

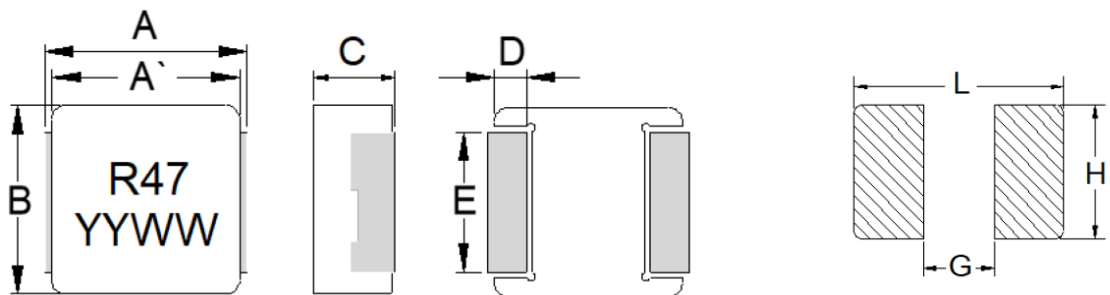
1. Part No. Expression

PIA 1707 SP R47 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)



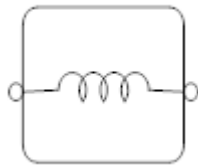
Recommended PCB Layout

- 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

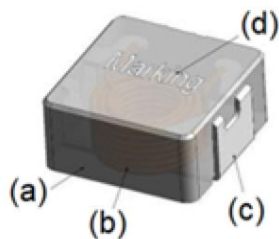
A	A'	B	C	D
17.8±0.5	16.9±0.3	16.9±0.3	6.7±0.3	2.3±0.3
E	L	G	H	-
11.9±0.3	18.5 Ref	12.0 Ref	12.5 Ref	-

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

3. Schematic



4. Material List



- (a) Core
- (b) Wire
- (c) Terminal
- (d) 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) All test data referenced to 25°C ambient.
- (d) Heat Rated Current (Irms) will cause the coil temperature rise approximately ΔT of 40°C. (keep 1min)
- (e) Saturation Current (Isat) will cause inductance L_0 to drop approximately 30%.
- (f) Rated DC Current: The lower value of Irms and Isat.
- (g) Part Temperature (Ambient + Temp. Rise): Should not exceed 125°C under worst case operating conditions.
- (h) Maximum Operating Voltage: 80V
- (i) Storage Condition (Component in its packaging)
 - i) Temperature: Less than 40°C
 - ii) Humidity: Less than 60% RH

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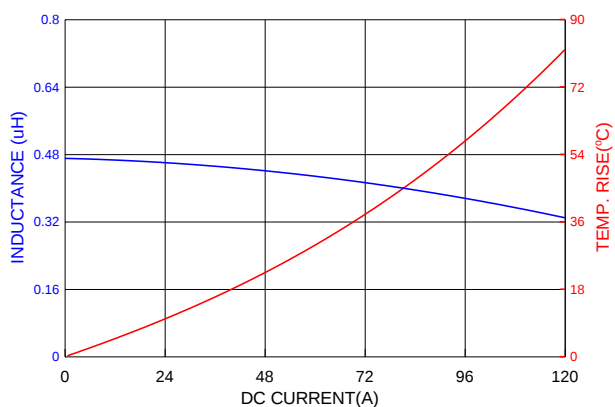
6. Electrical Characteristics

