Semi-Shielded Power Inductor – *PNS3015(W) Series*

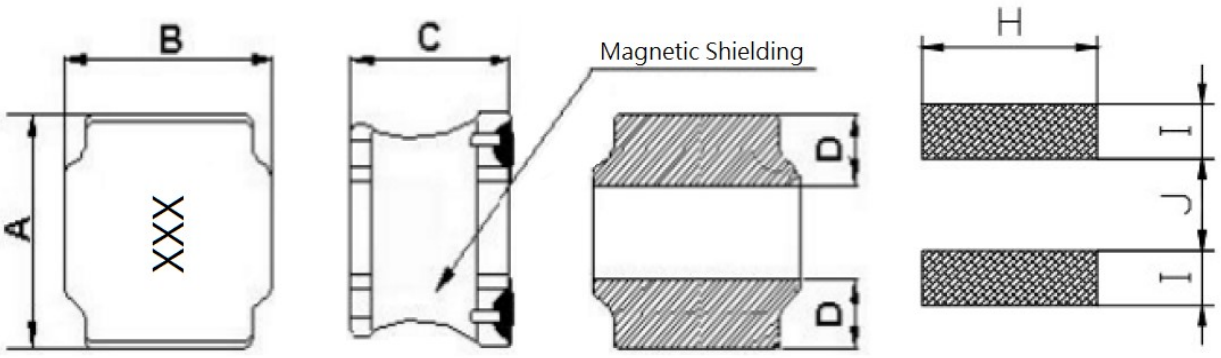
1. Part No. Expression

P N S 3 0 1 5 1 R 0 Y W F

(a) (b) (c) (d) (e) (f)

(a) Series Code
(b) Dimension Code
(c) Inductance Code
(d) Tolerance Code
(e) Special Code
(f) Packaging Code

2. Configuration & Dimensions (Unit: mm)



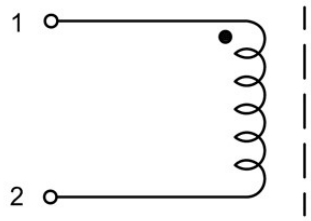
Recommended PCB Layout

Note: 1.Solder paste thickness at 0.12 mm and above is recommended.

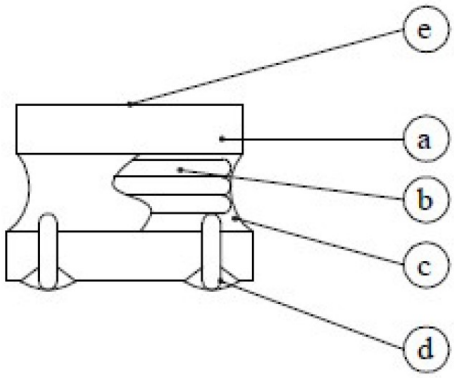
2. Marking: Inductance

A	B	C	D	H	I	J
3.0±0.2	3.0±0.2	1.5+0.2/-0.3	0.9 Ref	3.2 Ref	1.0 Ref	1.0 Ref

3. Schematic



4. Material List



(a) Core
(b) Wire
(c) Adhesive
(d) Terminal
(e) Ink

5. General Specifications

(a) Operating Temp.: -40°C to +125°C (including self-temperature rise)
(b) Storage Temp.: -40°C to +125°C (on board)
(c) Heat Rated Current (Irms) will cause the coil temperature rise approximately ΔT of 40°C Typ.
(d) Saturation Current (Isat) will cause L0 to drop 30% Typ.
(e) Rated Current: The lower value of Isat and Irms.
(f) Storage Condition (Component in its packaging)
  i) Temperature: Less than 40°C
  ii) Humidity: Less than 60% RH

