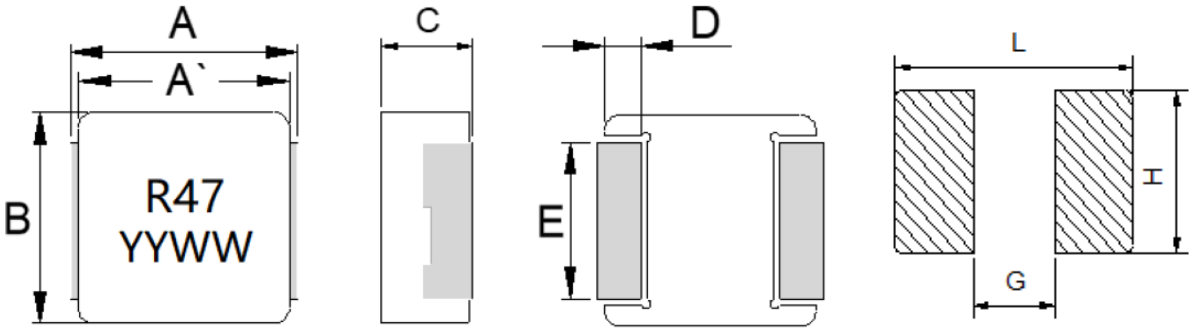
1. Part No. Expression

P I A Q 1 7 0 7 S P R 4 7 M N

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

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

2. Configuration & Dimensions (Unit: mm)



Recommended PCB Layout

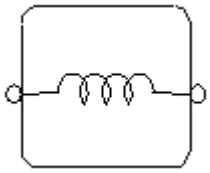
Note: 1. The above PCB layout reference only.

2. Recommend solder paste thickness at 0.17 mm and above.

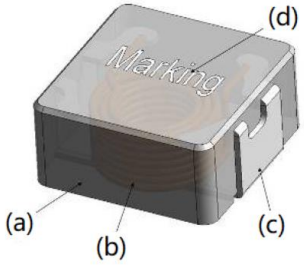
3. Marking: Top= Inductance Code, Bottom=YYWW (Year/World week), Black

A	A'	B	C	D	E	L	G	H
17.8±0.5	16.9±0.3	16.9±0.3	6.7±0.3	2.3±0.3	11.9±0.3	18.5 Ref	12.0 Ref	12.5 Ref

3. Schematic



4. Material List



(a) Core
(b) Wire
(c) Clip
(d) Ink

5. General Specifications

(a) Reliability test for this part meets AEC-Q200 standard.
(b) Operating Temp.: -55°C to +155°C (including self-temperature rise)
(c) Storage Temp.: -55°C to +155°C (on board)
(d) All test data referenced to 25°C ambient.
(e) Heat Rated Current (Irms) will cause the coil temperature rise approximately ΔT of 40°C.
(f) Saturation Current (Isat) will cause inductance L0 to drop approximately 30%.
(g) Rated Current: The lower value of Isat and Irms.
(h) Part Temperature (Ambient + Temp. Rise): Should not exceed 155°C under worst case operating conditions.
(i) Maximum Operating Voltage: 90V
(j) Storage Condition (Component in its packaging)
  i) Temperature: Less than 40°C
  ii) Humidity: Less than 60% RH

