Specification For Approval

Item P/N	PHN252012T-SERIES	**Test Instrument**	E4991、4338、6379
Product	Power Inductor	**Test Frequency**	1 MHz / 0.2V

Customer：

Customer P/N：

Description： Power Inductor

HT P/N： PHN252012T-SERIES

Revision No.： Version: 1.1

Date：

Notes： Standard

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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	PHN252012T-SERIES	**Test Instrument**	E4991、4338、6379
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Version	Revision Item	Before Revision	After Revision	Date
1.0	First Version			

Specification

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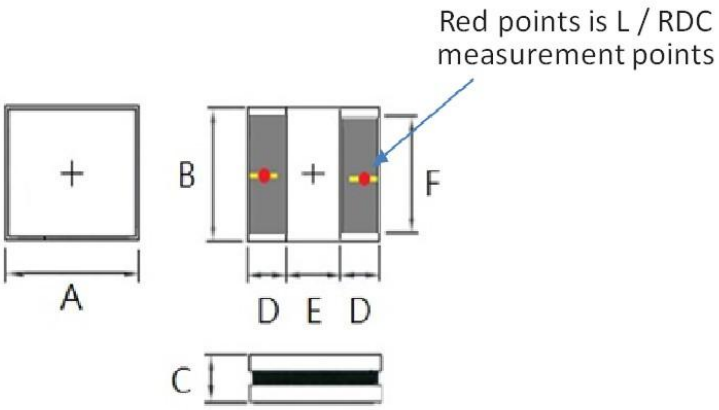
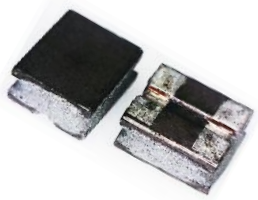
■ Style and Dimensions (mm)





PHN252012	Dimensions
A	2.5 ± 0.3
B	2.0 ± 0.35
C	1.3 Max.
D	0.85 Ref.
E	0.80 Ref.

■ Explanation Of Part Numbers

① ② ③ ④ ⑤

PHN 252012 T - 100 M

① Product Name
② Shapes and Dimensions
③ Material
④ Inductance【at 1MHz】100:10μH
⑤ Inductance Tolerance (N = 30% , M = 20%)

■ Electrical Characteristics

P/N	Inductance (μH)	DCR (Ω) typ.	DCR (Ω) Max.	Isat (A) typ.	Isat (A) Max.	Irms (A) typ.	Irms (A) Max.
PHN252012T-R33□	0.33	0.022	0.032	6.80	6.5	4.7	4.3
PHN252012T-R47□	0.47	0.025	0.035	6.30	6	4.3	4
PHN252012T-1R0□	1.0	0.047	0.055	4.80	4.5	3.5	3.2
PHN252012T-1R5□	1.5	0.065	0.072	4.10	3.8	2.7	2.4
PHN252012T-2R2□	2.2	0.09	0.108	3.30	3.1	2.4	2.3
PHN252012T-3R3□	3.3	0.14	0.165	2.60	2.4	2.2	2
PHN252012T-4R7□	4.7	0.2	0.3	2.20	2.10	2.00	1.90
PHN252012T-100□	10	0.45	0.55	1.40	1.30	1.10	1.00

Note：

●L: Agilent/HP E4991, 1MHz/200mV
●RDC: Digital Milliohm Meter Agilent/HP4338B
●Isat & Irms : Microtest 6379, 1MHz/200mV

