

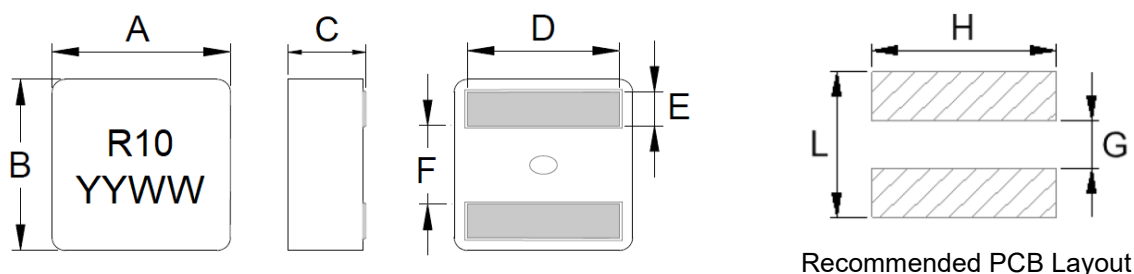
1. Part No. Expression

P I F Q 0 4 0 2 A R 1 0 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)

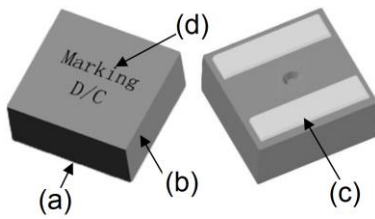


- Note:
1. The above PCB layout reference only.
 2. Recommend solder paste thickness at 0.12 mm and above.
 3. Marking: Top= Inductance Code, Bottom=YYWW (Year/World week), Black

A	B	C	D	E
4.10±0.20	4.10±0.20	1.90±0.20	3.40±0.30	0.88±0.20
F	L	G	H	-
1.60±0.25	3.40 Ref	1.40 Ref	3.80 Ref	-

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

3. Material List



NO	Items
(a)	Core
(b)	Wire
(c)	Solder
(d)	Ink

4. 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 20°C & 40°C.
- (f) Saturation Current (Isat) will cause inductance L0 to drop approximately 30%.
- (g) Rated DC Current: The lower value of Irms and Isat.
- (h) Part Temperature (Ambient + Temp. Rise): Should not exceed 155°C under worst case operating conditions.
- (i) Maximum Operating Voltage:
 - i) 15V (ref 1.2uH and above)
 - ii) 40V (ref 1.2uH and below)
- (j) Storage Condition (Component in its packaging)
 - i) Temperature: Less than 40°C
 - ii) Humidity: Less than 60% RH

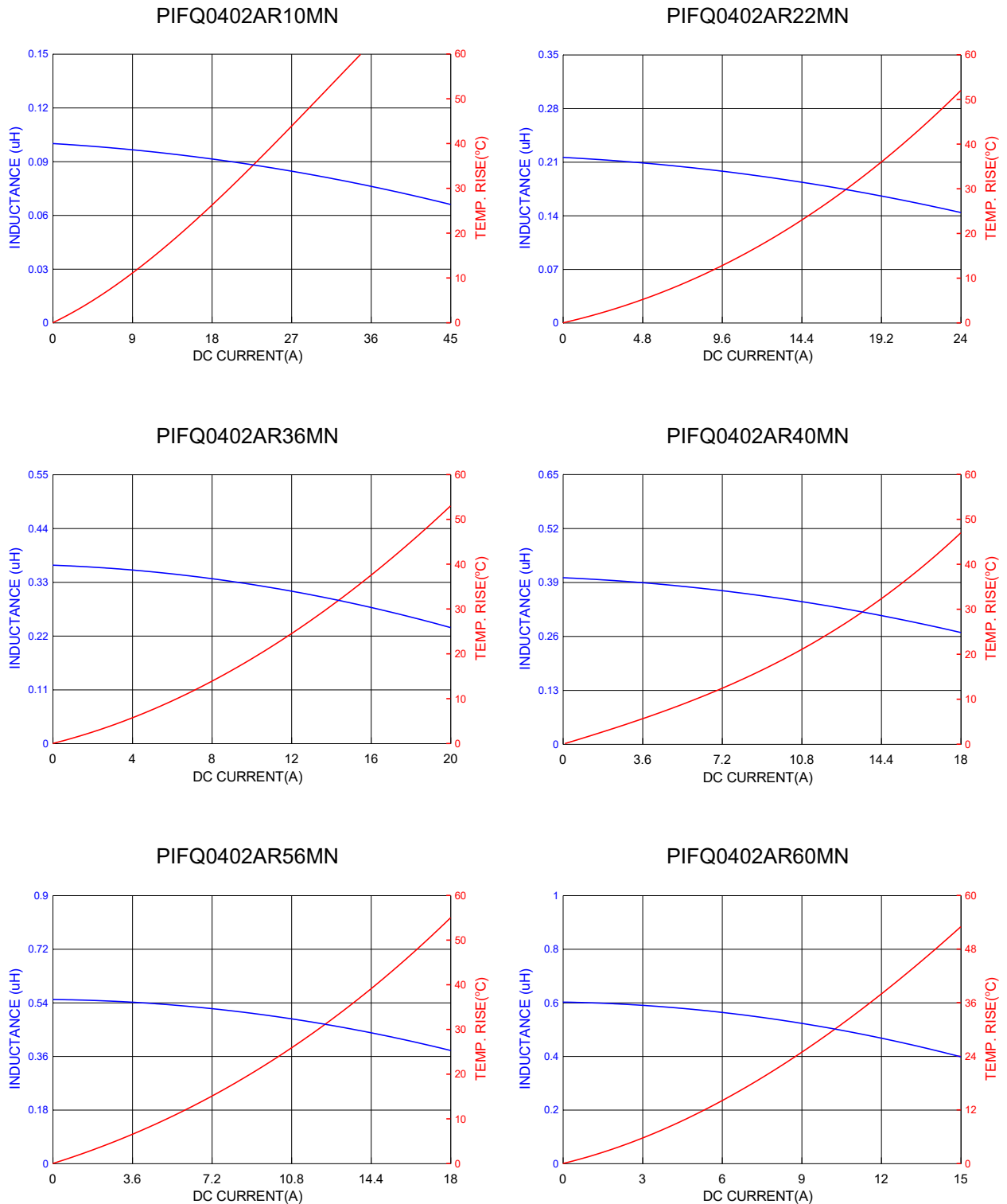
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5. Electrical Characteristics