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

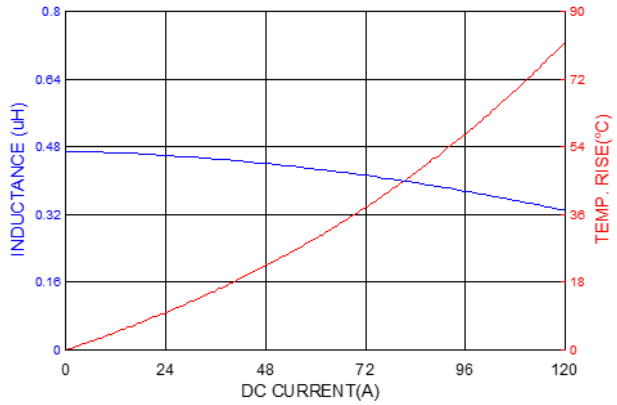
6. Electrical Characteristics

Part Number	Inductance (uH)@ 0A ±20%	Test Frequency	Irms (A)		Isat (A)		DCR (mΩ)	
			Typ	Max	Typ	Max	Typ	Max
PIAQ1707SPR47MN	0.47	1.0V/100KHz	60	55	110	100	0.7	0.9
PIAQ1707SPR56MN	0.56	1.0V/100KHz	56	50	80	70	0.81	0.97
PIAQ1707SP1R0MN	1.00	1.0V/100KHz	46	42	50	45	1.06	1.3
PIAQ1707SP1R5MN	1.50	1.0V/100KHz	39	35	46	40	1.5	1.8
PIAQ1707SP1R8MN	1.80	1.0V/100KHz	35	32	40	34	1.7	2.0
PIAQ1707SP2R2MN	2.20	1.0V/100KHz	32	30	35	32	1.8	2.2
PIAQ1707SP3R3MN	3.30	1.0V/100KHz	30	28	32	29	2.7	3.3
PIAQ1707SP4R7MN	4.70	1.0V/100KHz	28	26	29	26	3.7	4.5
PIAQ1707SP6R8MN	6.80	1.0V/100KHz	24	22	25	22	6.0	7.2
PIAQ1707SP100MN	10.0	1.0V/100KHz	21	19	22	19	9.2	10.6
PIAQ1707SP150MN	15.0	1.0V/100KHz	16	14	16	14	12.8	15.5
PIAQ1707SP220MN	22.0	1.0V/100KHz	13.5	11.5	13.5	11.5	20.5	24
PIAQ1707SP330MN	33.0	1.0V/100KHz	12	10	12	10	32	37
PIAQ1707SP470MN	47.0	1.0V/100KHz	9.5	8.0	9.5	8.0	40	47
PIAQ1707SP680MN	68.0	1.0V/100KHz	8.0	6.5	8.5	7.2	66	76
PIAQ1707SP820MN	82.0	1.0V/100KHz	6.5	5.7	8.0	6.5	69	83

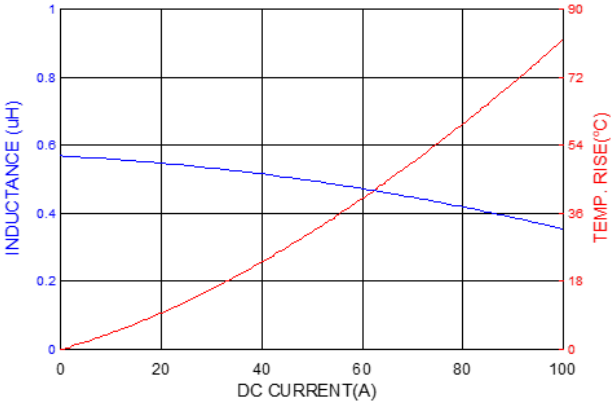
NOTE: Specifications subject to change without notice. Please check our website for latest information.