Characteristics

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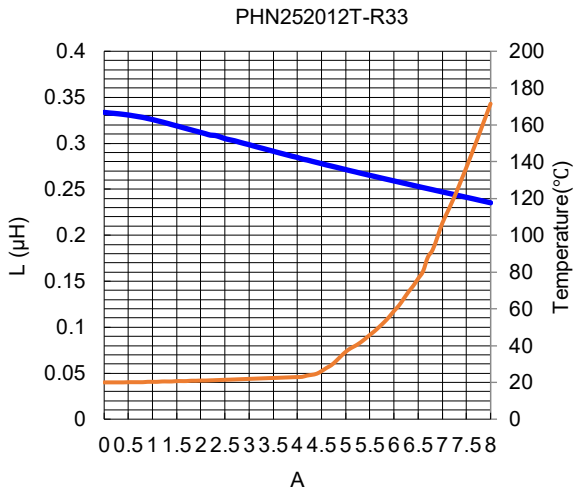
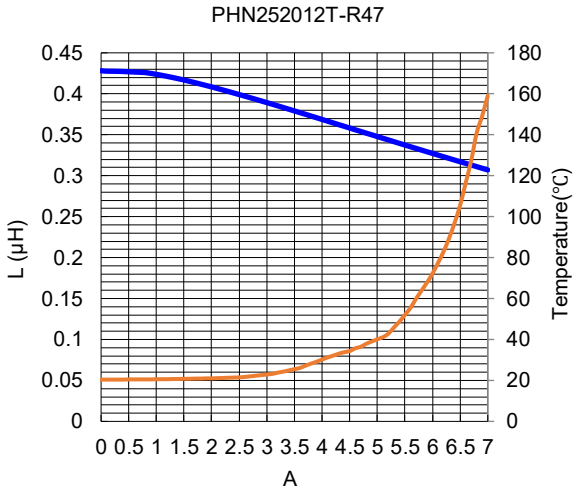
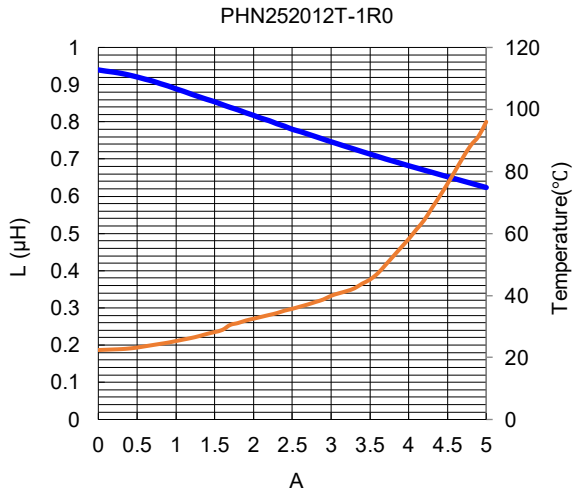
Note：

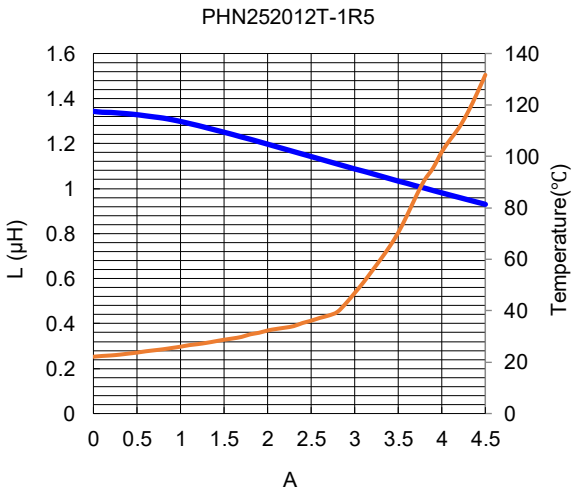
- ●Isat for Inductance drop30% from its value without current typical.
- ●Irms for a 40℃ rise above 25℃ ambient typical.
- ●If Use wave soldering is there will be some risk. (Crack、unwitting& Mark Shedding)
- ●Re-flow soldering temperatures below 240 degrees, there will be unwitting risk.
- ●Operating Temperature Range -40℃ to +150℃(Including self-temperature rise)
- ●Storage temp. and humidity: Less than 40℃ and 60% RH.
- ●When total area of exposed wire occurring to each side is not greater than 75% of coating resin area, that is acceptable.

