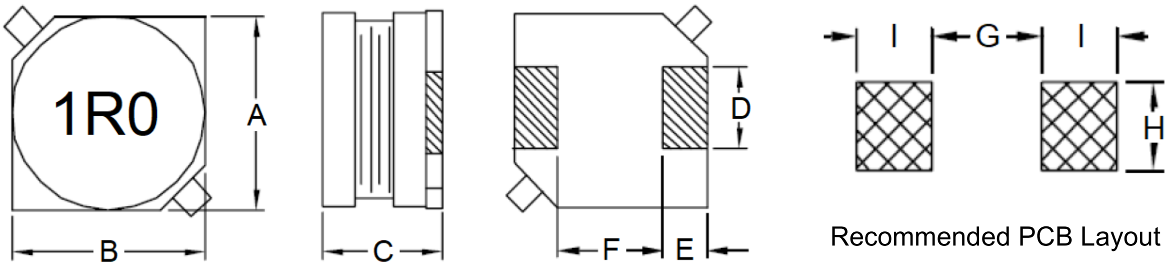
Unshielded Power Inductor – *PSB0705 Series*

1. Part No. Expression

PSB 0705 1R0 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)

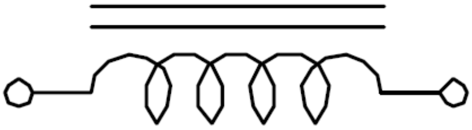


Recommended PCB Layout

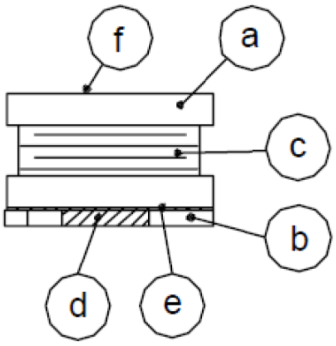
Note: 1. The above PCB layout reference only.
2. Marking: Inductance Code

A	B	C	D	E
7.0±0.3	7.0±0.3	4.6±0.3	2.0±0.2	1.5±0.2
F	G	H	I	-
4.0±0.2	3.7 Ref	2.2 Ref	1.9 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 +85°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 40°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

6. Electrical Characteristics

Part Number	Inductance (uH) @0A	Test Frequency	DCR (mΩ) Max	IDC (A) Max
PSB07051R0MZF	1.0	1V/100KHz	23	3.50
PSB07051R5MZF	1.5	1V/100KHz	28	3.20
PSB07052R2MZF	2.2	1V/100KHz	33	3.00
PSB07053R3MZF	3.3	1V/100KHz	40	2.70
PSB07054R7MZF	4.7	1V/100KHz	50	2.50

Tolerance Code: K=±10%, L=±15%, M=±20%

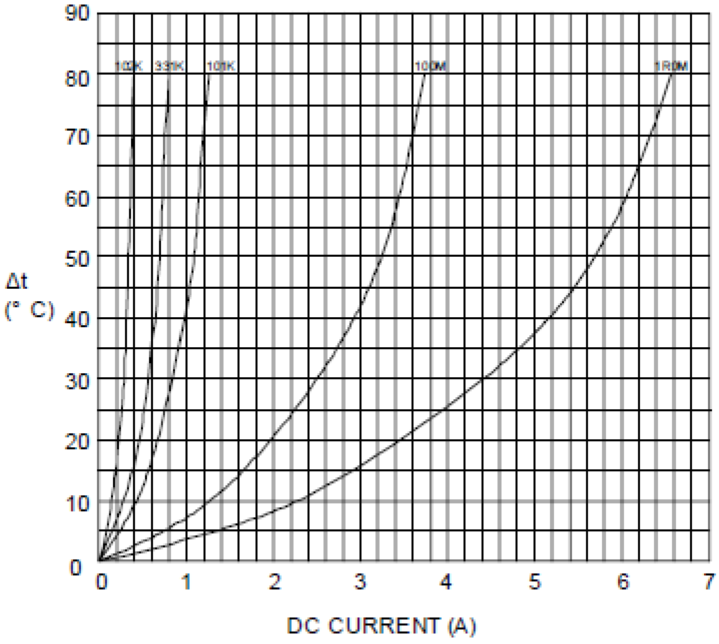
NOTE: Specifications subject to change without notice. Please check our website for latest information.

