Specification For Approval

Item P/N	PCN4015CI-SERIES	**Test Instrument**	E4991 / 4339B / 6379
Product	Common Choke Coil for Power Lines	**Test Frequency**	10 MHz / 100 MHz / 0.5V

Customer：

Customer P/N：

Description： Common Choke Coil for Power Lines

HT P/N： PCN4015CI-SERIES

Revision No.： Version: 1.0

Date：

Notes： Automobile Conform to AEC-Q200

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IATF 16949:2016 / ISO 9001:2015 / ISO 14001:2015

Ht Documented		Customer Approval
Approved	Jack	
Checked	George	
Prepared	Cherrie	

List of editions

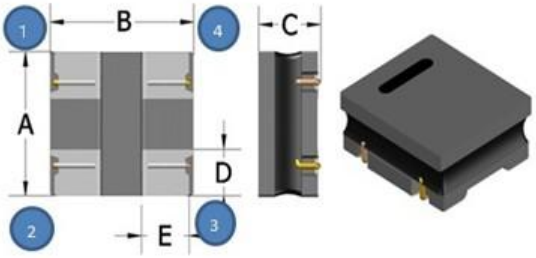
Item P/N	PCN4015CI-SERIES	**Test Instrument**	E4991 / 4339B / 6379
Product	Common Choke Coil for Power Lines	**Test Frequency**	10 MHz / 100 MHz / 0.5V

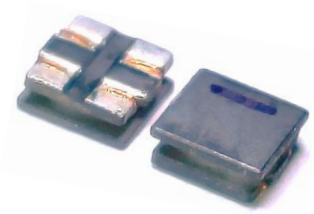
Version	Revision Item	Before Revision	After Revision	Date
1.0	First Version			

Specification

Item P/N	PCN4015CI-SERIES	**Test Instrument**	E4991 / 4339B / 6379
Product	Common Choke Coil for Power Lines	**Test Frequency**	10 MHz / 100 MHz / 0.5V

■ Style and Dimensions (mm)





PCN4015	Dimensions
A	4.00 ± 0.2
B	4.00 ± 0.2
C	1.60 Max.
D	1.55 Typ.
E	1.40 Typ.

■ Explanation Of Part Numbers

① ② ③ ④

PCN 4015 CI - 101

① Product name
② Shapes and dimensions
③ For Automobile Conform to AEC-Q200 Grade 1
④ Impedance【at 100MHz】101:100Ω

■ Electrical Characteristics

P/N	Z(Ω) Common Mode		DCR (Ω)	DC Current (A)	Rated Voltage	Insulation Resistance	Withstand Voltage
	Impedance at 10MHz	Impedance at 100MHz	±40%	Max.	Vdc (V)Typ.	IR (MΩ) Min.	Vdc (V)Typ.
PCN4015CI-101	10 ± 40%	100 Typ.	0.016	3.1	60	10	150
PCN4015CI-251	25 ± 40%	250 Typ.	0.024	2.6	60	10	150
PCN4015CI-401	38 ± 40%	400 Typ.	0.03	2.1	60	10	150
PCN4015CI-501	50 ± 40%	500 Typ.	0.03	2.1	60	10	150
PCN4015CI-601	53 ± 40%	600 Typ.	0.03	2.0	60	10	150
PCN4015CI-851	65 ± 40%	850 Typ.	0.04	2.0	60	10	150
PCN4015CI-102	65 ± 40%	1000 Typ.	0.04	2.0	60	10	150
PCN4015CI-172	100 ± 40%	1700 Typ.	0.06	1.5	60	10	150
PCN4015CI-242	120 ± 40%	2400 Typ.	0.075	1.4	60	10	150
PCN4015M-302	180 ± 40%	2200 Typ.	0.12	1.1	60	10	150

Specification

Item P/N	PCN4015CI-SERIES	**Test Instrument**	E4991 / 4339B / 6379
Product	Common Choke Coil for Power Lines	**Test Frequency**	10 MHz / 100 MHz / 0.5V

※Operating temperature : -40 to +125℃

for Automobile Conform to AEC-Q200 Grade 1

Storage temp. and humidity: Less than 40℃ and 60% RH.