■ Performance curves









Characteristics

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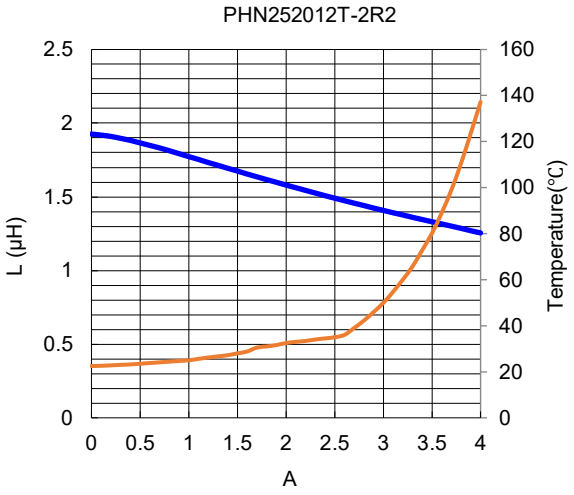
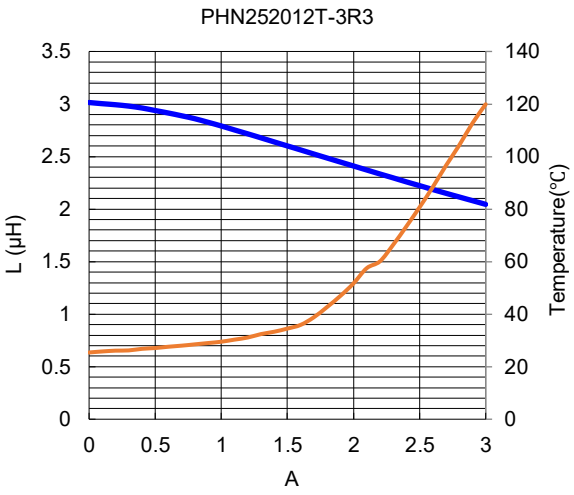
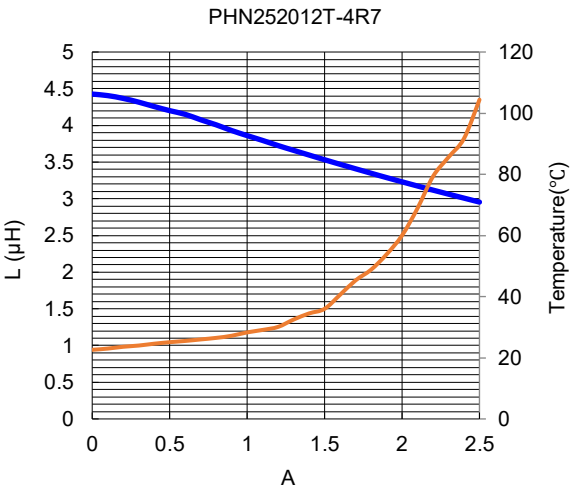
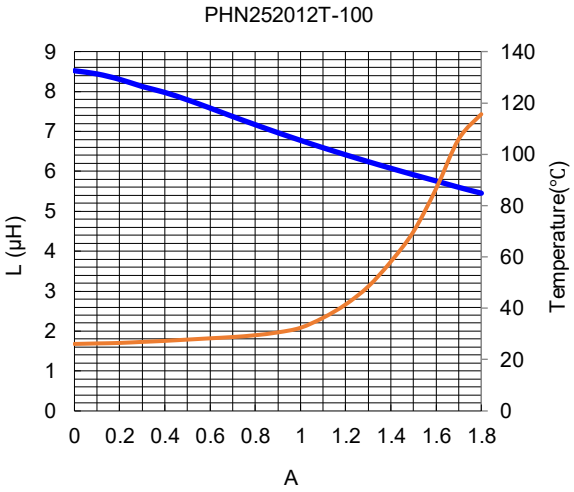
■ Performance Curves



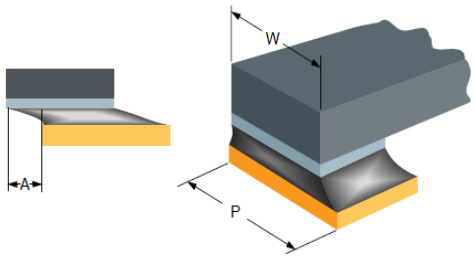






■ Overhang acceptance description

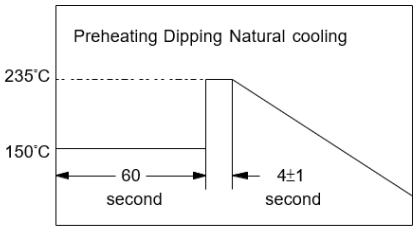
Side overhang (A) is less than or equal to 20% width of component termination area (W) or 20% width of land (P), whichever is less.



Characteristics

Item P/N	PHN252012T-SERIES	**Test Instrument**	E4991、4338、6379
Product	Power Inductor	**Test Frequency**	1 MHz / 0.2V

■ Reliability and Test Condition

Item	Performance	Test Condition
Operating Temperature	-40~+150℃(Including self-temperature rise)	
Electrical Performance Test		
Inductance (μH)	Refer to standard electrical characteristic list	Agilent E4991, Agilent 4287 Agilent E4982A，Agilent 4286 MICROTEST 6379
Q		
SRF		Agilent E4991
DC Resistance		Agilent 4338
Rated Current	Base on temp. rise & △L/L0A≦30%	Saturation DC Current (Isat) will cause L0A to drop ap proximately △L(%)
Temperature Rise Test	△T40℃ Max.	Heat Rated Current (Irms) Will cause the coil temperature rise approximately △T(℃) without core loss. 1.Applied the allowed DC current. 2.Temperature measured by digital surface thermometer
Mechanical Performance Test		
Resistance to Soldering Heat MIL-STD-202 Method 210	1.Inductors shall be no evidence of electrical and mechanical damage. 2.Inductance within ±10% of initial value	Temp:260±5℃ Time:10±1Sec
Solderability Test ANSI/JSTD-002	More than 95% of terminal electrode should be covered with solder.	 be dipped in a melted solder bath at 235±5℃ for 4±1seconds.

