



# JIP201610 Series Engineering Specification

## 1. Scope

### Feature

High saturation current realized by material properties and structure design

Low DC resistance to achieve high conversion efficiency and lower temperature rising

Low Profile: 2.0 mm × 1.6 mm × 1.0 mm.

Magnetically shielded structure to accomplish high resolution in EMC protection.

Halogen free, Lead Free, RoHS Compliance.

### Applications

JIP201610S L series is generic applied in portable DC to DC converter line.

Smart phone, PAD

DC/DC converter

Thin-type power supply module,

## 2. Explanation of Part Number

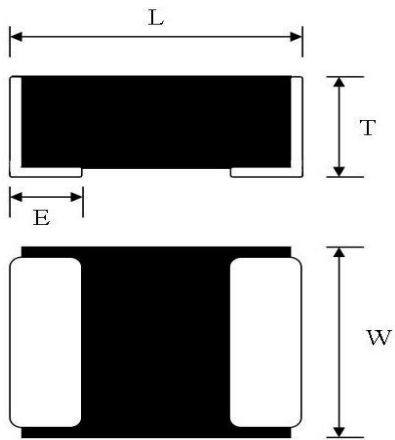
<b>J</b>	<b>I</b>	<b>P</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>6</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>R</b>	<b>2</b>	<b>M</b>
			<b>1</b>		<b>2</b>		<b>3</b>		<b>4</b>		<b>5</b>	

- ◆ 1 : Series Name: Wire-wound type power inductor
  - ◆ 2 : Size Code: The first two digitals: length(mm), The last two digitals: width(mm)
  - ◆ 3 : Thickness in mm
  - ◆ 4 : Initial inductance value: 2R2 = 2.2  $\infty$ H
  - ◆ 5: Model code, Tolerance of Inductance  $\pm$ 20%.
  - ◆ 6: Electrode type.
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### 3. Construction & Dimensions

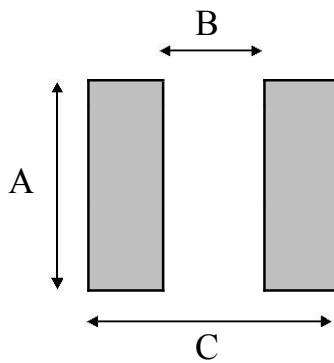
#### 3.1. End termination: Ni/Sn

#### 3.2. Construction & Dimension :



L [mm]	W [mm]	T [mm]	E [mm]
2.0±0.2	1.6±0.2	1.0 max.	0.5±0.3

#### 3.3. Recommend Land Pattern Dimensions :



A [mm]	B [mm]	C [mm]
1.6	0.9	2.0

### 4. General specifications

#### 4.1. Temperature Specifications

Operating Temperature range : -40 to +125

Storage Temperature range : -50 to +125

\* The detail operating temperature describing can refer to 5.1 (7).

## 5. Performance Characteristics

### 5.1. Specifications

INPAQ Part Number	Li [ $\mu$ H] Initial inductance	RDC [ $m\Omega$ ] DC Resistance		Isat [A] Saturation Current		Irms [A] Heat Rating Current	
		Typical	Maximum	Typical	Maximum	Typical	Maximum
JIP201610-R47M	0.47	23	30	6.1	5.3	4.5	4.05
JIP201610-1R0M	1	48	60	3.9	3.3	3.2	3.0
JIP201610-1R5M	1.5	86	99	3.4	3.1	2.4	2.2
JIP201610-2R2M	2.2	117	140	2.6	2.45	2.2	2.0

Note 1: Customized design is available, please contact us.

Note 2: All test referenced to 26 ambient

Note 3: Inductance tolerance +/- 20%

Note 4: Inductance is measured with Agilent<sup>®</sup> LCR meter 4285A (or equivalent) at 1MHz/1V.

Note 5: DC resistance is measured with HIOKI<sup>®</sup> micro-ohm meter RM3542 or equivalent.

Note 6: Isat means that DC current will cause a 30% inductance reduction from initial value.

