Unshielded Power Inductor – *PDC0502 Series*

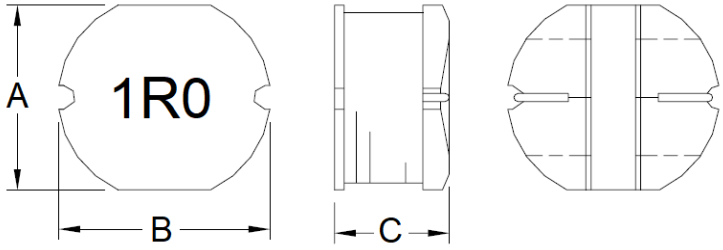
1. Part No. Expression

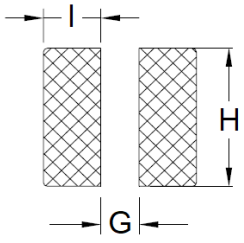
P D C 0 5 0 2 1 R 0 M Z F

(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)





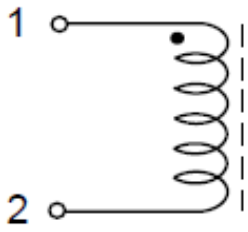
Recommended PCB Layout

Note: 1. The above PCB layout reference only.

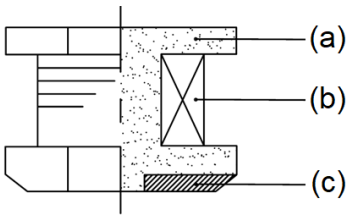
2. Marking: Inductance Code

A	B	C	G	H	I
5.20±0.30	5.80±0.30	2.50±0.35	1.70 Ref	5.50 Ref	2.15 Ref

3. Schematic



4. Material List



(a) Core
(b) Wire
(c) Electrode

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 approximately 10%.
(e) Rated Current: The lower value of Isat and Irms.
(f) 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 ±20%	Test Frequency	DCR (Ω) Max	IDC (A)
PDC05021R0MZF	1.0	1V/7.96MHz	0.030	4.80
PDC05021R4MZF	1.4	1V/7.96MHz	0.035	4.20
PDC05021R8MZF	1.8	1V/7.96MHz	0.040	3.80
PDC05022R2MZF	2.2	1V/7.96MHz	0.050	3.50
PDC05022R7MZF	2.7	1V/7.96MHz	0.055	3.10
PDC05023R3MZF	3.3	1V/7.96MHz	0.070	3.00
PDC05023R9MZF	3.9	1V/7.96MHz	0.080	2.80
PDC05024R7MZF	4.7	1V/7.96MHz	0.090	2.70

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

Part Number	Inductance (uH) @0A ±20%	Test Frequency	DCR (Ω) Max	IDC (A)
PDC05025R6MZF	5.6	1V/7.96MHz	0.110	2.20
PDC05026R8MZF	6.8	1V/7.96MHz	0.140	1.90
PDC05028R2MZF	8.2	1V/7.96MHz	0.150	1.80
PDC0502100MZF	10.0	1V/2.52MHz	0.165	1.50
PDC0502120MZF	12.0	1V/2.52MHz	0.250	1.40
PDC0502150MZF	15.0	1V/2.52MHz	0.280	1.20
PDC0502180MZF	18.0	1V/2.52MHz	0.320	1.10
PDC0502220MZF	22.0	1V/2.52MHz	0.420	1.00
PDC0502270MZF	27.0	1V/2.52MHz	0.450	0.90
PDC0502330MZF	33.0	1V/2.52MHz	0.550	0.80
PDC0502390MZF	39.0	1V/2.52MHz	0.580	0.75
PDC0502470MZF	47.0	1V/2.52MHz	0.830	0.70
PDC0502560MZF	56.0	1V/2.52MHz	0.900	0.65
PDC0502680MZF	68.0	1V/2.52MHz	0.970	0.60
PDC0502820MZF	82.0	1V/2.52MHz	1.200	0.55
PDC0502101MZF	100.0	1V/1KHz	1.500	0.50
PDC0502121MZF	120.0	1V/1KHz	1.700	0.47
PDC0502151MZF	150.0	1V/1KHz	1.950	0.45
PDC0502181MZF	180.0	1V/1KHz	2.600	0.40
PDC0502221MZF	220.0	1V/1KHz	3.400	0.35
PDC0502271MZF	270.0	1V/1KHz	4.000	0.30
PDC0502331MZF	330.0	1V/1KHz	4.500	0.27
PDC0502391MZF	390.0	1V/1KHz	5.000	0.25
PDC0502471MZF	470.0	1V/1KHz	7.000	0.23
PDC0502561MZF	560.0	1V/1KHz	8.000	0.21

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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.