Part Number	Inductance (μ H) @0A $\pm 20\%$	Test Frequency	Irms (A)		Isat (A)		DCR (m Ω)	
			Typ	Max	Typ	Max	Typ	Max
PIA1707SPR47MN	0.47	1.0V/100KHz	60.0	55.0	110	100	0.70	0.90
PIA1707SPR56MN	0.56	1.0V/100KHz	56.0	50.0	80.0	70.0	0.81	0.97
PIA1707SP1R0MN	1.00	1.0V/100KHz	46.0	42.0	50.0	45.0	1.06	1.30
PIA1707SP1R5MN	1.50	1.0V/100KHz	39.0	35.0	46.0	40.0	1.50	1.80
PIA1707SP1R8MN	1.80	1.0V/100KHz	35.0	32.0	40.0	34.0	1.70	2.00
PIA1707SP2R2MN	2.20	1.0V/100KHz	32.0	30.0	35.0	32.0	1.80	2.20
PIA1707SP3R3MN	3.30	1.0V/100KHz	30.0	28.0	32.0	29.0	2.70	3.30
PIA1707SP4R7MN	4.70	1.0V/100KHz	28.0	26.0	29.0	26.0	3.70	4.50
PIA1707SP6R8MN	6.80	1.0V/100KHz	24.0	22.0	25.0	22.0	6.00	7.20
PIA1707SP100MN	10.0	1.0V/100KHz	21.0	19.0	22.0	19.0	9.20	10.6
PIA1707SP150MN	15.0	1.0V/100KHz	16.0	14.0	16.0	14.0	12.8	15.5
PIA1707SP220MN	22.0	1.0V/100KHz	13.5	11.5	13.5	11.5	20.5	24.0
PIA1707SP330MN	33.0	1.0V/100KHz	12.0	10.0	12.0	10.0	32.0	37.0
PIA1707SP470MN	47.0	1.0V/100KHz	9.50	8.00	9.50	8.00	40.0	47.0
PIA1707SP820MN	82.0	1.0V/100KHz	6.50	5.70	8.00	6.50	69.0	83.0

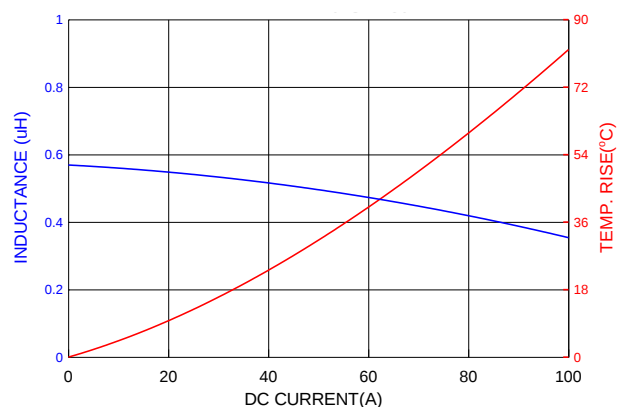
NOTE: Specifications subject to change without notice. Please check our website for latest information.