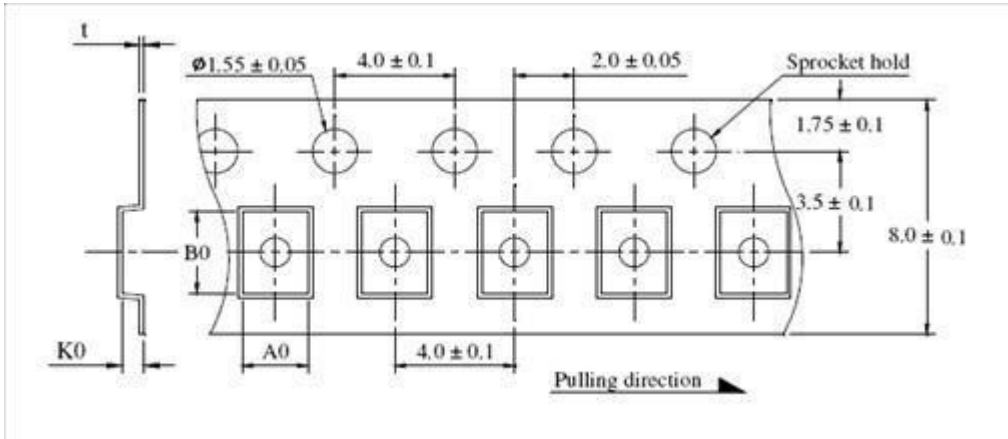
Note 7: Irms means that DC current will cause coil temp. rising to 40 whichever is smaller.

## 6. Reliability and Test Condition

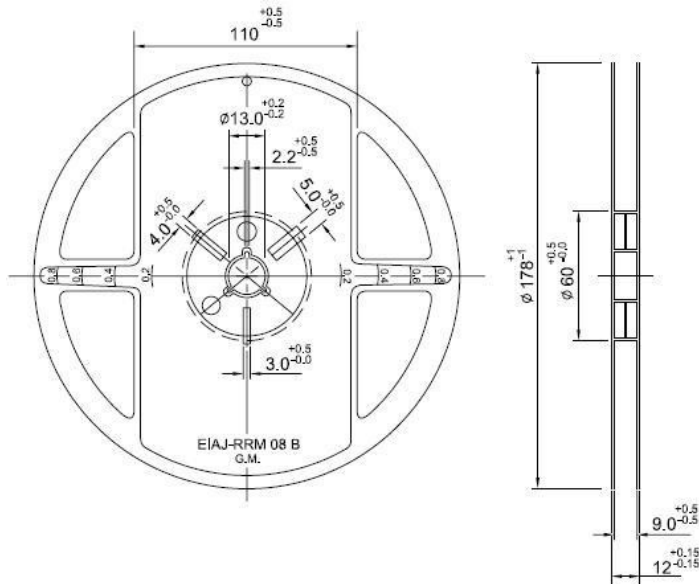
Test item	Test condition	Criteria
<b>Resistance to Solder Heat</b>	1. Solder temperature : $260 \pm 5$ 2. Flux : Rosin 3. DIP time : $10 \pm 1$ sec	1. More than 95 % of terminal electrode should be covered with new solder 2. No mechanical damage 3. Inductance value should be within $\pm 20$ % of the initial value
<b>Adhesive Test</b>	1. Reflow temperature : 245 It shall be Soldered on the substrate applying direction parallel to the substrate 2. Apply force(F) : 5 N 3. Test time : 10 sec	1. No mechanical damage 2. Soldering the products on PCB after the pulling test force > 5 N
<b>Temperature Cycle</b>	1. Temperature:-50~125For 30 minutes each 2. Cycle: 500 cycles 3. Measurement: At ambient temperature 24 hours after test completion	1. No mechanical damage 2. Inductance should be within $\pm 20\%$ of the initial value
<b>Dry Heat Test</b>	1. Temperature: $85 \pm 2$ 2. Testing time: 500 hrs 3. Applied current: Full rated current 4. Measurement: At ambient temperature 24 hours after test completion	1. No mechanical damage 2. Inductance should be within $\pm 20\%$ of the initial value
<b>Humidity Test</b>	1. Temperature: $60 \pm 2$ 2. Humidity: 90-95 % RH 3. Applied current: Full rated current 4. Testing time: 500 hrs 5. Measurement: At ambient temperature 24 hours after test completion	1. No mechanical damage 2. Inductance should be within $\pm 20\%$ of the initial value

## 7. Taping Package and Label Marking

### 7.1. Carrier tape dimensions



### 7.2. Taping reel dimensions



PART SIZE (EIA SIZE)	<b>2016</b>
Qty.(pcs)	3,000
BOX	5 reels / inner box

### **7.3. Taping specifications**

There shall be the portion having no product in both the head and the end of taping, and there shall be the cover tape in the head of taping.

### **7.4. Label Marking**

The label specified as follows shall be put on the side of reel.

(1) Part No.

(2) Quantity

(3) Lot No.