6. Electrical Characteristics

Part Number	Inductance (µH)	Test Frequency	DCR (mΩ) Max	Isat (A)		Irms (A)		Marking
				Typ	Max	Typ	Max	
PNS30151R0YWF	1.0±30%	1V/100kHz	39.0	2.50	2.20	1.80	1.50	1R0
PNS30151R2YWF	1.2±30%	1V/100kHz	52.0	2.10	1.90	1.78	1.40	1R2
PNS30151R5YWF	1.5±30%	1V/100kHz	65.0	1.82	1.62	1.75	1.50	1R5
PNS30151R8YWF	1.8±30%	1V/100kHz	65.0	1.80	1.60	1.50	1.20	1R8
PNS30152R2MWF	2.2±20%	1V/100kHz	78.0	1.78	1.56	1.30	1.15	2R2
PNS30153R3MWF	3.3±20%	1V/100kHz	104.0	1.35	1.28	1.17	0.90	3R3
PNS30154R7MWF	4.7±20%	1V/100kHz	162.5	1.35	1.20	1.00	0.85	4R7
PNS30155R1MWF	5.1±20%	1V/100kHz	172.9	1.30	1.20	0.78	0.70	5R1
PNS30156R8MWF	6.8±20%	1V/100kHz	260.0	1.10	0.85	0.75	0.65	6R8
PNS3015100MWF	10.0±20%	1V/100kHz	325.0	0.92	0.55	0.59	0.45	100
PNS3015120MWF	12.0±20%	1V/100kHz	416.0	0.90	0.81	0.58	0.45	120
PNS3015180MWF	18.0±20%	1V/100kHz	559.0	0.65	0.58	0.46	0.36	180
PNS3015220MWF	22.0±20%	1V/100kHz	598.0	0.55	0.48	0.44	0.33	220
PNS3015330MWF	33.0±20%	1V/100kHz	1066.0	0.52	0.46	0.34	0.28	330
PNS3015390MWF	39.0±20%	1V/100kHz	1293.5	0.45	0.40	0.35	0.26	390
PNS3015470MWF	47.0±20%	1V/100kHz	1625.0	0.36	0.32	0.27	0.22	470
PNS3015560MWF	56.0±20%	1V/100kHz	1664.0	0.29	0.26	0.27	0.20	560
PNS3015680MWF	68.0±20%	1V/100kHz	3510.0	0.23	0.20	0.19	0.17	680
PNS3015101MWF	100.0±20%	1V/100kHz	4043.0	0.18	0.16	0.15	0.13	101

7. Soldering Specification

Mildly activated rosin fluxes are preferred. Our 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.

7-1. IR Soldering Reflow

Recommended temperature profiles for lead free re-flow soldering in Figure 1, Table 1.1 & 1.2 (J-STD-020E).

7-2. Iron Reflow

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 (Figure 2).

Note:

(a) Preheat circuit and products to 150°C.

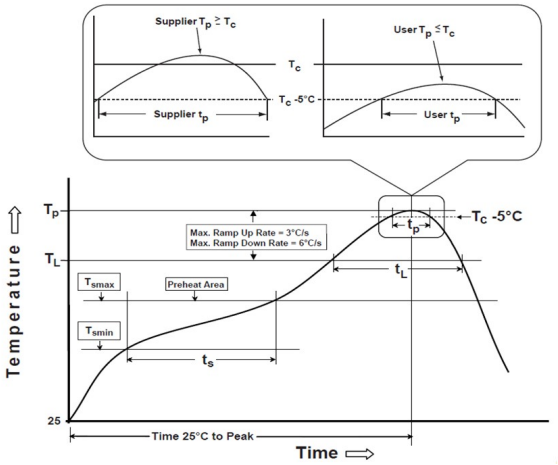
(b) 355°C tip temperature (Max.)

(c) Never contact the ceramic with the iron tip

(d) 1.0mm tip diameter (Max.)

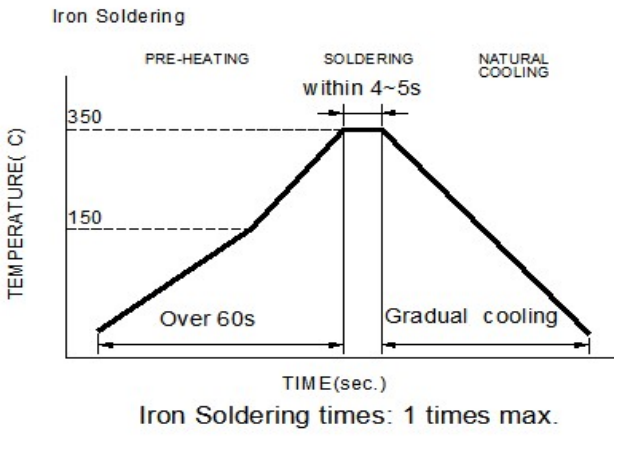
(e) Use a 20 watt soldering iron with tip diameter of 1.0mm

(f) Limit soldering time to 4~5 sec.



Reflow times: 3 times Max

Figure 1: IR Soldering Reflow



Soldering iron method: 350±5°C Max

Figure 2: Iron soldering temperature profiles

Table (1.1) Reflow Profiles

Profile Type:	Pb-Free Assembly
Preheat -Temperature Min (T_{smin}) -Temperature Max (T_{smax}) -Time (t_s) from (T_{smin} to T_{smax})	 150°C 200°C 60-120seconds
Ramp-up rate ($T_L$to T_p)	3°C /second max.
Liquids temperature (T_L) Time (t_L) maintained above T_L	217°C 60-150 seconds
Classification temperature (T_c)	See Table (1.2)
Time (t_p) at Tc- 5°C (Tp should be equal to or less than Tc.)	*< 30 seconds
Ramp-down rate (T_p to T_L)	6°C /second max.
Time 25°C to peak temperature	8 minutes max.