Part Number	Inductance (uH) @0A	Test Frequency	DCR (mΩ) Max	IDC (A) Max
PSB07056R8MZF	6.8	1V/100KHz	60	2.20
PSB0705100MZF	10.0	1V/100KHz	75	2.00
PSB0705120MZF	12.0	1V/100KHz	85	1.90
PSB0705150LZF	15.0	1V/100KHz	90	1.50
PSB0705180LZF	18.0	1V/100KHz	100	1.40
PSB0705220LZF	22.0	1V/100KHz	120	1.30
PSB0705270LZF	27.0	1V/100KHz	150	1.20
PSB0705330LZF	33.0	1V/100KHz	180	1.10
PSB0705390LZF	39.0	1V/100KHz	190	1.00
PSB0705470LZF	47.0	1V/100KHz	220	0.90
PSB0705560KZF	56.0	1V/100KHz	250	0.85
PSB0705680KZF	68.0	1V/100KHz	270	0.80
PSB0705820KZF	82.0	1V/100KHz	380	0.70
PSB0705101KZF	100.0	1V/100KHz	420	0.65
PSB0705121KZF	120.0	1V/100KHz	520	0.60
PSB0705151KZF	150.0	1V/100KHz	580	0.50
PSB0705181KZF	180.0	1V/100KHz	650	0.45
PSB0705221KZF	220.0	1V/100KHz	880	0.40
PSB0705271KZF	270.0	1V/100KHz	990	0.35
PSB0705331KZF	330.0	1V/100KHz	1100	0.32
PSB0705391KZF	390.0	1V/100KHz	1400	0.30
PSB0705471KZF	470.0	1V/100KHz	1900	0.28
PSB0705561KZF	560.0	1V/100KHz	2200	0.25
PSB0705681KZF	680.0	1V/100KHz	2500	0.22
PSB0705821KZF	820.0	1V/100KHz	2900	0.20
PSB0705102KZF	1000.0	1V/100KHz	4000	0.18

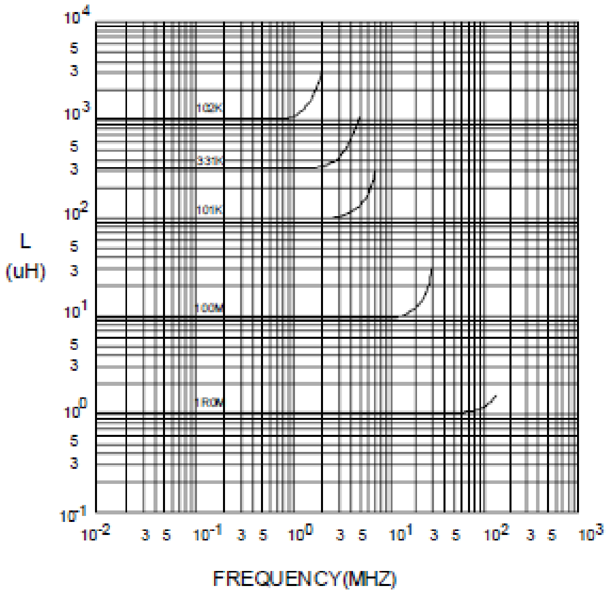
Tolerance Code: K=±10%, L=±15%, M=±20%

7. Characteristics Curves

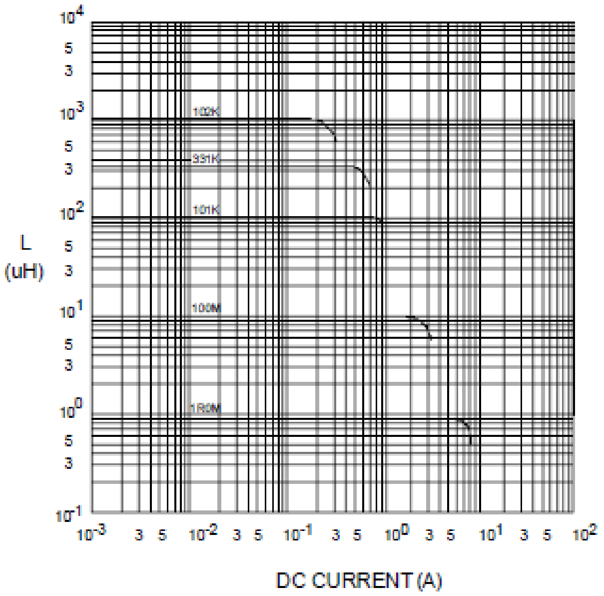
@ TEMP. RISE VS. DC SUPERPOSITION RESPONSE CURVE



@ INDUCTANCE VS. FREQUENCY RESPONSE CURVE



@ INDUCTANCE VS. DC SUPERPOSITION RESPONSE CURVE



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

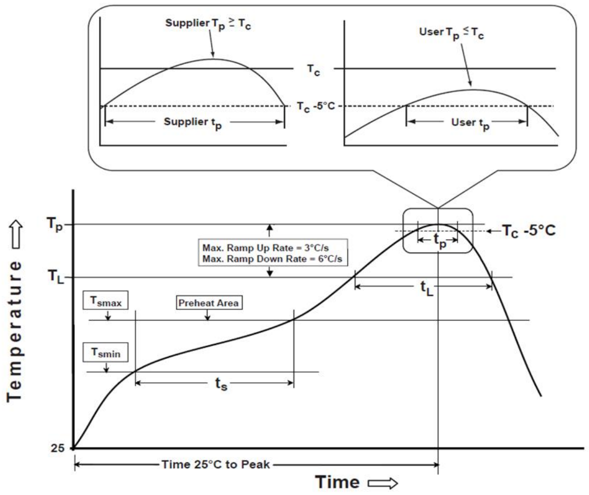
Recommended temperature profiles for lead free re-flow soldering in Figure 1, Table 1.1 & 1.2 (J-STD-020E).

