      | 33                 | 28   | 4.9                         | 5.4  | 3.6                         | 4.1  |

- \* 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)

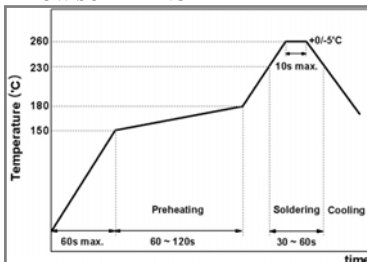
### PRODUCT IDENTIFICATION

**CIG**    **T**    **2016**    **10**    **LH**    **R47**    **M**    **N**    **E**  
**(1)**    **(2)**    **(3)**    **(4)**    **(5)**    **(6)**    **(7)**    **(8)**    **(9)**

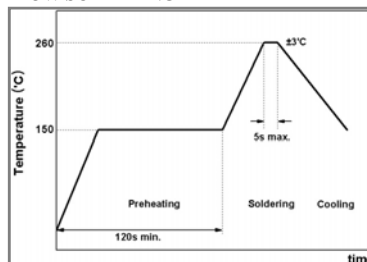
- (1) Power Inductor
- (2) Type (T: Metal Composite Thin Film Type)
- (3) Dimension (2016: 2.0mm x1.6 mm )
- (4) Thicknes (10: 1.0mm)
- (5) Remark (Characterization Code)
- (6) Inductan (R47: 0.47 uH)
- (7) Toleranc (M:±20%)
- (8) Internal Code
- (9) Packaging (C:paper tape, E:embossed tape)

### RECOMMENDED SOLDERING CONDITION

#### REFLOW SOLDERING



#### FLOW SOLDERING



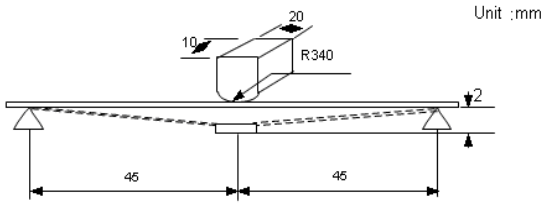
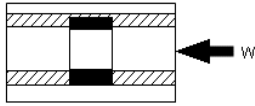
#### IRON SOLDERING

|                                   |             |
|-----------------------------------|-------------|
| 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) |
| Embossed Taping | 3000 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℃ for 2~3 min, the specimen shall be immersed in solder at 245±5℃ for 4±1 seconds.   |           |
| Resistance to Soldering                        | No mechanical damage.<br>Remaining terminal Electrode: 75% min.<br>Inductance change to be within ±20% to the initial. | After being dipped in flux for 4±1 seconds, and preheated at 150~180℃ for 2~3 min, the specimen shall be immersed in solder at 260±5℃ for 10 ±0.5 seconds.   |           |
| Thermal Shock<br>(Temperature Cycle test)      | No mechanical damage<br>Inductance change to be within ±20% to the initial.  | Repeat 100 cycles under the following conditions.<br>-40±3℃ for 30 min → 85±3℃ for 30 min  |           |
| High Temp. Humidity<br>Resistance Test         | No mechanical damage<br>Inductance change to be within ±20% to the initial   | 85±2℃, 85%RH, for 500±12 hours.<br>Measure the test items after leaving at normal temperature and humidity for 24 hours.   |           |
| Low Temperature Test                           | No mechanical damage<br>Inductance change to be within ±20% to the initial.  | Solder the sample on PCB. Exposure at -55±2℃ for 500±12 hours.<br>Measure the test items after leaving at normal temperature and humidity for 24hours.   |           |
| High Temperature Test                          | No mechanical damage<br>Inductance change to be within ±20% to the initial.  | Solder the sample on PCB. Exposure at 125±2℃ for 500±12 hours.<br>Measure the test items after leaving at normal temperature and humidity for 24hours.   |           |
| High Temp. Humidity Resistance<br>Loading Test | No mechanical damage<br>Inductance change to be within ±20% to the initial   | 85±2℃, 85%RH, Rated Current for 500±12 hours.<br>Measure the test items after leaving at normal temperature and humidity for 24 hours.   |           |
| High Temperature Loading Test                  | No mechanical damage<br>Inductance change to be within ±20% to the initial   | 85±2℃, Rated Current for 500±12 hours.<br>Measure the test items after leaving at normal temperature and humidity for 24 hours.  |           |
| Reflow Test                                    | No mechanical damage<br>Inductance change to be within ±20% to the initial   | Peak 260±5℃, 3 times   |           |
| Vibration Test                                 | No mechanical damage<br>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<br>Test Speed; 1.0mm/sec.<br>Keep the test board at the limit point in 5 sec.<br>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<br>Inductance change to be within ±20% to the initial.  | Random Free Fall test on concrete plate.<br>1 meter, 10 drops  |           |
| Ipeak<br>(AC+DC Load Life)                     | No mechanical damage<br>Inductance change to be within ±20% to the initial   | 85±2℃, 85%RH, Load(Ipeak) for 120 hours.<br>(Frequency:1MHz, Load(Ipeak):1.5hr on / 0.5hr off)<br>Measure the test items after leaving at normal temperature and humidity for 24 hours.<br>* Load(Ipeak) = Irms(max)×1.4 |           |

