Unshielded Power Inductor – *PDB1003 Series*

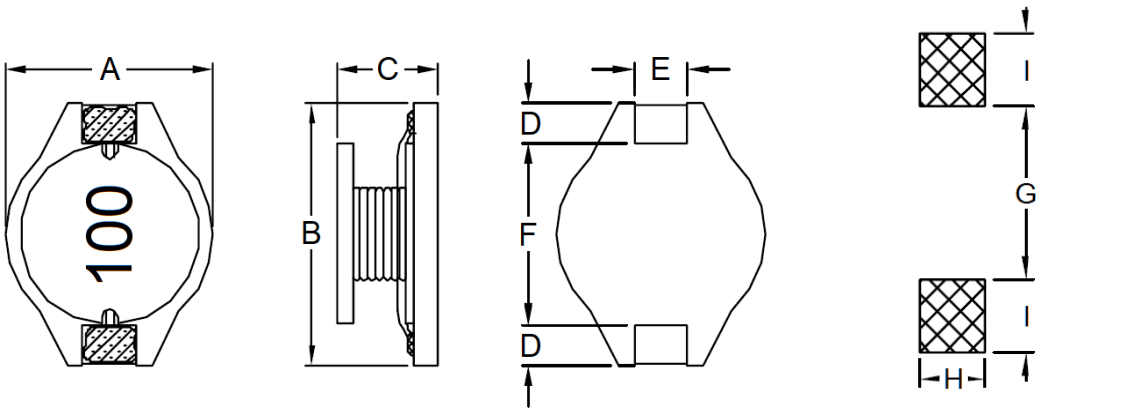
1. Part No. Expression

P D B 1 0 0 3 1 0 0 M Z F

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

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

2. Configuration & Dimensions (Unit: mm)



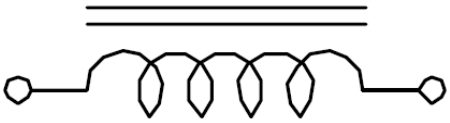
Recommended PCB Layout

Note: 1. The above PCB layout reference only.

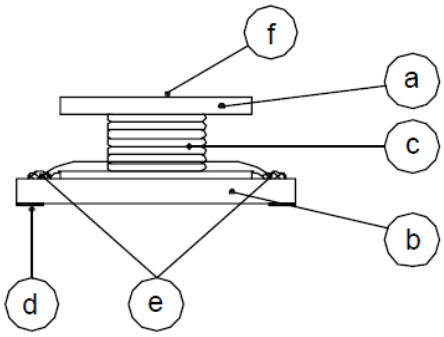
2. Marking: Inductance Code

A	B	C	D	E
10.0±0.2	12.7±0.2	3.0±0.3	2.4±0.2	2.2±0.2
F	G	H	I	-
7.6±0.3	7.3 Ref	2.8 Ref	3.0 Ref	-

3. Schematic



4. Material List



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

5. General Specifications

(a) Operating Temp.: -40°C to +125°C (including self-temperature rise)
(b) All test data referenced to 25°C ambient.
(c) Heat Rated Current (Irms) will cause the coil temperature rise ΔT of 30°C Max.
(d) Saturation Current (Isat) will cause inductance L0 to drop 10% Max.
(e) Rated Current: The lower value of Isat and Irms.
(f) Resistance to solder heat : 260° C.10 secs
(g) Storage Condition (Component in its packaging)
    i) Temperature: -10°C to 40°C
    ii) Humidity: Less than 60% RH

NOTE: Specifications subject to change without notice. Please check our website for latest information.

6. Electrical Characteristics

Part Number	Inductance (uH) @0A ±20%	Test Frequency	SRF (MHz) Typ	DCR (mΩ) Max	IDC (A)
PDB1003100MZF	10	1V/100KHz	35.0	110	2.00
PDB1003150MZF	15	1V/100KHz	33.0	150	1.50
PDB1003220MZF	22	1V/100KHz	25.0	230	1.30
PDB1003330MZF	33	1V/100KHz	19.0	300	1.10
PDB1003470MZF	47	1V/100KHz	14.0	390	0.80
PDB1003680MZF	68	1V/100KHz	12.0	660	0.70
PDB1003101MZF	100	1V/100KHz	10.0	840	0.60
PDB1003151MZF	150	1V/100KHz	8.0	1200	0.50
PDB1003221MZF	220	1V/100KHz	6.0	1900	0.40
PDB1003331MZF	330	1V/100KHz	5.0	2700	0.30
PDB1003471MZF	470	1V/100KHz	4.0	4000	0.20
PDB1003681MZF	680	1V/100KHz	3.0	5300	0.10
PDB1003102MZF	1000	1V/100KHz	2.5	8400	0.05