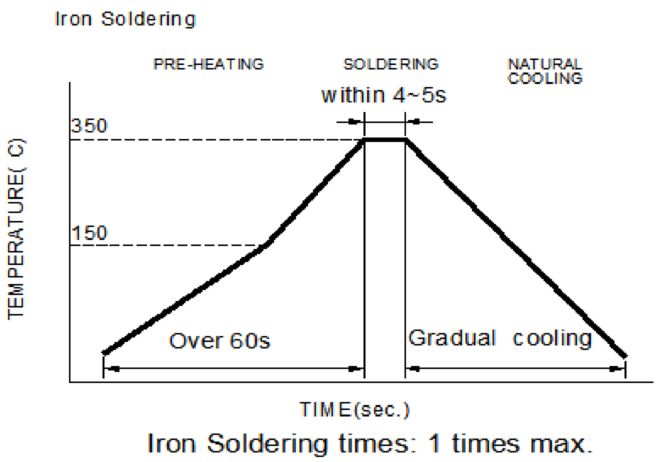
8-2. Iron Reflow

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

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.

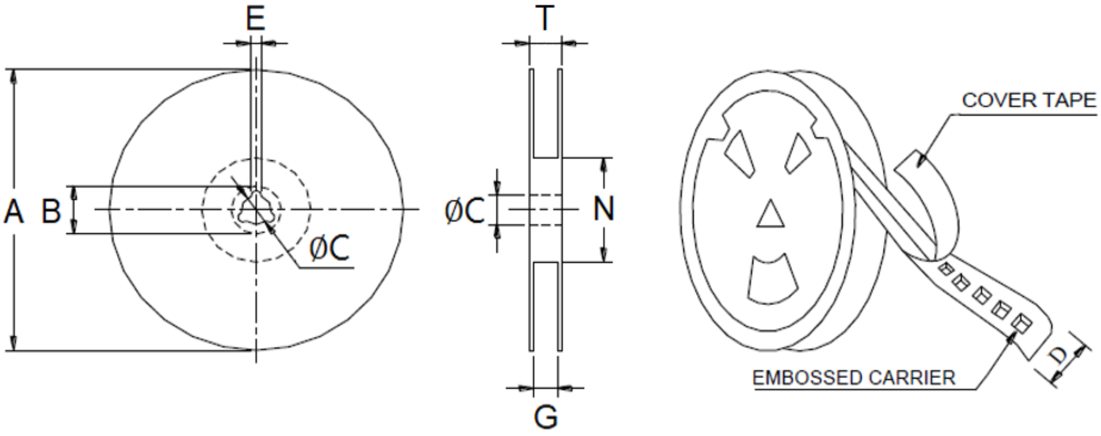
Table (1.2) Package Thickness/Volume and Classification Temperature (T_c)

	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

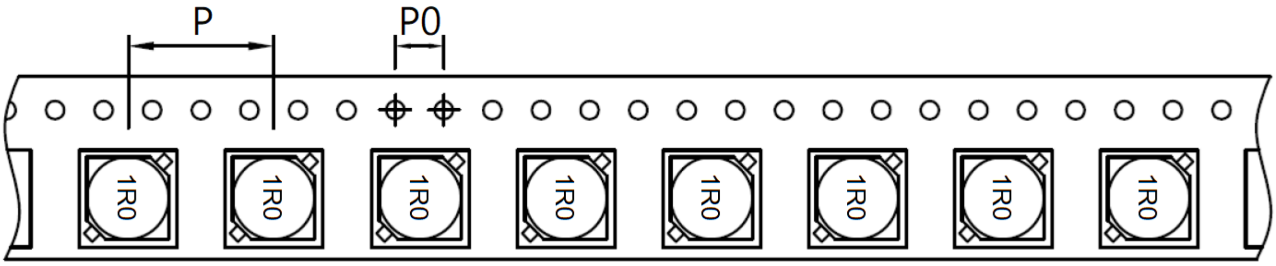
9-1. Reel Dimension (Unit: mm)



*CARRIER TAPE WIDTH：D

Type	A	B	C	D
	330.0 Ref	21.0 Ref	13.0 Ref	16.0 Ref
13”x16	E	G	N	T
	2.0 Ref	18.0 Max	50.0 Min	22.4 Ref

9-2. Tape Dimension (Unit: mm)

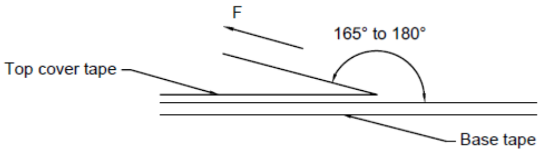


P	P0
12	4

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	680	13-16	6,000	7.6	38 x 36.5 x 21

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.