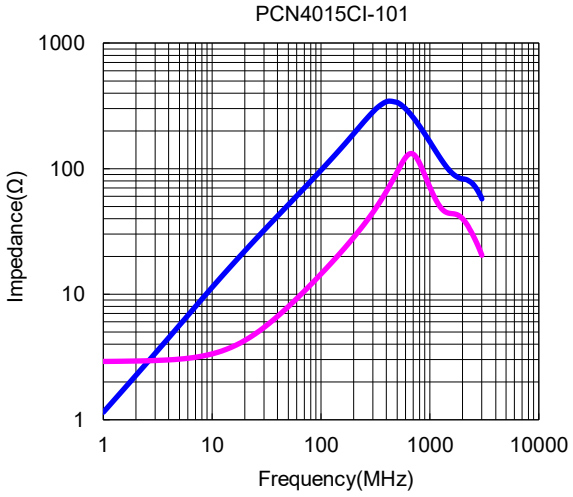
Typical Heat Rating DC Current would cause an approximately △T of 40℃

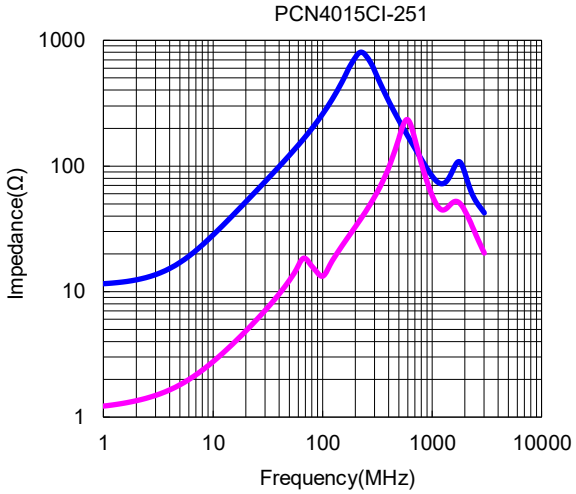
If Use Wave soldering is there will be some risk.

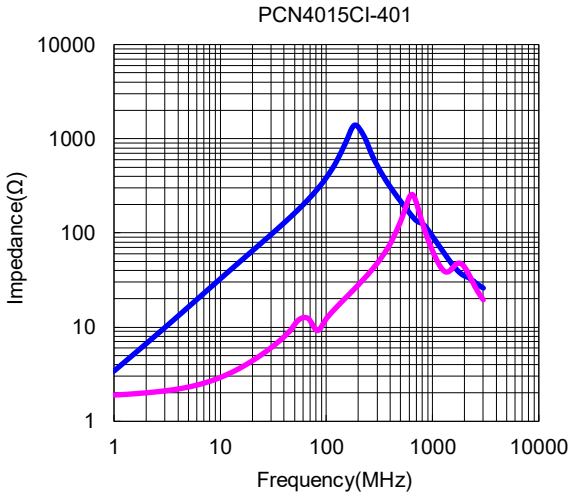
Re-flow soldering temperatures below 240 degrees, there will be unwitting risk.

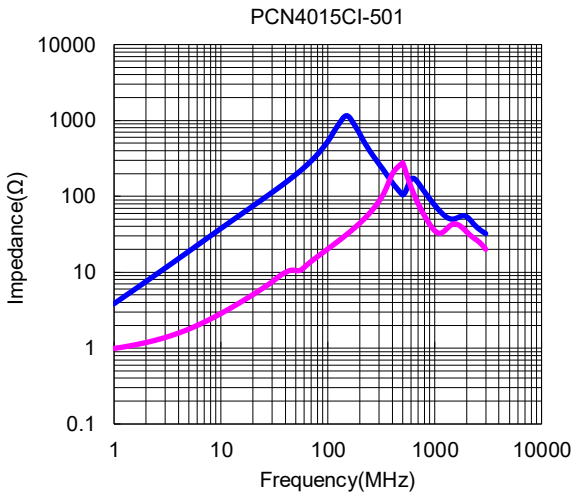
Solder standard according to IPC-A-610D 8.2.1 Chip Components - Bottom Only Terminations.