7. Characteristics Curve

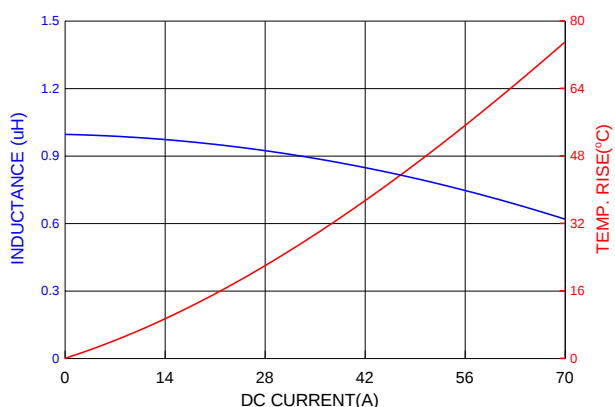
PIA1707SPR47MN



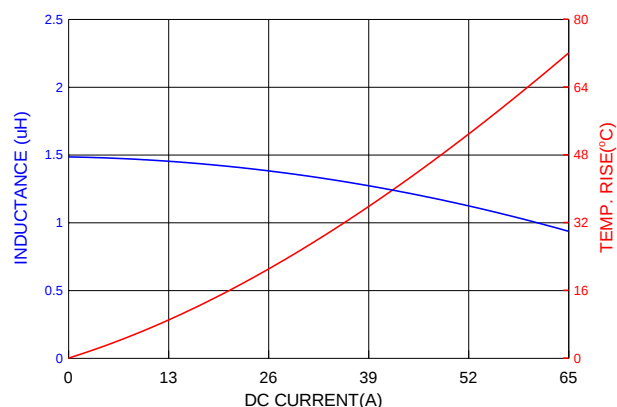
PIA1707SPR56MN



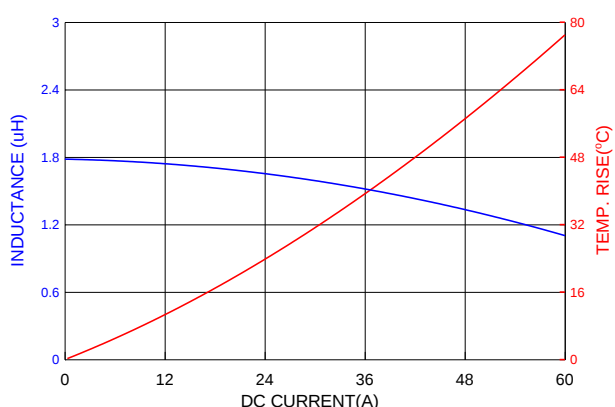
PIA1707SP1R0MN



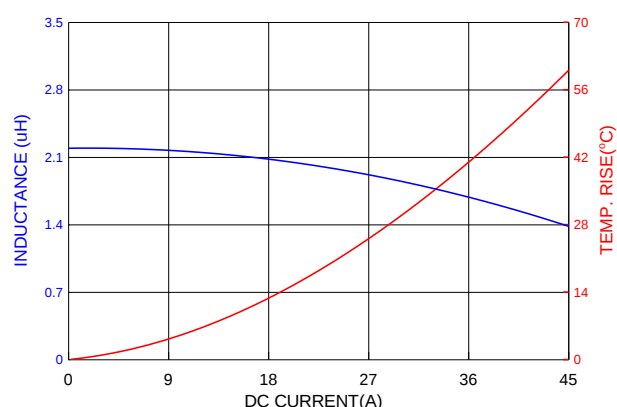
PIA1707SP1R5MN



PIA1707SP1R8MN

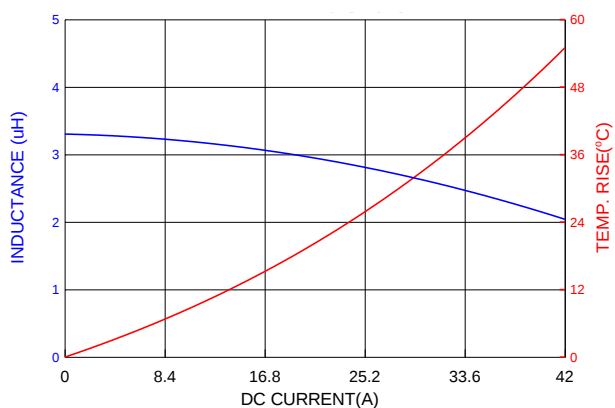


PIA1707SP2R2MN

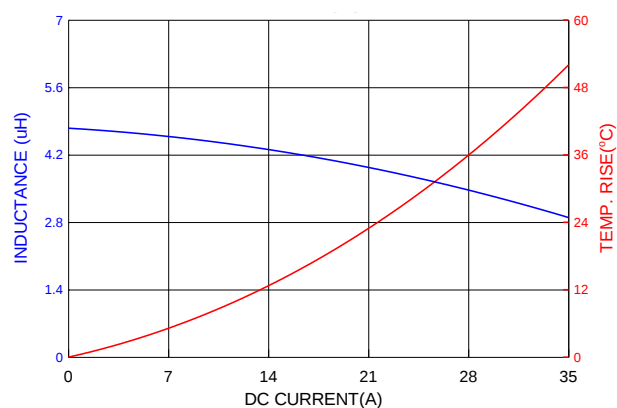


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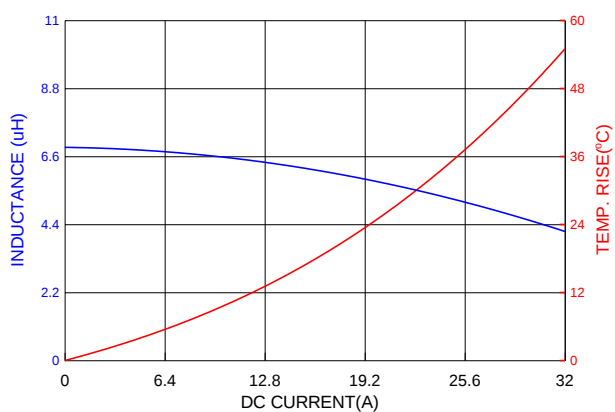
PIA1707SP3R3MN