7. Characteristics Curve

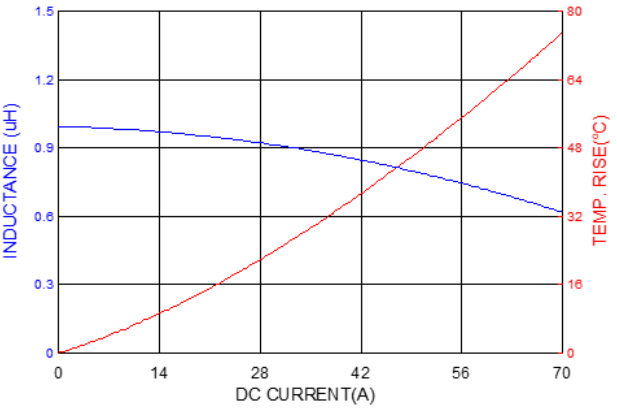
PIAQ1707SPR47MN



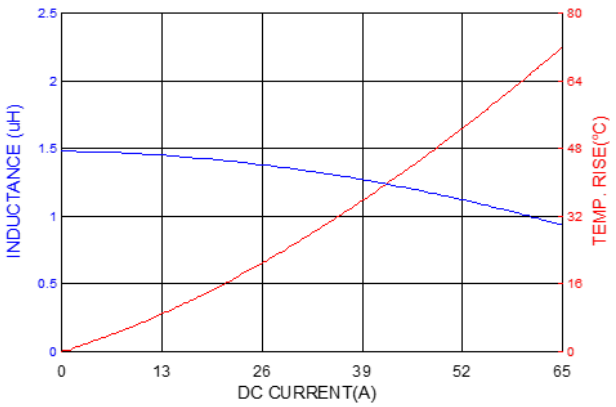
PIAQ1707SPR56MN



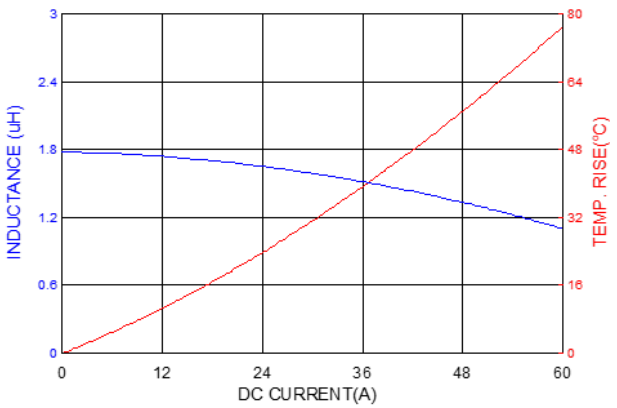
PIAQ1707SP1R0MN



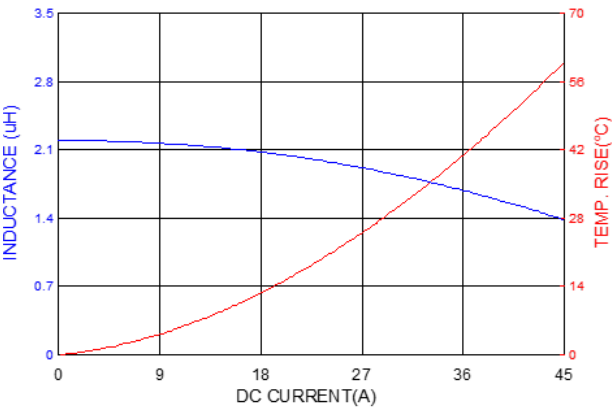
PIAQ1707SP1R5MN



PIAQ1707SP1R8MN



PIAQ1707SP2R2MN



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

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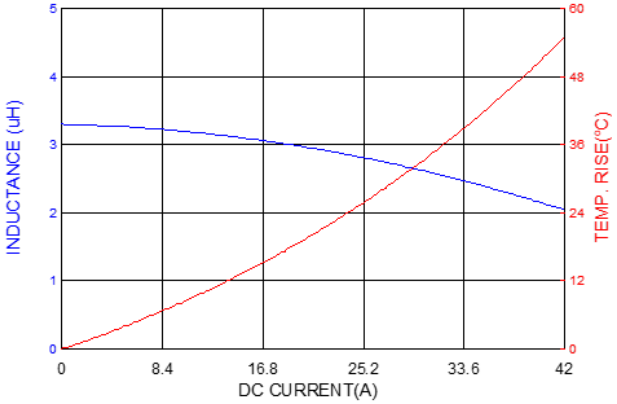
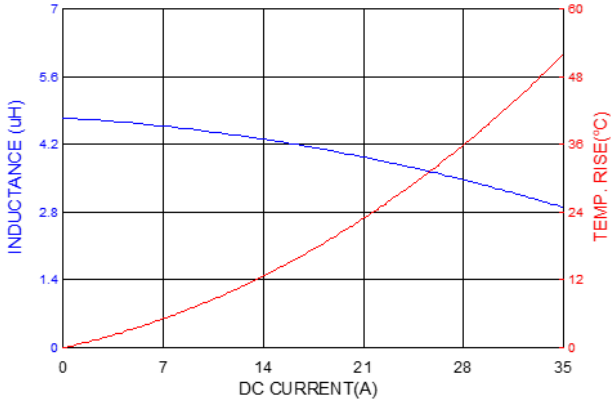
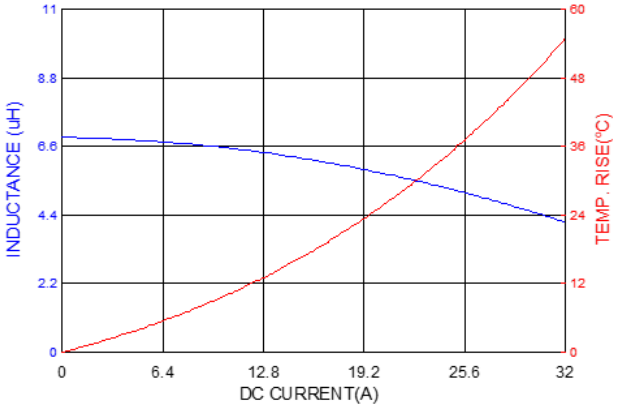