■ Performance curves







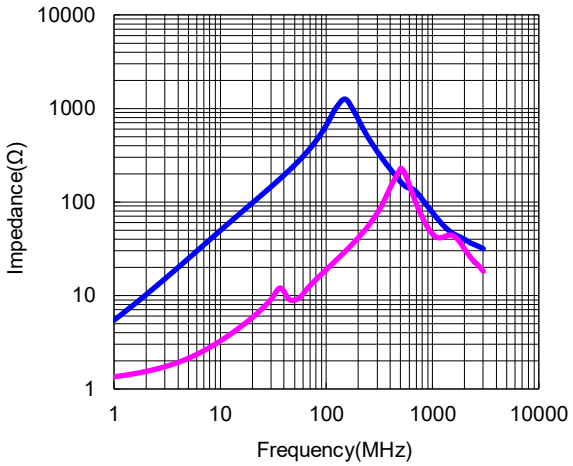


Specification

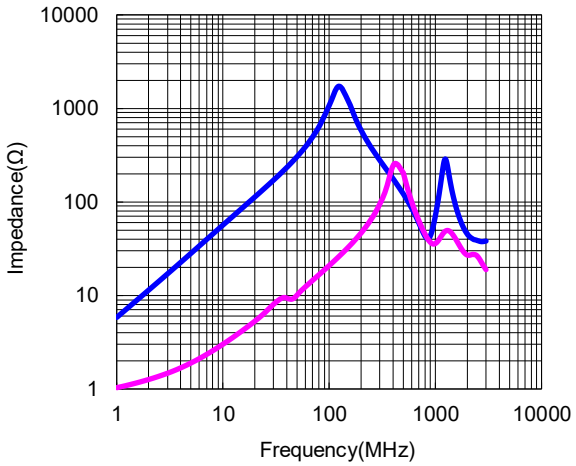
Item P/N	PCN4015CI-SERIES	**Test Instrument**	E4991 / 4339B / 6379
Product	Common Choke Coil for Power Lines	**Test Frequency**	10 MHz / 100 MHz / 0.5V