Part Number	Inductance (μ H) @0A $\pm 20\%$	Test Frequency	I _{rms} (A) Typ		I _{sat} (A)		DCR (m Ω)	
			20°C rise	40°C rise	Typ	Max	Typ	Max
PIFQ0402AR10MN	0.10	0.1V/100KHz	13.5	18.0	38.0	33.0	2.2	2.42
PIFQ0402AR22MN	0.22	0.1V/100KHz	13.0	16.8	19.5	18.8	4.1	4.6
PIFQ0402AR36MN	0.36	0.1V/100KHz	11.0	14.5	17.0	15.0	5.6	6.3
PIFQ0402AR40MN	0.40	0.1V/100KHz	10.0	14.0	15.5	13.5	6.9	7.73
PIFQ0402AR56MN	0.56	0.1V/100KHz	8.5	12.0	14.0	12.6	8.4	9.3
PIFQ0402AR60MN	0.60	0.1V/100KHz	8.0	11.7	13.7	12.3	8.6	9.52
PIFQ0402AR72MN	0.72	0.1V/100KHz	7.6	10.5	12.0	10.6	10.4	11.6
PIFQ0402A1R0MN	1.00	0.1V/100KHz	6.8	9.6	9.6	8.8	13.3	14.6
PIFQ0402A1R2MN	1.20	0.1V/100KHz	6.6	9.0	9.0	7.8	16.2	17.9
PIFQ0402A1R5MN	1.50	0.1V/100KHz	5.8	7.6	8.0	7.4	21.0	23.5
PIFQ0402A1R8MN	1.80	0.1V/100KHz	5.2	7.0	7.5	7.0	25.0	28.0
PIFQ0402A2R2MN	2.20	0.1V/100KHz	4.6	5.6	6.5	6.0	35.2	38.7

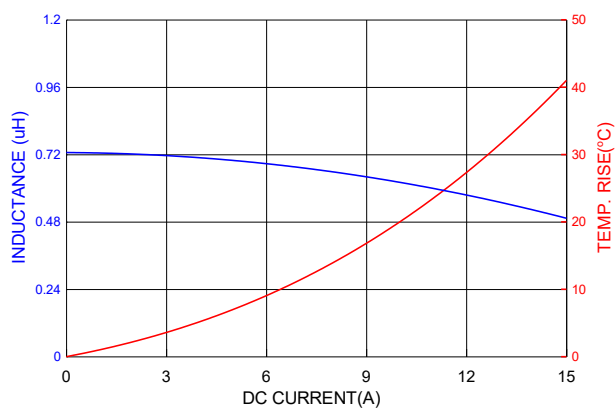
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6. Characteristics Curve