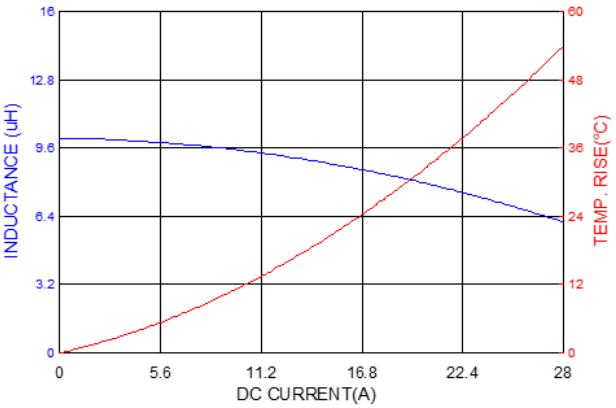
PIAQ1707SP4R7MN



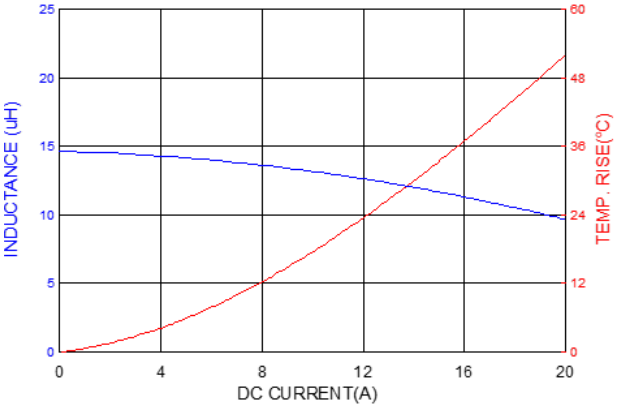
PIAQ1707SP6R8MN



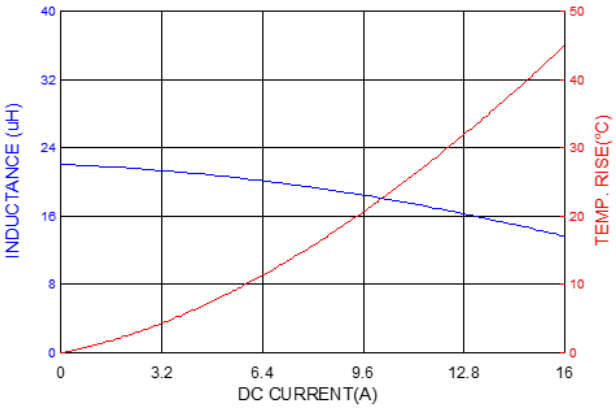
PIAQ1707SP100MN



PIAQ1707SP150MN

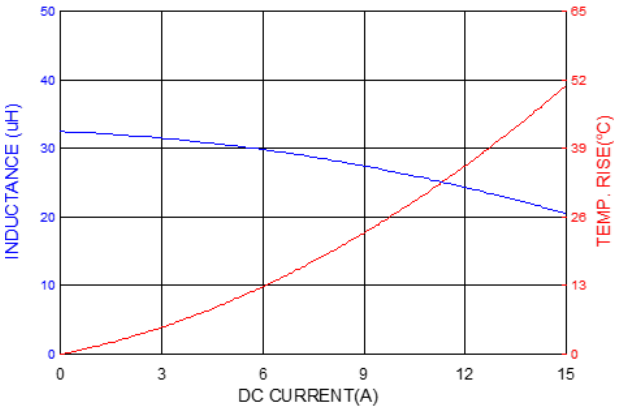


PIAQ1707SP220MN

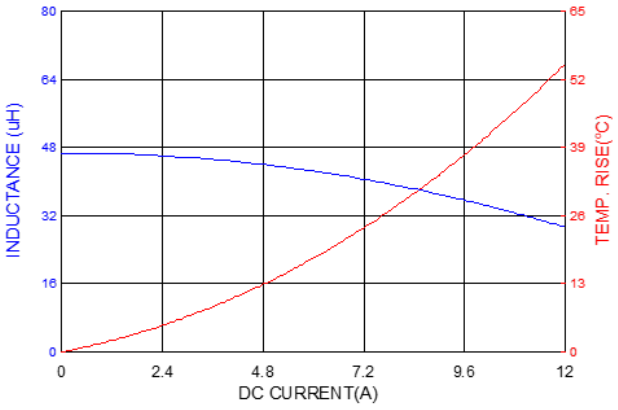


NOTE: Specifications subject to change without notice. Please check our website for latest information.