Characteristics

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■ Reliability and Test Condition

<table>
<tr><th>Item</th><th>Performance</th><th>Test Condition</th></tr>
<tr><td colspan="3">Reliability Test</td></tr>
<tr><td>Humidity Test
MIL-STD-202
ME THOD 103</td><td rowspan="4">1.Visual examination: No mechanical damage
2.Inductance: Within±10% of initial value</td><td>1.Temperature:+85±2℃
2.Humidity:90~95%
3.Time:500±8hrs
4.Measured at Room Temperature After Placing for 2 to 3hrs</td></tr>
<tr><td>Thermal Shock
Test MIL-STD-202
ME THOD 107</td><td>Conditions for 1 cycle
<table>
<tr><th>Step</th><th>Temperature(℃)</th><th>Times(min.)</th></tr>
<tr><td>1</td><td>-40±2</td><td>30±3</td></tr>
<tr><td>2</td><td>Room</td><td>Within5</td></tr>
<tr><td>3</td><td>+150±5</td><td>30±3</td></tr>
</table>
Total:100 cycle
Measured at Room Temperature After Placing for 2 to 3hrs</td></tr>
<tr><td>High Temperature Life Test
MIL-STD-202
ME THOD 108</td><td>1.Temperature:150±2℃
2. Time:500±8hrs
3. Measured at Room Temperature After Placing for 2 to 3hrs</td></tr>
<tr><td>Low Temperature Storage Test
JESD22-A119</td><td>1.Temperature:-40±2℃
2. Time:500±8hrs
3. Measured at Room Temperature After Placing for 2 to 3hrs</td></tr>
<tr><td>Random Vibration Test
MIL-STD-202
ME THOD 204</td><td>Appearance: Cracking, shipping, and any other defects harmful to the characteristics should not be allowed.
Inductance: Within±10%</td><td>Frequency:10-55-10Hz for 15 min.
Amplitude:1.52mm
Directions and times: X, Y, Z directions for 15 min. This cycle shall be performed 12 times. In each of three mutually perpendicular directions (Total 9hors).</td></tr>
</table>

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.

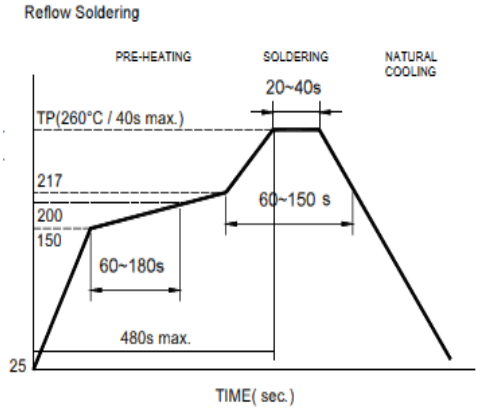
Soldering Iron (Figure 2):

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

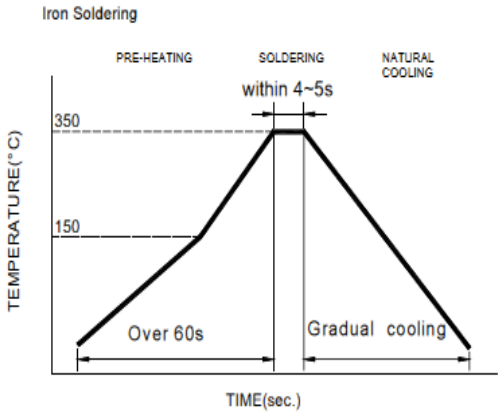
●Preheat circuit and products to 150℃
●355℃ tip temperature (max.)