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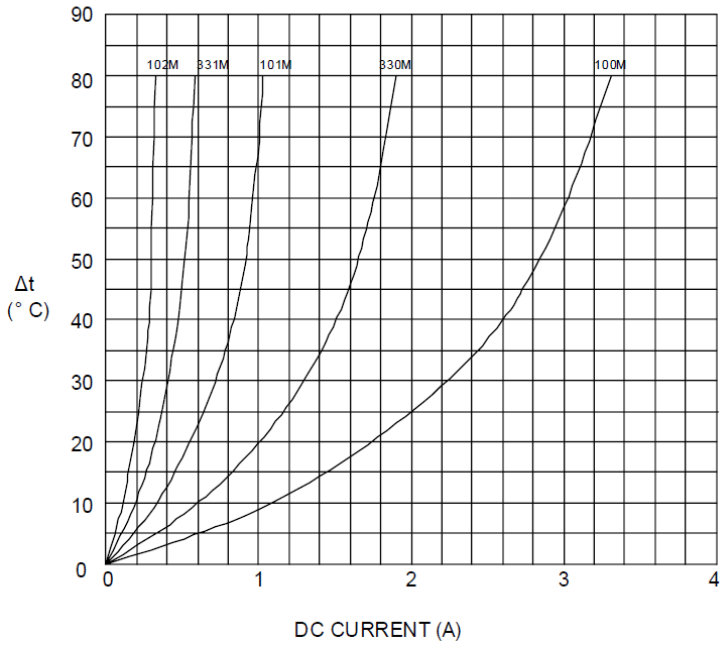
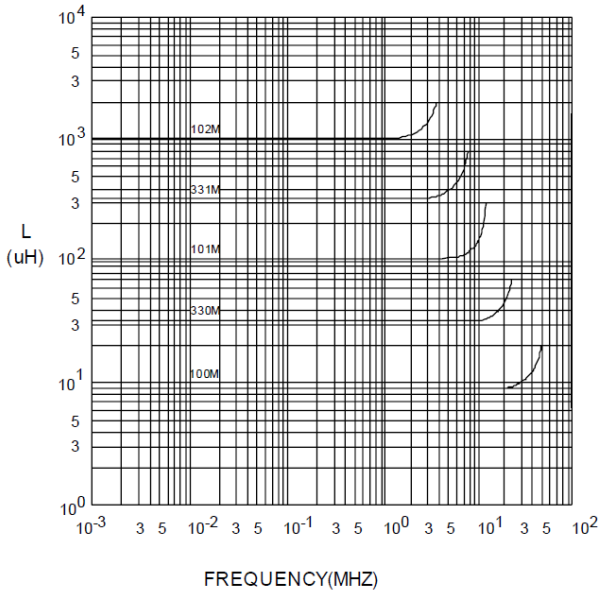
7. Characteristics Curves

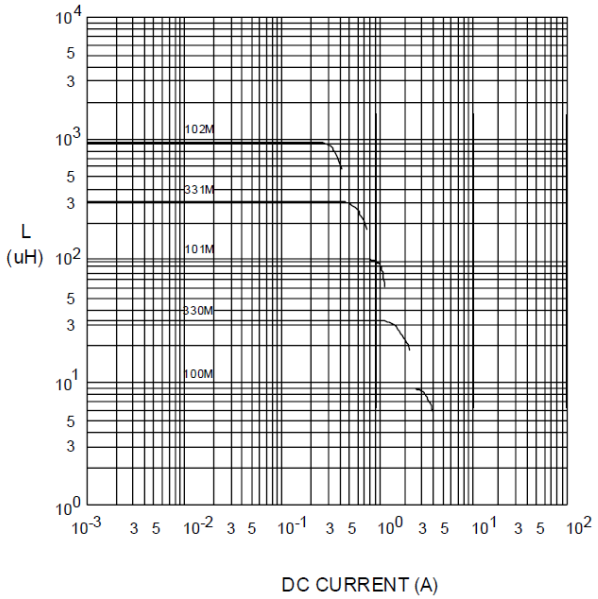
@ TEMP. RISE VS. DC SUPERPOSITION RESPONSE CURVE



@ INDUCTANCE VS. FREQUENCY RESPONSE CURVE



@ INDUCTANCE VS. DC SUPERPOSITION RESPONSE CURVE



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8. 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.

8-1. IR Soldering Reflow

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

8-2. 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.

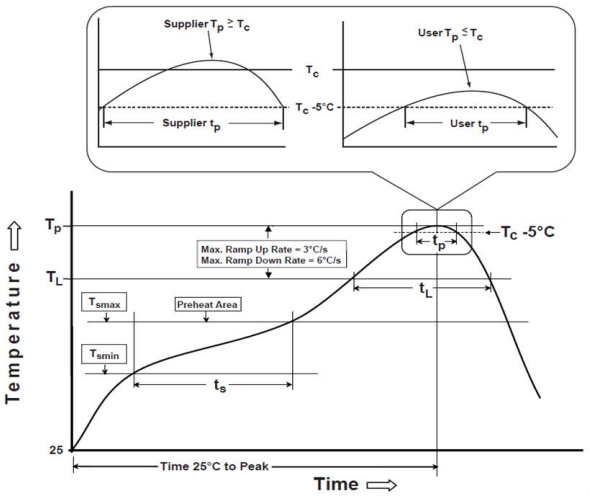
(b) 355°C tip temperature (Max.)