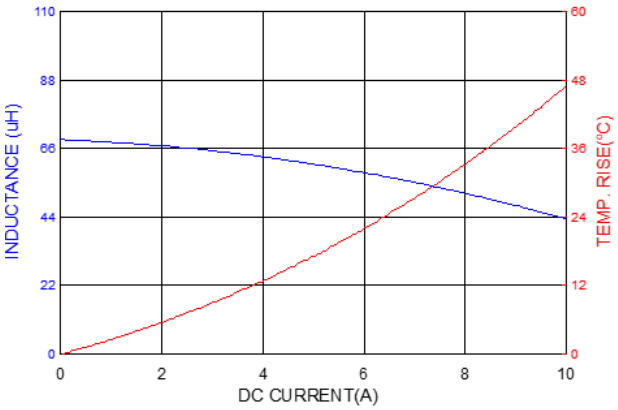
PIAQ1707SP330MN



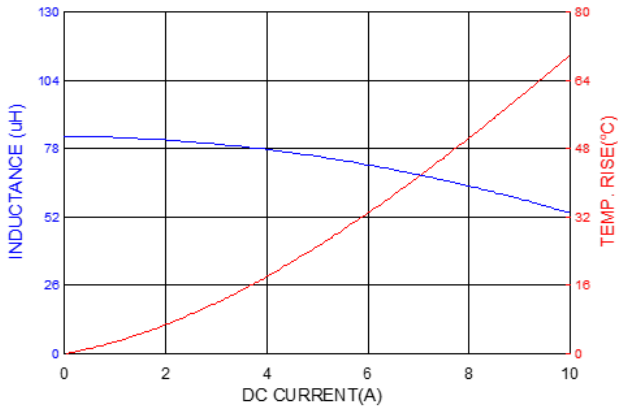
PIAQ1707SP470MN



PIAQ1707SP680MN



PIAQ1707SP820MN



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

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-020F).

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.

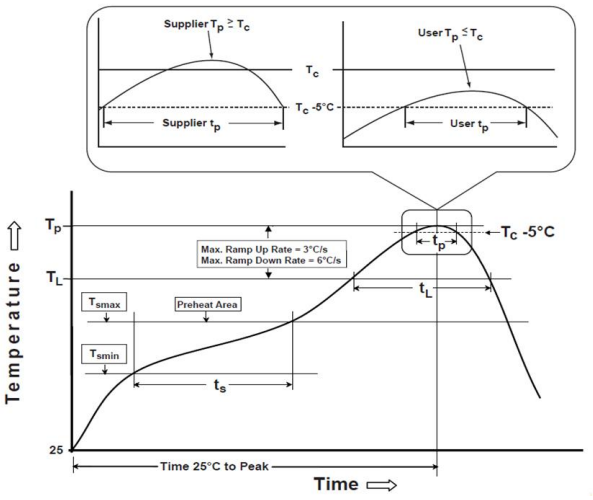
(b) 350°C tip temperature (Max.)

(c) Never contact the ceramic with the iron tip

(d) 1.0mm tip diameter (Max.)

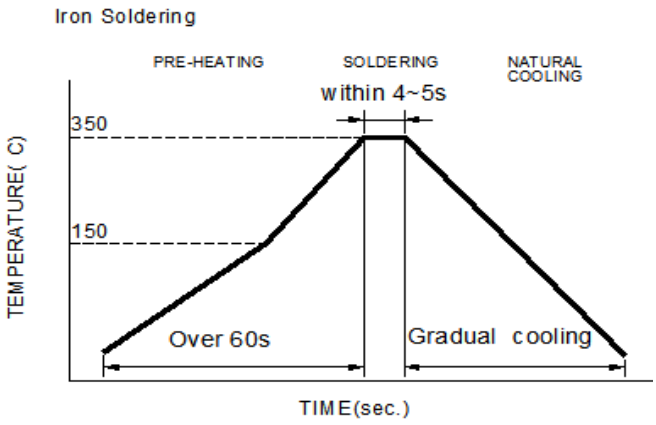
(e) Use a 20 watt soldering iron with tip diameter of 1.0mm

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



Reflow times: 3 times Max

Figure 1: IR Soldering Reflow



Iron Soldering times：1 times 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.**

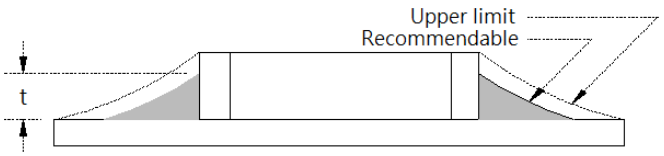
Table (1.2) Package Thickness/Volume and Classification Temperature (T_c)

	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-020F.