### 1. Model : CIGT201610LHR47MNE

### 2. Description

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|--------------------|----------------|----------------------|-----------------|--------------------------|--------------------|------|-----------------------------|------|-----------------------------|------|
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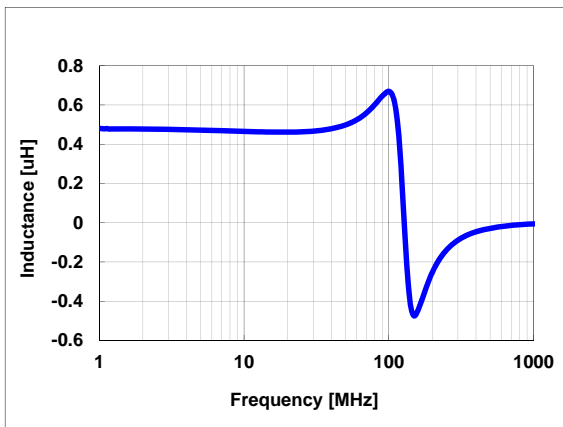
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### 3. Characteristics data

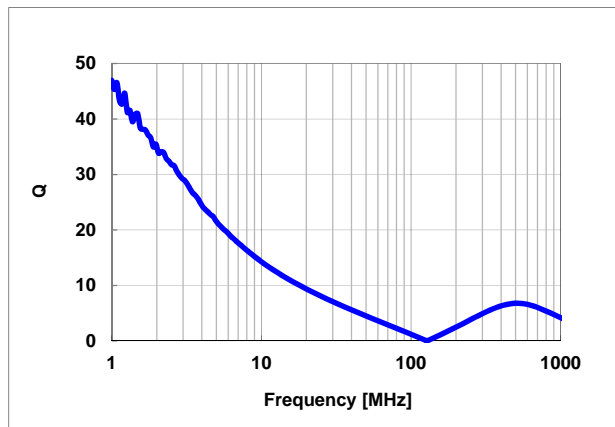
#### 1) Frequency characteristics (Ls)

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

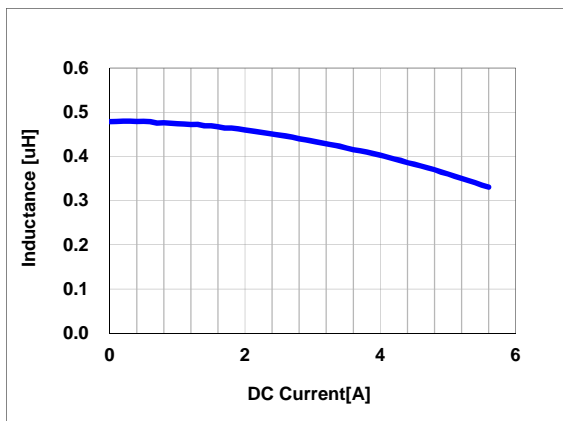


#### 2) Frequency characteristics (Q)

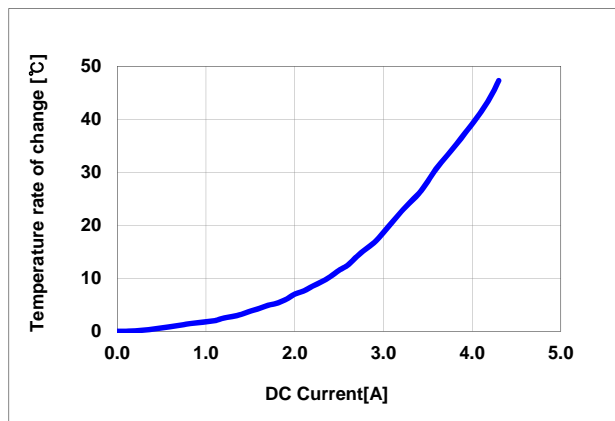
Agilent E4294A +E4991A , 1MHz to 1,000MHz



#### 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