(c) Never contact the ceramic with the iron tip

(d) 1.0mm tip diameter (Max.)

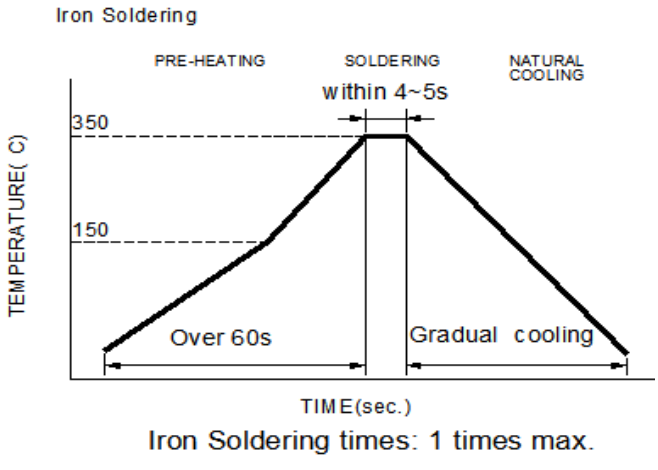
(e) Use a 20 watt soldering iron with tip diameter of 1.0mm

(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

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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.

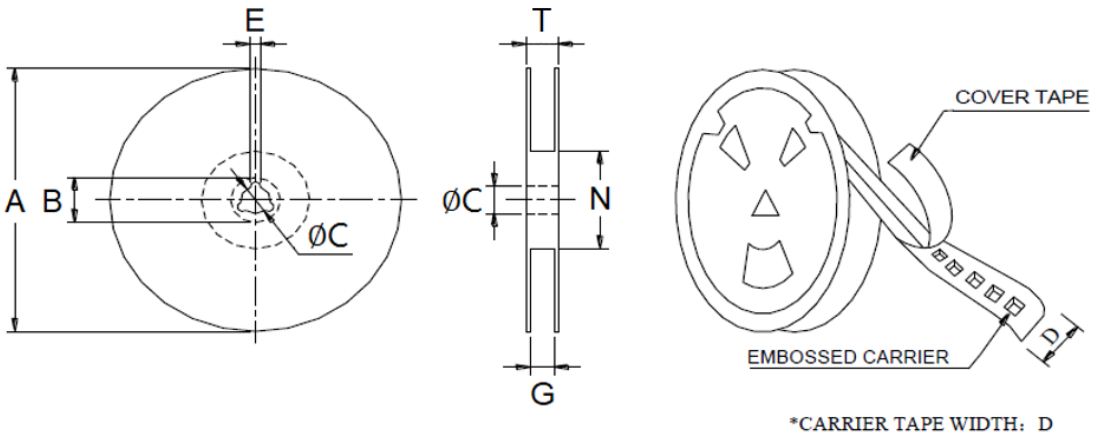
Table (1.2) Package Thickness/Volume and Classification Temperature (T_c)

	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.

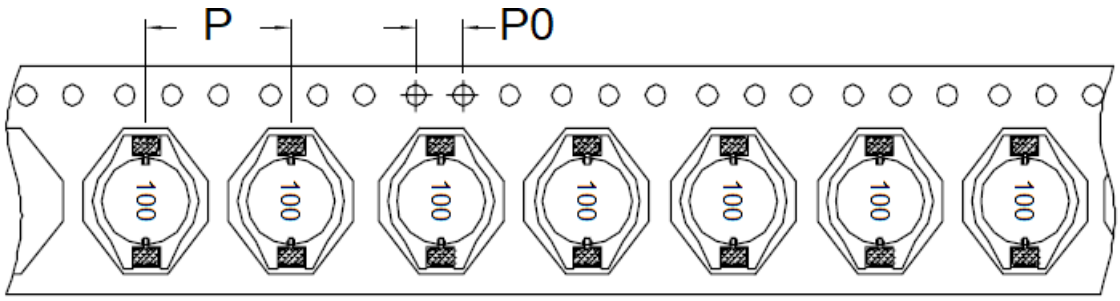
9. Packaging Information

9-1. Reel Dimension (Unit: mm)



Type	A	B	C	D
	330.0 Ref	21.0 Ref	13.0 Ref	24.0 Ref
13”x24	E	G	N	T
	2.0 Ref	26.0 Max	50.0 Min	30.4 Ref

9-2. Tape Dimension (Unit: mm)



P	P0
16	4

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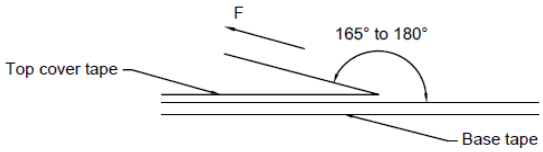
9-3. Packaging Type

INNER : REEL			OUTER : CARTON		
Q'TY(PCS)	G.W. (gw)	STYLE	Q'TY(PCS)	G.W. (Kg)	SIZE(cm)
1,000	950	13-24	4,000	7.3	40 x 40 x 24

9-4. 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.