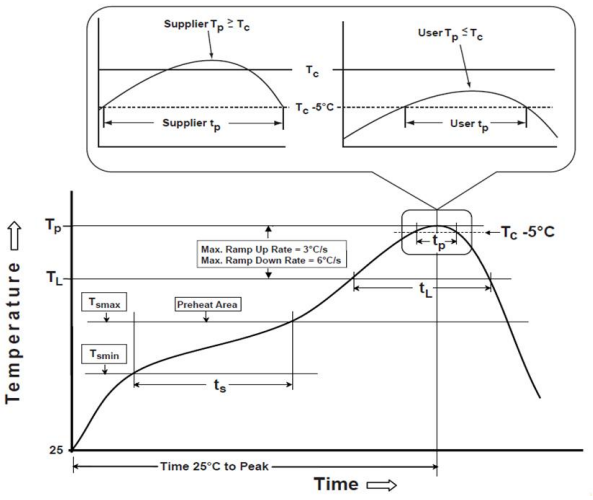
(b) 355°C tip temperature (Max.)

(c) Never contact the ceramic with the iron tip

(d) 1.0mm tip diameter (Max.)

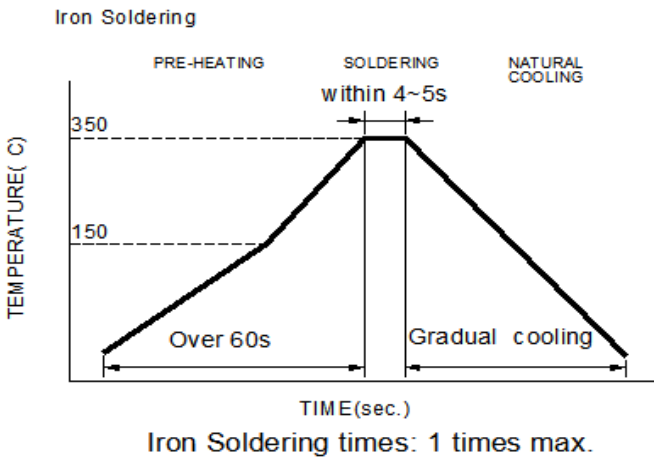
(e) Use a 20 watt soldering iron with tip diameter of 1.0mm

(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

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

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.

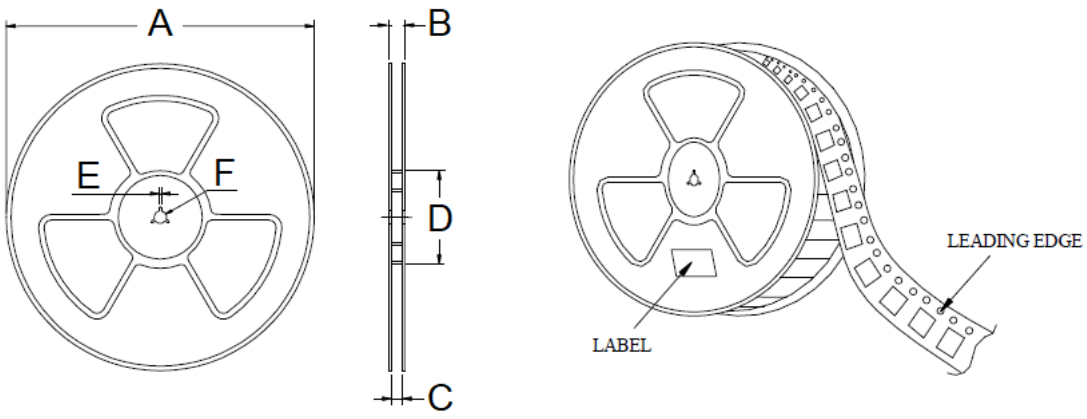
Table (1.2) Package Thickness/Volume and Classification Temperature (T_c)

	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.

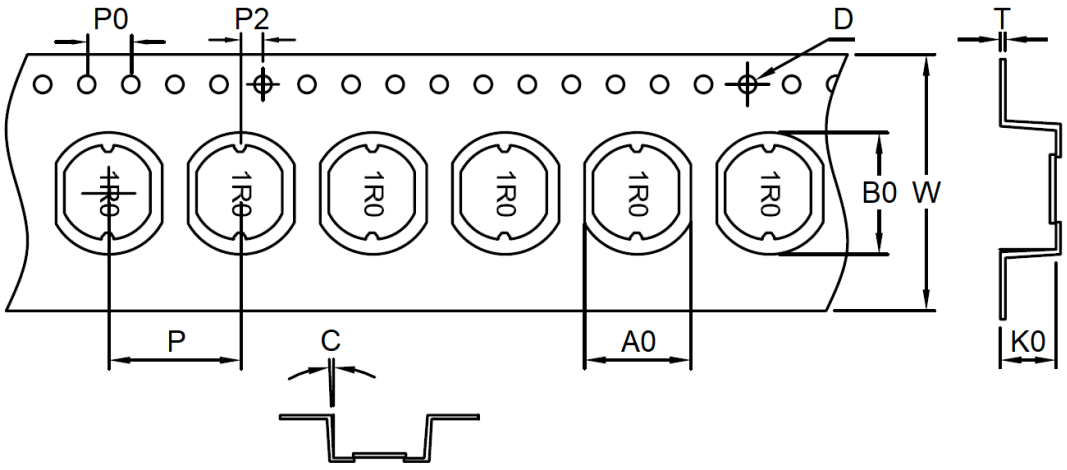
8. Packaging Information

8-1. Reel Dimension (Unit: mm)