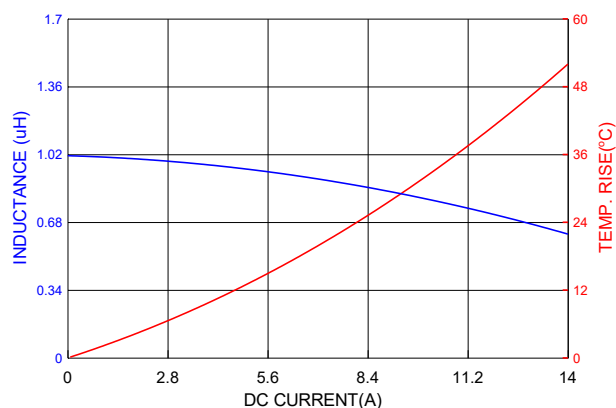


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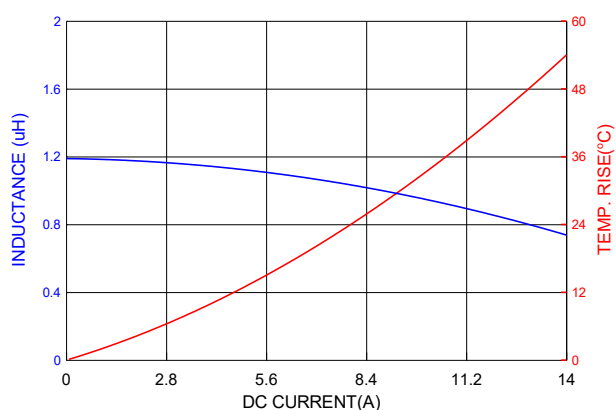
PIFQ0402AR72MN



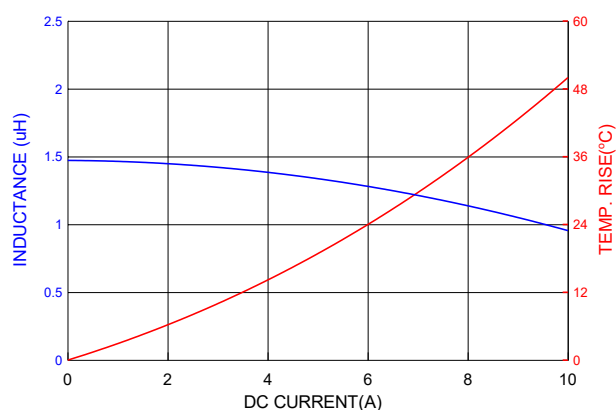
PIFQ0402A1R0MN



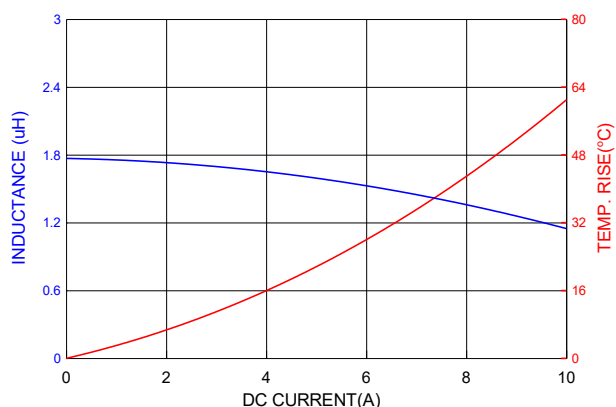
PIFQ0402A1R2MN



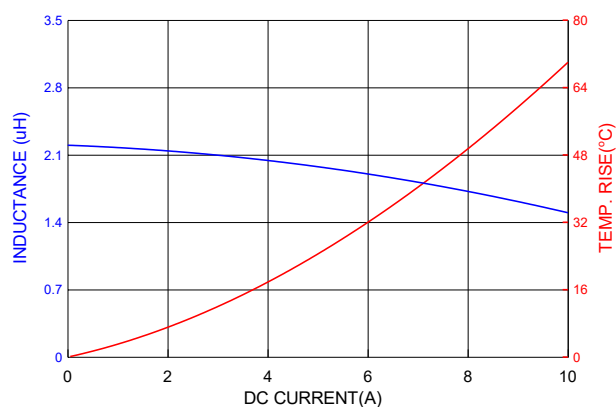
PIFQ0402A1R5MN



PIFQ0402A1R8MN



PIFQ0402A2R2MN



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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

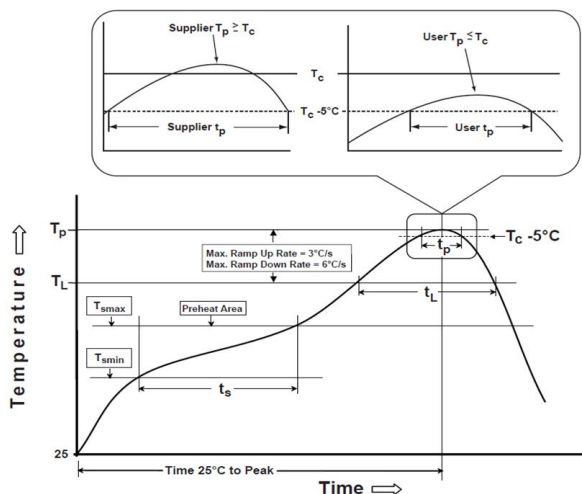
Recommended temperature profiles for lead free re-flow soldering in Figure 1, Table 1.1 & 1.2 (J-STD-020E).