■ Performance curves

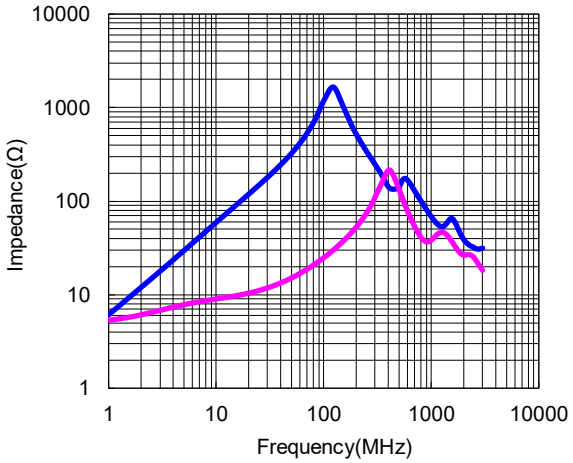
PCN4015CI-601



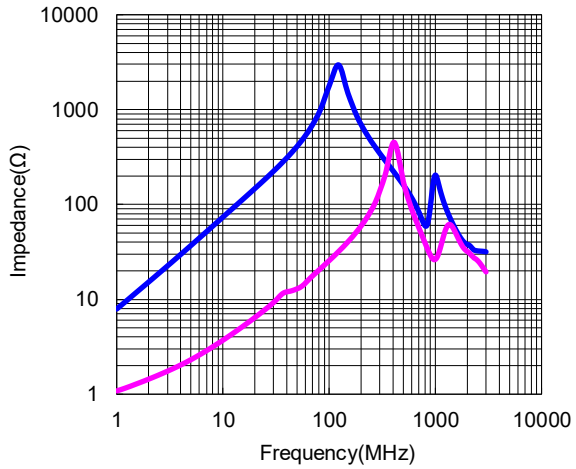
PCN4015CI-851



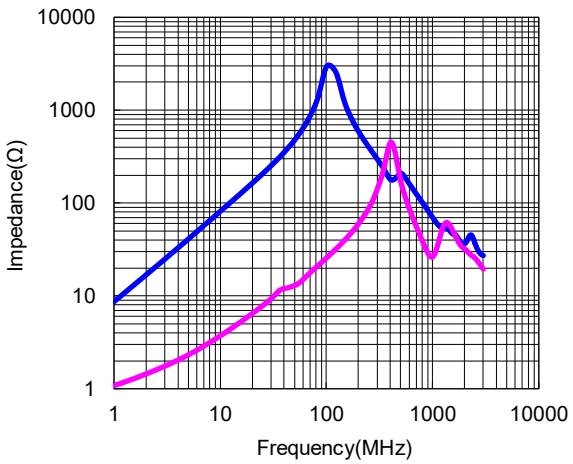
PCN4015CI-102



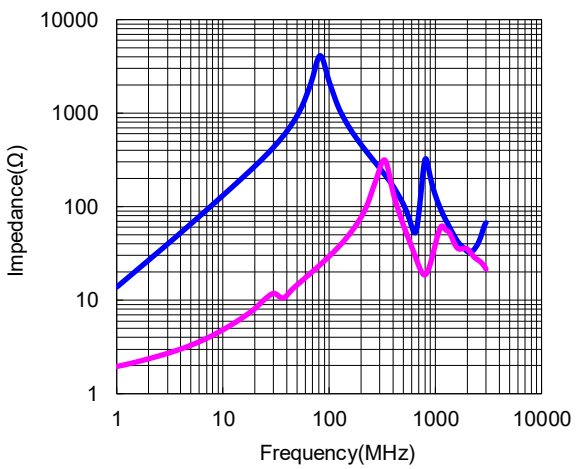
PCN4015CI-172



PCN4015CI-242



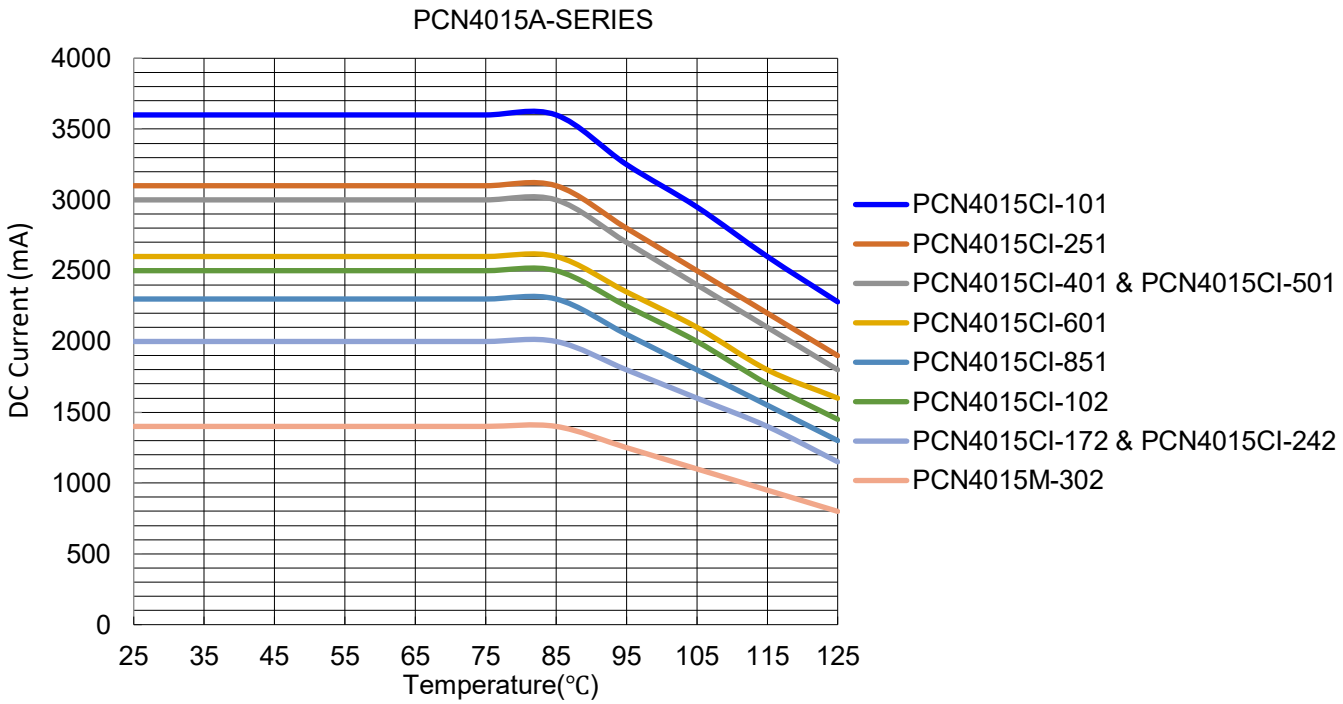
PCN4015M-302



Specification

Item P/N	PCN4015CI-SERIES	**Test Instrument**	E4991 / 4339B / 6379
Product	Common Choke Coil for Power Lines	**Test Frequency**	10 MHz / 100 MHz / 0.5V

■ Performance curves

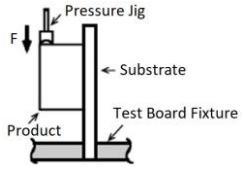
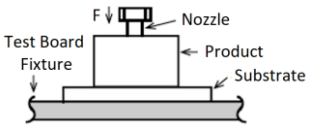
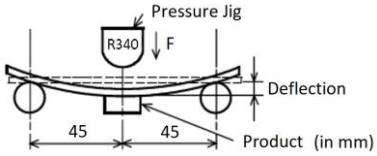
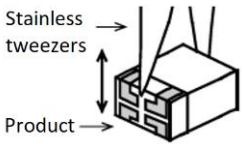


※In operating temperature exceeding +85℃, derating of current Is necessary for PCN4015 series. Please apply the derating curve shown in chart according to the operating temperature.

Characteristics

Item P/N	PCN4015CI-SERIES	Test Instrument	E4991 / 4339B / 6379
Product	Common Choke Coil for Power Lines	Test Frequency	10 MHz / 100 MHz / 0.5V

■ Mechanical Performance

<table>
<tr><th>No.</th><th>Item</th><th>Specifications</th><th>Test Method</th></tr>
<tr><td>1</td><td>Appearance and Dimensions</td><td>Style and Dimensions</td><td>Visual Inspection and Measured with Slide Calipers.</td></tr>
<tr><td>2</td><td>Bonding Strength and Core Strength</td><td>No Evidence of Chipping, Breakage.
No Evidence of Coming off Glass-Epoxy Substrate.</td><td>Applying Force (F): 10N
Applying Time: 5± 1s
  </td></tr>
<tr><td>3</td><td>Body Strength</td><td>No Evidence of Chipping, Breakage.</td><td>Applying Force (F): 10N