8-3. Soldering Volume

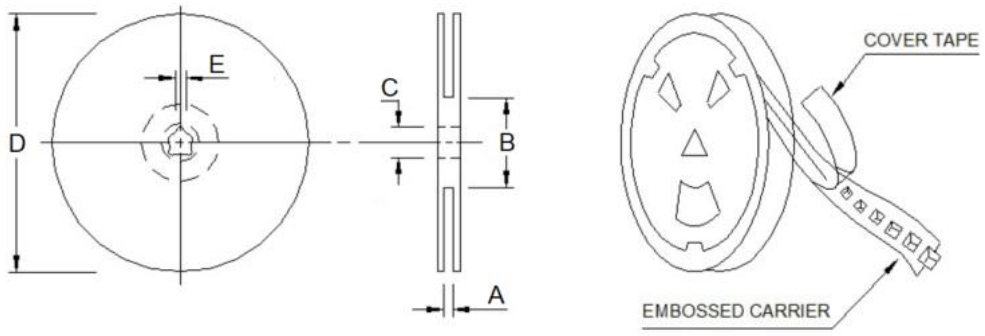
Accordingly increasing the solder volume, the mechanical stress to product is also increased. Exceeding solder volume may cause the failure of mechanical or electrical performance. Solder shall be used not to be exceeded as shown in the Figure below. Minimum fillet height = soldering thickness + 25% product height.



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

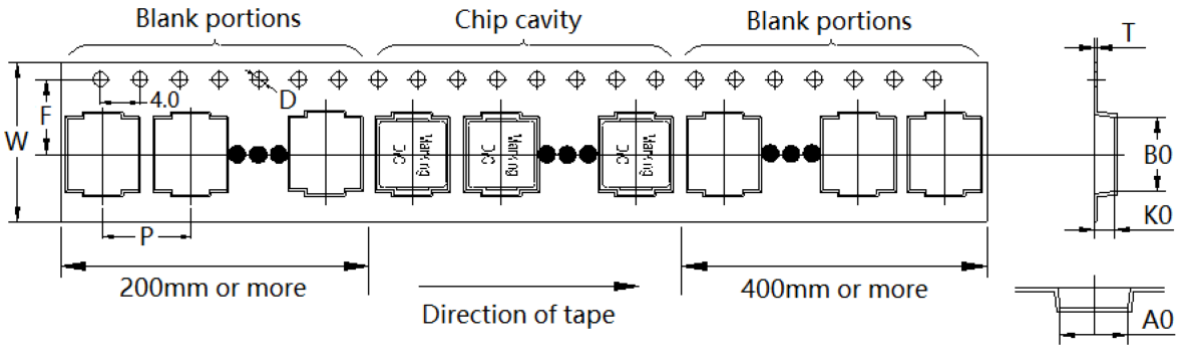
9. Packaging Information

9-1. Reel Dimension (Unit: mm)



Type	A	B	C	D	E
13”x32mm	32.4 Ref	100.0 Ref	13.5 Ref	330.0 Ref	2.0 Ref

9-2. Tape Dimension (Unit: mm)



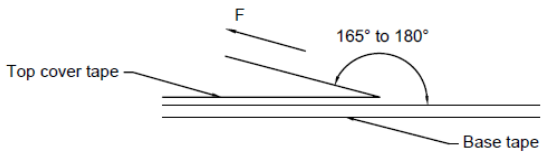
B0	A0	K0	P
18.50±0.10	17.50±0.10	7.50±0.10	24.00±0.10
W	F	T	D
32.00±0.30	14.20±0.10	0.50±0.05	1.50±0.10

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

9-3. Packaging Quantity (Unit: Pcs)

Chip/ Reel	200
Inner Box	200
Carton	800

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) Products meet IPC/JEDEC J-STD-020F standard-MSL, level 1.

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

(c) 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.