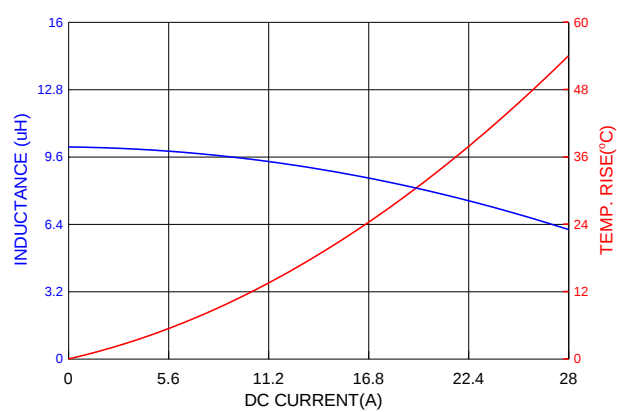
PIA1707SP4R7MN



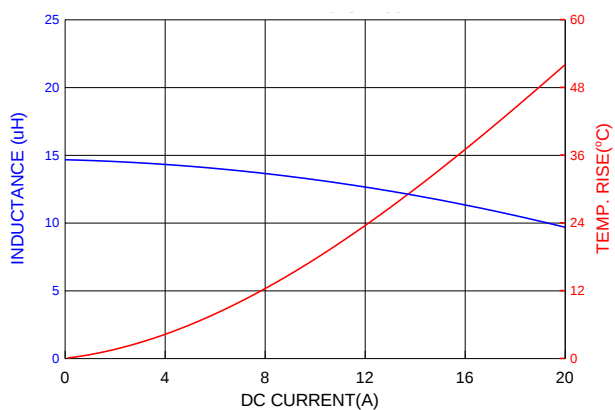
PIA1707SP6R8MN



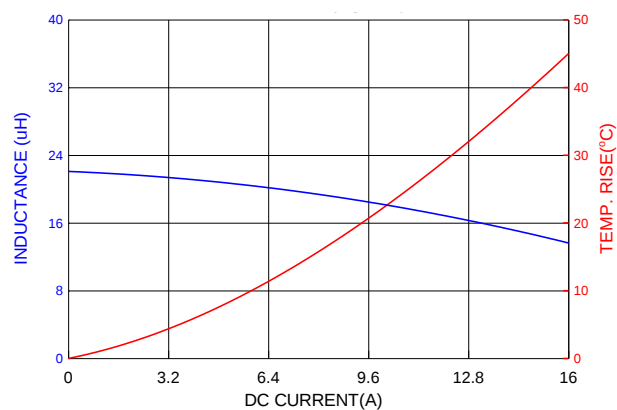
PIA1707SP100MN



PIA1707SP150MN

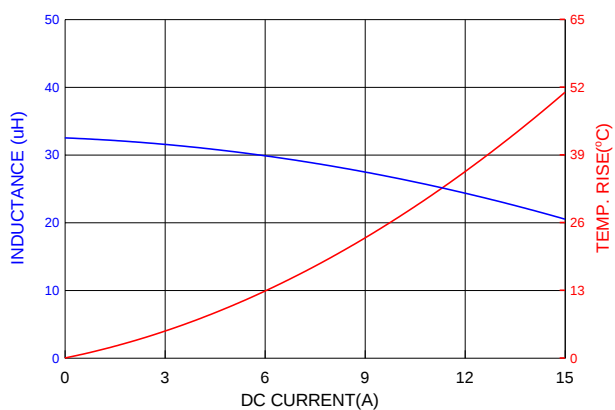


PIA1707SP220MN

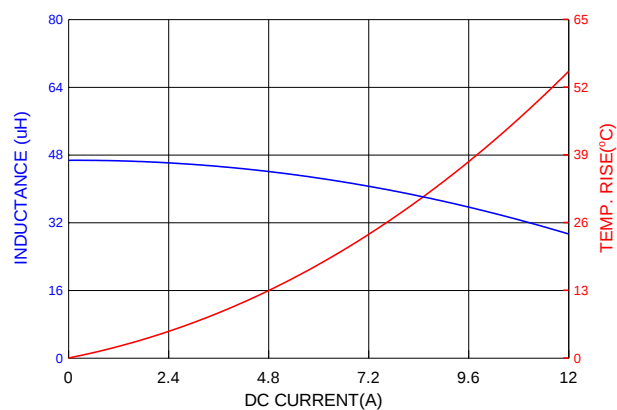


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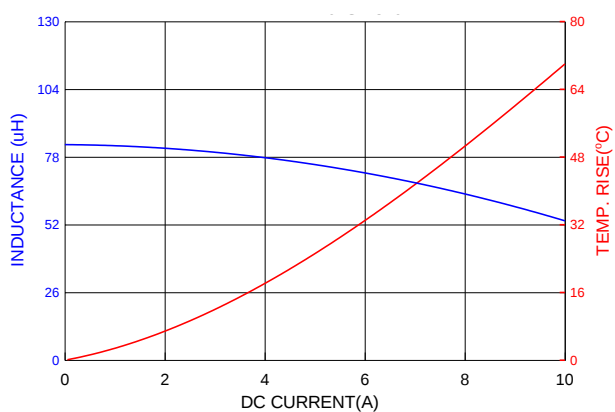
PIA1707SP330MN



PIA1707SP470MN



PIA1707SP820MN



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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

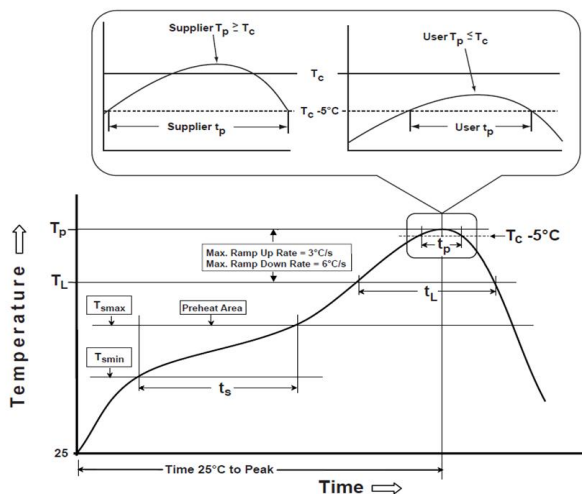
Recommended temperature profiles for lead free re-flow soldering in Figure 1, Table 1.1 & 1.2 (J-STD-020E).

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).