Applying Time: 5± 1s
  </td></tr>
<tr><td>4</td><td>Bonding Strength</td><td rowspan="3">Meet Table 1.
Table 1<table><tr><td>Appearance</td><td>No Damaged.</td></tr><tr><td>Impedance Change (at 100MHz)</td><td>Within ±20%</td></tr><tr><td>I.R.</td><td>10MΩ Min.</td></tr><tr><td>Withstand Voltage</td><td>No Damaged.</td></tr></table></td><td>Substrate: Glass-Epoxy (t=1.6mm)
Deflection: 2.0mm
Keeping Time: 30s
Speed of Applying Force: 0.5mm/s
  </td></tr>
<tr><td>5</td><td>Vibration</td><td>Products Shall be Soldered on the Substrate.
Oscillation Frequency: 10 to 55 to 10Hz for 1 Min.
Total Amplitude: 1.5mm
Testing Time: A Period of 2 Hours in Each of 3 Mutually Perpendicular Directions (Total 6 Hours).</td></tr>
<tr><td>6</td><td>Drop</td><td>Products Shall be Dropped Concrete or Steel Board.
Method: Free Fall
Height: 1m
The Number of Times: 10 Times</td></tr>
<tr><td>7</td><td>Solderability</td><td>The electrodes Shall be at Least 90% Covered with New Solder coating.</td><td>Flux: Ethanol Solution of Rosin, 25 (wt)%
Pre-Heating: 150± 10℃, 1 Minute.
Solder: (1) Su/Pb=60/40, (2) Su-3.0Ag-0.5Cu
Solder Temperature: (1) 230±5℃, (2) 230±5℃
Immersion Time: 4± 1s
Immersion and Immersion Rates: 25mm/s
  </td></tr>
<tr><td>8</td><td>Resistance to Soldering Heat</td><td>Meet Table 1.</td><td>Flux: Ethanol Solution of Rosin, 25 (wt)%
Pre-Heating: 150± 10℃, 1 Minute.
Solder: (1) Su/Pb=60/40, (2) Su-3.0Ag-0.5Cu
Solder Temperature: 270±5℃
Immersion Time: 5± 1s
Immersion and Immersion Rates: 25mm/s
Then Measured After Exposure in the Room Condition for 4 to 48 Hours.</td></tr>
</table>