●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

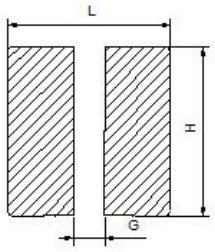


Reflow times: 3 times max.
Fig.1



Iron Soldering times: 1 times max.
Fig.2

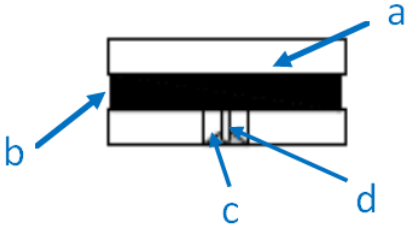
■ Recommended PC Board Pattern



L(mm)	G(mm)	H(mm)
2.7	0.8	2.2

■ 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



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.

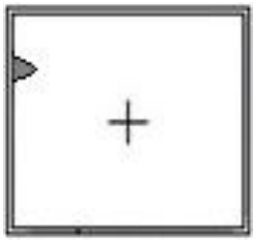
●Transportation

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.

■ Appearance Standard

●Core chipping

The appearance standard of the top and bottom ferrite core chipping size, the top or bottom area is less than 5%.



●Exposed wire tolerance limit of coating resin part on product side,

Size of exposed wire occurring to coating resin is specified below.

1. Width direction(dimension a)： Acceptable when a<=w/2 Nonconforming when a>w/2
2. Length direction (dimension b)： Dimension b is not specified.
3. When total area of exposed wire occurring to each sides is not greater than 50% of coating resin area, that is acceptable.

Packing For SMD

Item P/N	PHN252012T-SERIES	Test Instrument	E4991、4338、6379
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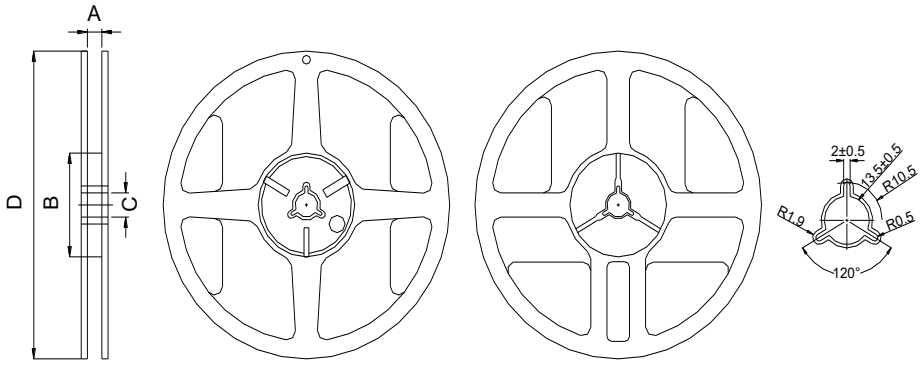
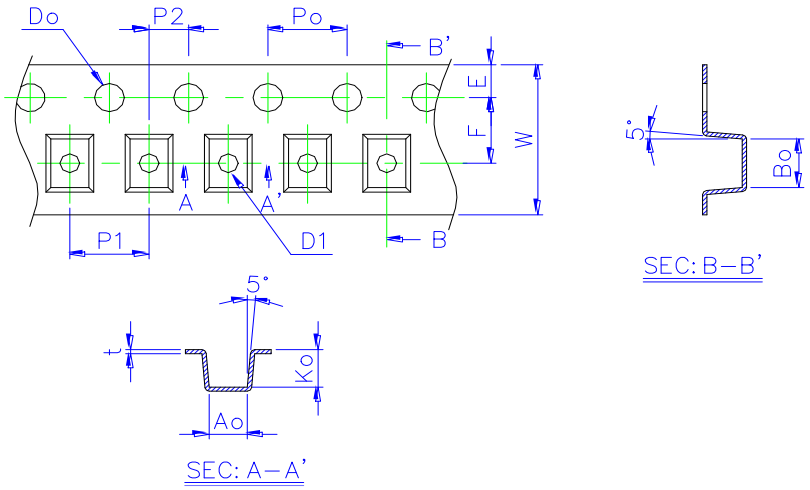
■ Reel Dimension & Tape Dimension



7"x8mm　　7"x12mm

Type	A(mm)	B(mm)	C(mm)	D(mm)
7”x8mm	9.5±0.5	60±2	13.5±0.5	178±2



Size	T(mm)	Ao(mm)	Bo(mm)	Ko(mm)	W(mm)	E(mm)	F(mm)	Po(mm)	P1(mm)	P2(mm)	Do(mm)
252012	0.22±0.05	2.40±0.10	2.80±0.10	1.35±0.10	8.00±0.20	1.75±0.10	3.50±0.05	4.00±0.05	4.00±0.10	2.00±0.05	1.50+0.1,-0

■ Packaging Quantity

Chip Size	252012
7”/ Reel	2000