0 Part No. And Quantity shall be marked on outer packaging.

### **7.5. Quantity of products in the taping package**

(1) Standard quantity : 3000pcs/Reel

(2) Shipping quantity is a multiple of standard quantity.

## **8. Precautions for Handling**

### **8.1. Precaution for handling of substrate**

Do not exceed to bend the board after soldering this product extremely. (reference examples)

0 Mounting place must be as far as possible from the position, which is close to the break line of board, or on the line of large holes of board.

0 Do not bend extremely the board, in mounting another components.

If necessary, use back-up pin (support pin) to prevent from bending extremely.

0 Do not break the board by hand. We recommend to use the machine or the jig to break it.

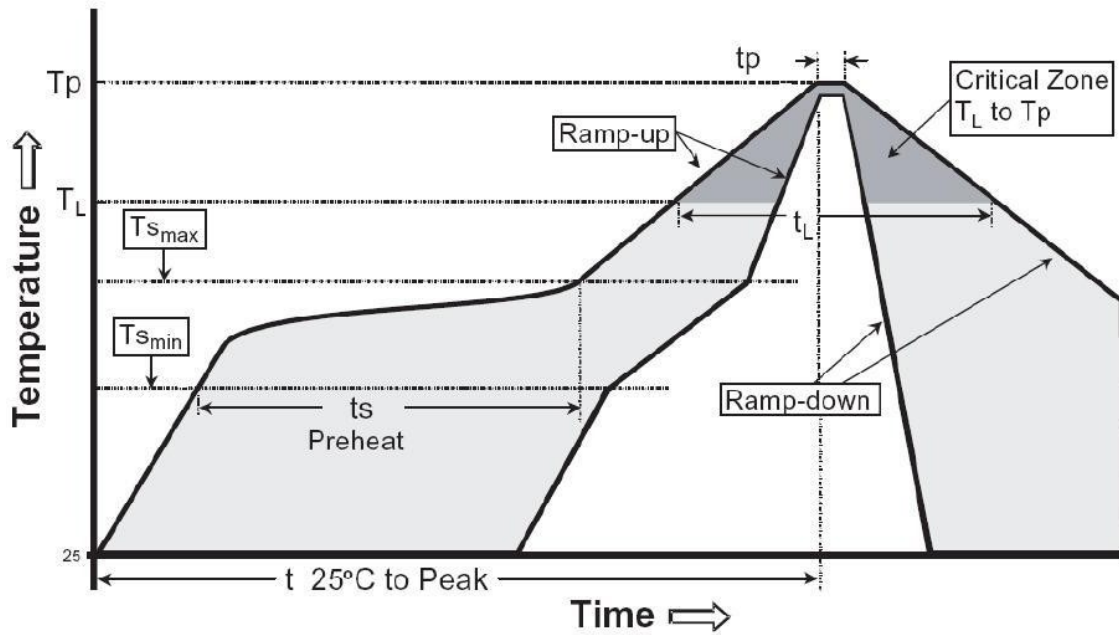
### **8.2. Precaution for soldering**

Note that this product will be easily damaged by rapid heating, rapid cooling or local heating.

Do not give heat shock over 100°C in the process of soldering. We recommend to take preheating and gradual cooling.

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### 8.3. Recommendable reflow soldering



Reference IPC-020c-5-1

Profile Feature	Pb free Assembly
Average Ramp Rate (Ts max to Tp)	3/second max
Preheat	
- Temperature Min (T <sub>smmin</sub> )	150
- Temperature Min (T <sub>smmax</sub> )	200
- Time(t <sub>smmin</sub> to t <sub>smmin</sub> )	60-180 seconds
Time maintained above:	
- Temperature (T <sub>L</sub> )	217
- Time (t <sub>L</sub> )	60-150 seconds
Peak Temperature (T <sub>p</sub> )	260+0/-5
Time within 5of actual Peak Temperature (T <sub>p</sub> )	20-40 seconds
Ramp-Down Rate	6/second max.
Time 25to Peak Temperature	8 minutes max

#### **8.4. Soldering gun procedure**

Note the follows, in case of using solder gun for replacement.

- (1) The tip temperature must be less than 280°C for the period within 3 seconds by using soldering gun under 30 W.
- (2) **The soldering gun tip shall not touch this product directly.**

#### **8.5. Soldering volume**

Note that excess of soldering volume will easily get crack the body of this product.

#### **8.6. Taping Package Storage Condition**

Storage Temperature : 5 to 40

Relative Humidity: < 65%RH

Storage Time : 12 months max

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