Characteristics

Item P/N	PCN4015CI-SERIES	**Test Instrument**	E4991 / 4339B / 6379
Product	Common Choke Coil for Power Lines	**Test Frequency**	10 MHz / 100 MHz / 0.5V

■ Enviromental Performance

Product shall be solderd on the glass-epoxy substrate (t=1.6mm)

No.	Item	Specifications	Test Method
1	Temperature Cycle	Meet Table 1.	1 Cycle 1 step: -40℃ (+0, -3)℃ / 30min (+3, -0) min 2 step: Ordinary Temp. / 3 min max. 3 step: +125℃ (+3, -0)℃ / 30min (+3, -0) min 4 step: Ordinary Temp. / 3 min max. Total of 10 Cycles Then Measured After Exposure in the Room Condition for 4 to 48 Hours.
2	Humidity		Temperature: 40±2℃ Humidity: 90 to 95% (RH) Time: 1000h (+48 h, -0 h) Then Measured After Exposure in the Room Condition for 4 to 48 Hours.
3	Humidity Load		Temperature: 40±2℃ Humidity: 90 to 95% (RH) Test Voltage: Rated Voltage Time: 1000h (+48 h, -0 h) Then Measured After Exposure in the Room Condition for 4 to 48 Hours. (Ref. Item)
4	Heat Life		Temperature: 85±2℃ Humidity: 90 to 95% (RH) Test Voltage: Rated Voltage Time: 1000h (+48 h, -0 h) Then Measured After Exposure in the Room Condition for 4 to 48 Hours. (Ref. Item)
5	Cold Resistance		Temperature: -40±2℃ Time: 1000h (+48 h, -0 h) Then Measured After Exposure in the Room Condition for 4 to 48 Hours. (Ref. Item)

Characteristics

Item P/N	PCN4015CI-SERIES	**Test Instrument**	E4991 / 4339B / 6379
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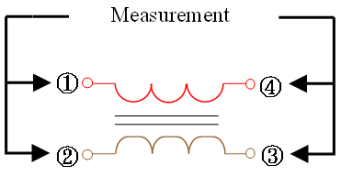
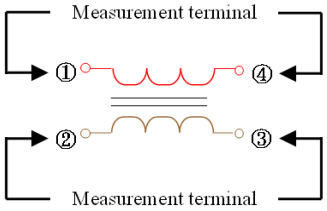
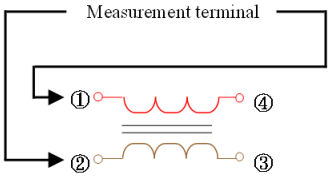
■ Terminal to be Tested

When measuring and suppling the voltage, the following terminal is applied.