Type	A	B	C	D	E	F
13”x12	330.00	18.40	12.40	100.00	2.30	R6.75

8-2. Tape Dimension (Unit: mm)



W	A0	B0	K0	P
12.00+0.30/-0.10	5.45±0.10	6.10±0.10	3.10±0.10	8.00±0.10
D	P0	P2	T	C
1.50+0.10/-0.00	4.00±0.10	2.00±0.10	0.35 Ref	3° Max

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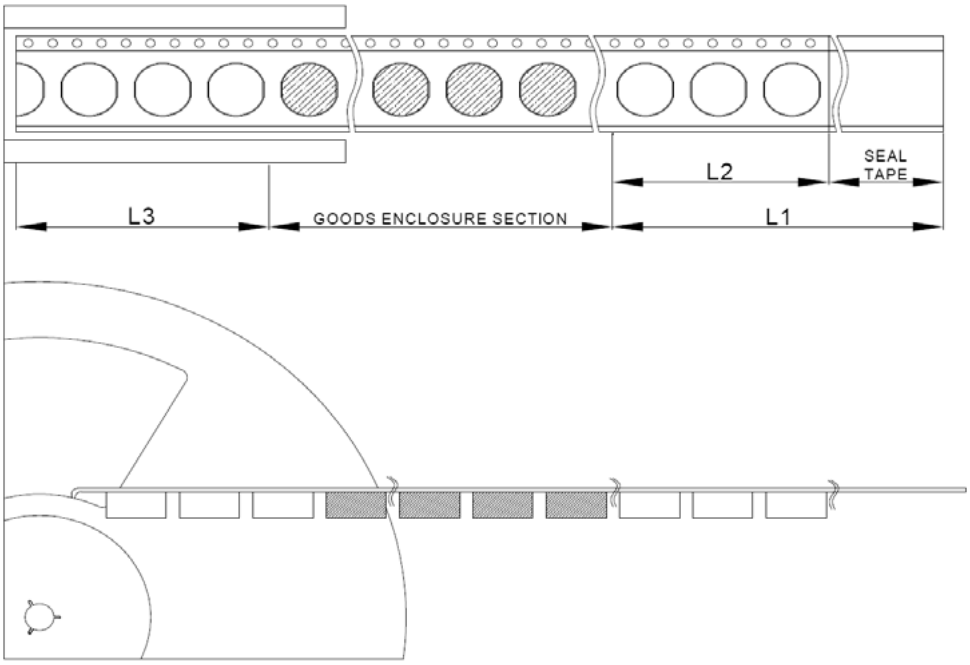
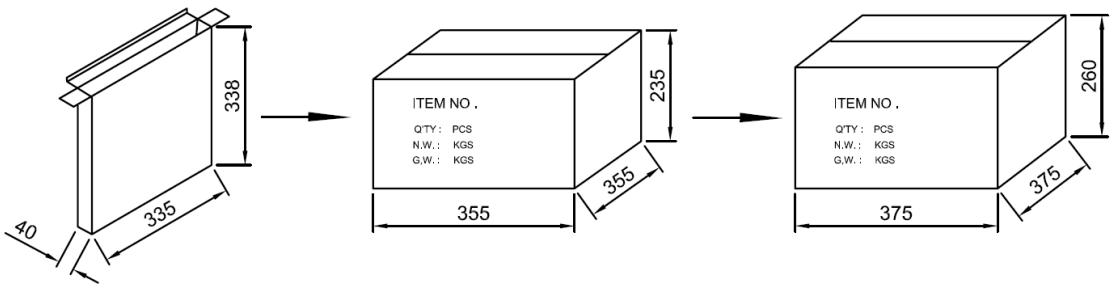


L1	LEADER SECTION LENGTH	400mm Min
L2	START CATTIER TAPE LENGTH	170mm Min
L3	TRAILER SECTION LENGTH	170mm Min
QUANTITY	2000 PCS	

8-3. Packaging Quantity (Unit: Pcs)

Chip/ Reel	4,000
Inner Carton	20,000
Outside Carton	20,000



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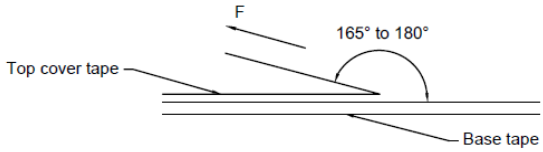
8-4. Tearing Off Force



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.