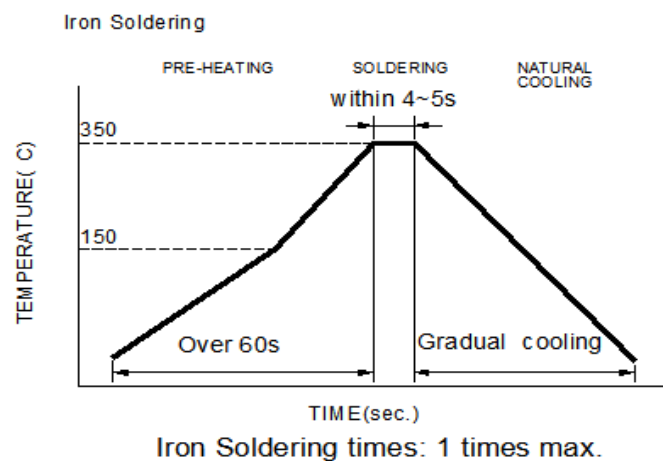
Note:

- Preheat circuit and products to 150°C.
- 355°C tip temperature (Max.)
- Never contact the ceramic with the iron tip
- 1.0mm tip diameter (Max.)
- Use a 20 watt soldering iron with tip diameter of 1.0mm
- 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})	150°C
-Temperature Max (T_{smax})	200°C
-Time (t_s) from (T_{smin} to T_{smax})	60-120seconds
Ramp-up rate (T_L to T_p)	3°C /second max.
Liquids temperature (T_L)	217°C
Time (t_L) maintained above T_L	60-150 seconds
Classification temperature (T_c)	See Table (1.2)
Time (t_p) at $T_c - 5^\circ\text{C}$ (T_p should be equal to or less than T_c .)	* < 30 seconds
Ramp-down rate (T_p to T_L)	6°C /second max.
Time 25°C to peak temperature	8 minutes max.