No.	Item	Terminal to be Tested
1	Impedance (Ω) (Measurement Terminal)	
2	DC Resistance (Ω) (Measurement Terminal)	
3	DC Current (A) (Measurement Terminal)	
4	Insulation Resistance (I.R.) (Measurement Terminal)	
5	Withstanding Voltage (V) (Measurement Terminal)	
6	Rated Voltage (V) (Measurement Terminal)	
7	Humidity Load (Supply Terminal)	
8	Heat Life (Supply Terminal)	

Characteristics

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■ Soldering and Mounting

Soldering

Mildly activated rosin fluxes are preferred. Terminations are suitable for re-flow soldering systems.

If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

Solder re-flow:

Recommended temperature profiles for re-flow soldering in Figure 1.

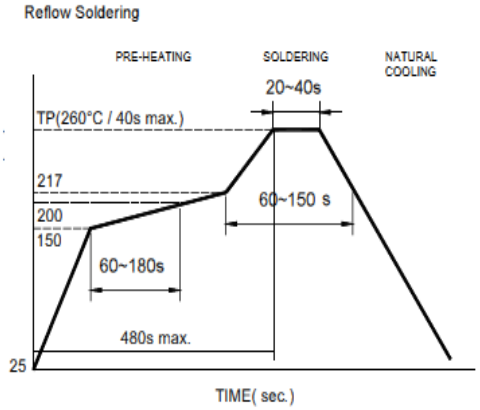
Soldering Iron (Figure 2):

Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended.

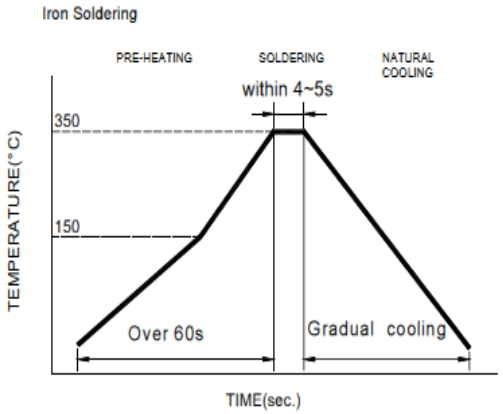
●Preheat circuit and products to 150℃
●355℃ tip temperature (max.)

●Never contact the ceramic with the iron tip
●1.0mm tip diameter (max.)

●Use a 20-watt soldering iron with tip diameter of 1.0mm

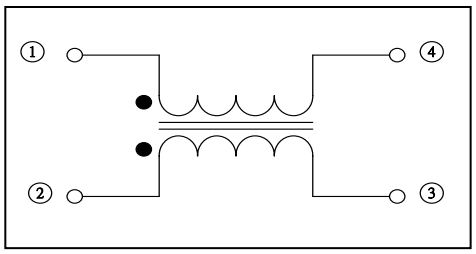


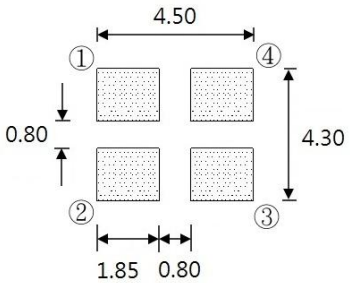
Reflow times: 3 times max.
Fig.1



Iron Soldering times: 1 times max.
Fig.2

■ Recommended PC Board Pattern





Guideline of solder paste thickness: ≥100μm

*Solderability is subject to reflow conditions and thermal conductivity.

Please make sure that your product has been evaluated in view of your specifications with our product being mounted to your product.

Characteristics

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■ Application Notice

●Storage Conditions(component level)

To maintain the solderability of terminal electrodes:

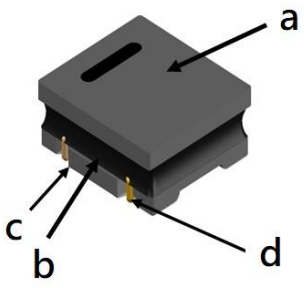
1. HUNGTRON products meet IPC/JEDEC J-STD-020D standard-MSL, level 1.
2. Temperature and humidity conditions: Less than 40℃ and 60% RH.
3. Recommended products should be used within 12 months form the time of delivery.
4. The packaging material should be kept where no chlorine or sulfur exists in the air.