Tp: maximum peak package body temperature, **Tc**: the classification temperature.

For user (customer) **Tp** should be equal to or less than **Tc.**

*Tolerance for peak profile temperature (Tp) is defined as a supplier minimum and a user maximum.

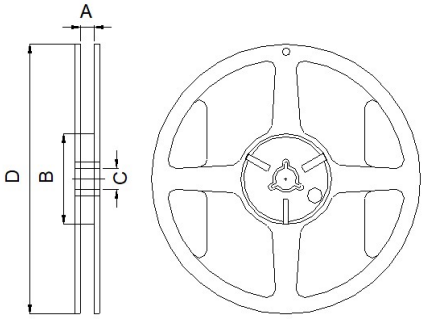
Table (1.2) Package Thickness/Volume and Classification Temperature (T_c)

	Package Thickness	Volume mm^3 <350	Volume mm^3 350-2000	Volume mm^3 >2000
PB-Free Assembly	<1.6mm	260°C	260°C	260°C
	1.6-2.5mm	260°C	250°C	245°C
	≥2.5mm	250°C	245°C	245°C

Reflow is referred to standard IPC/JEDEC J-STD-020E.

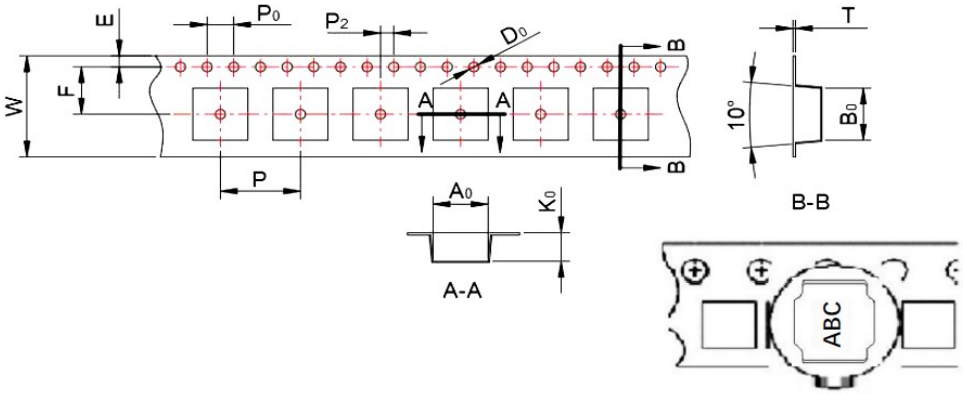
8. Packaging Information

8-1. Reel Dimension (Unit: mm)



A	B	C	D
8.2	60.0	13.0	180.0

8-2. Tape Dimension (Unit: mm)

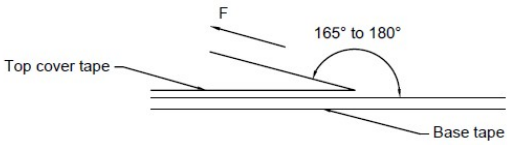


W	A0	B0	K0	P	F
8.00	3.20	3.20	1.70	4.00	3.50
E	D0	P0	P2	T	-
1.75	1.50	4.00	2.00	0.25	-

8-3. Packaging Quantity (Unit: Pcs)

Chip/ Reel	2,000
Inner Box	10,000
Outer Box	100,000

8-4. Tearing Off Force



The force for tearing off cover tape is according to the follow table, in the arrow direction under the following conditions.

(Referenced ANSI/EIA-481-D-2008 of 4.11 standard)

Room Temp. (°C)	Room Humidity (%)	Room atm (hPa)	Tearing Speed (mm/min)
5~35	45~85	860~1060	300±10

Tape Size	8 mm	12 to 56 mm	72 mm or Wider
Tearing Off Force (grams)	10~100	10~130	10~150

Application Notice

1. Storage Conditions

To maintain the solderability of terminal electrodes:

(a) Recommended products should be used within 12 months from the time of delivery.

(b) The packaging material should be kept where no chlorine or sulfur exists in the air.

2. Transportation

(a) Products should be handled with care to avoid damage or contamination from perspiration and skin oils.

(b) Vacuum pick up is strongly recommended for individual components.

(c) Bulk handling should ensure that abrasion and mechanical shock are minimized.