T_p: maximum peak package body temperature, **T_c**: the classification temperature.

For user (customer) **T_p** should be equal to or less than **T_c**.

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

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

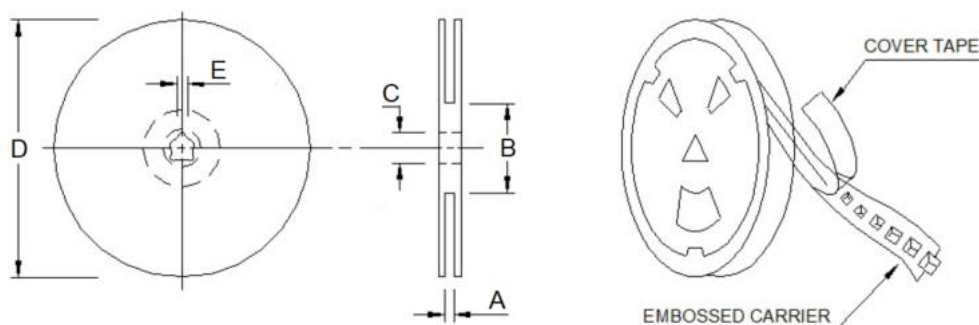
	Package Thickness	Volume mm ³ <350	Volume mm ³ 350-2000	Volume mm ³ >2000
PB-Free Assembly	<1.6mm	260°C	260°C	260°C
	1.6-2.5mm	260°C	250°C	245°C
	≥2.5mm	250°C	245°C	245°C

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

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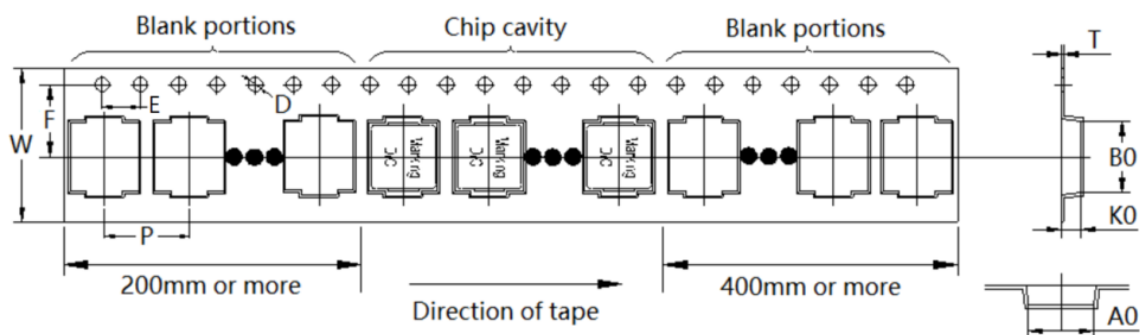
9. Packaging Information

9-1. Reel Dimension (Unit: mm)



Type	A	B	C	D	E
13"x32mm	32.4+2.0/-0.0	100.0±2.0	13.0+0.5/-0.2	330.0	2.0±0.5

9-2. Tape Dimension (Unit: mm)



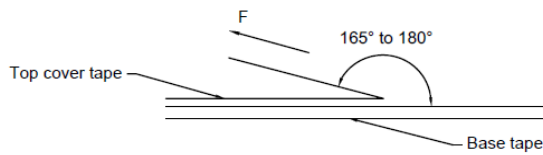
B0	A0	K0	P	W
18.50±0.10	17.50±0.10	7.50±0.10	24.00±0.10	32.00±0.30
F	T	D	E	-
14.20±0.10	0.50±0.05	1.50±0.10	4.00	-

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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) 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.

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