●Transportation

1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
3. Bulk handling should ensure that abrasion and mechanical shock are minimized.

■ Product Composition Diagram

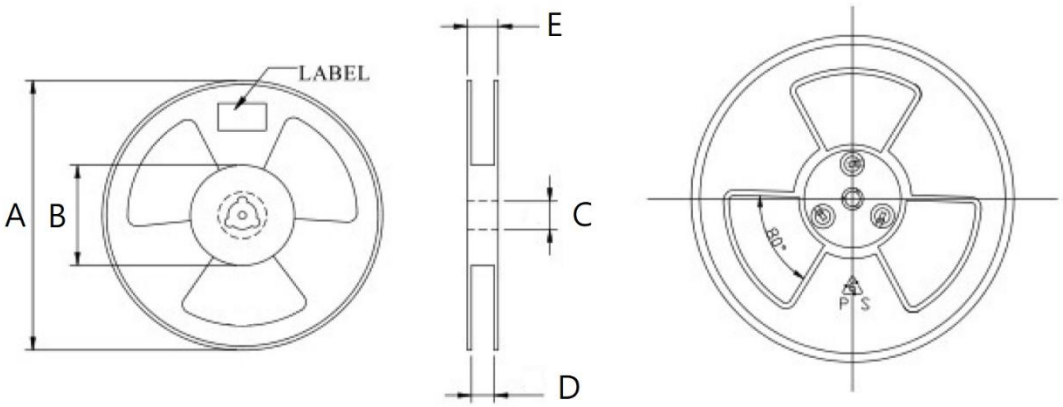
No.	Description	Specification
a.	Core	Metal Core
b.	Coating	Epoxy with Metal powder
c	Termination	Tin Pb Free
d	Wire	Enameled Copper Wire



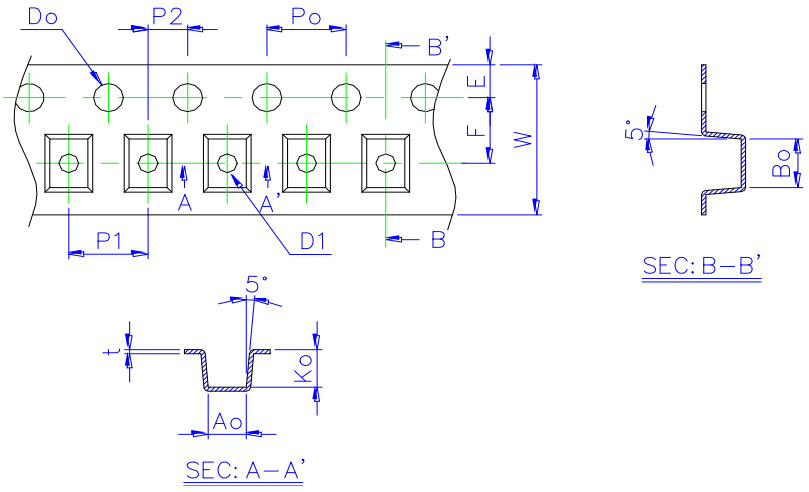
Packing For SMD

Item P/N	PCN4015CI-SERIES	**Test Instrument**	E4991 / 4339B / 6379
Product	Common Choke Coil for Power Lines	**Test Frequency**	10 MHz / 100 MHz / 0.5V

■ Reel Dimension & Tape Dimension



Type	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)
13”X12mm	330±1.0	100±2	13.5±0.5	12.7±0.5	16.7±0.5



Size	t(mm)	Ao(mm)	Bo(mm)	Ko(mm)	W(mm)	E(mm)	F(mm)	Po(mm)	P1(mm)	P2(mm)	Do(mm)
4015	0.25±0.05	4.25±0.10	4.25±0.10	1.65±0.10	12.00±0.20	1.75±0.10	5.50±0.05	4.0±0.2	8.0±0.10	2.0±0.05	1.5+0.1,-0

■ Packaging Quantity

Chip Size	4015
13”/ Reel	2500