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).

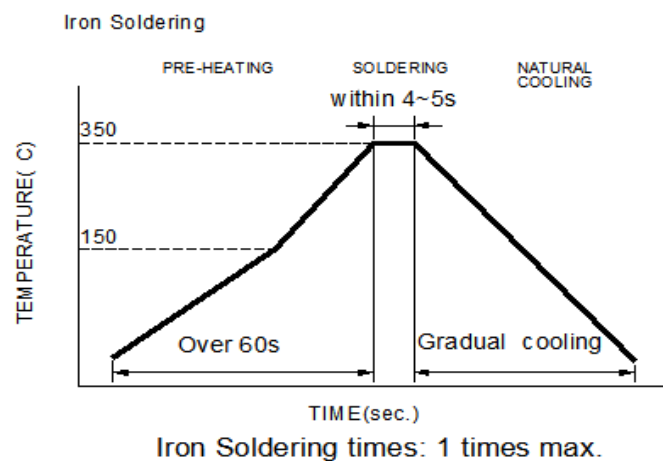
Note:

- 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)

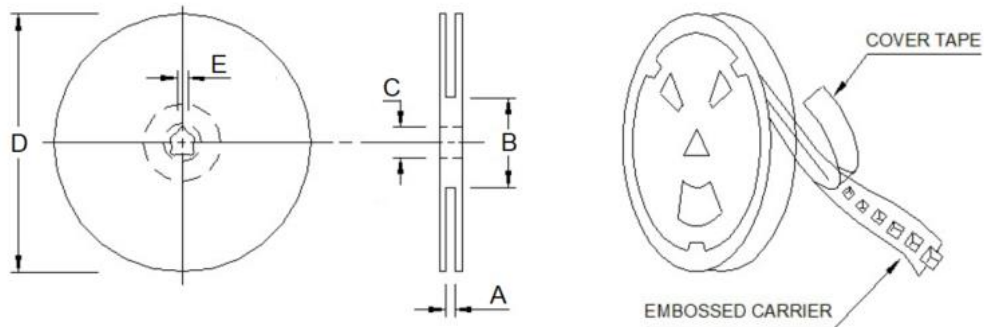
	Package Thickness	Volume mm ³ <350	Volume mm ³ 350-2000	Volume mm ³ >2000
PB-Free Assembly	<1.6mm	260°C	260°C	260°C
	1.6-2.5mm	260°C	250°C	245°C
	≥2.5mm	250°C	245°C	245°C

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

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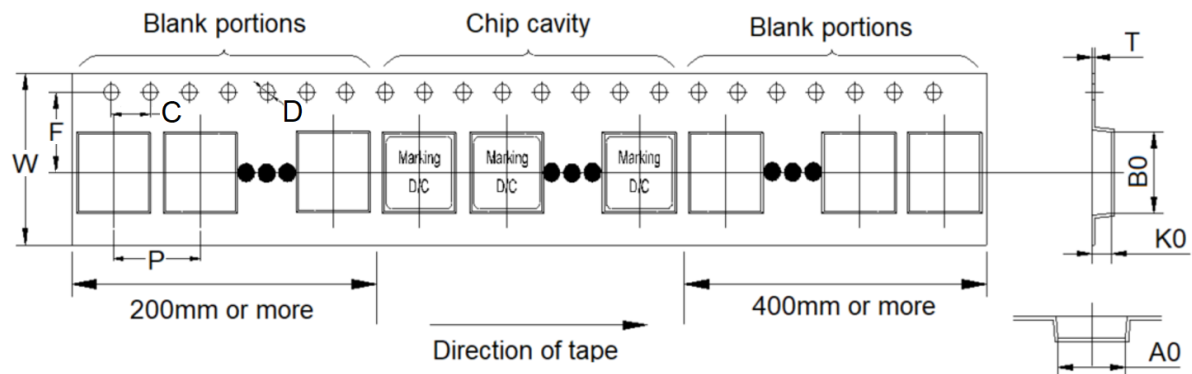
8. Packaging Information

8-1. Reel Dimension (Unit: mm)



Type	A	B	C	D	E
13"x12mm	12.4+2.0/-0.0	100.0±2.0	13.0+0.5/-0.2	330.0	2.0±0.5

8-2. Tape Dimension (Unit: mm)



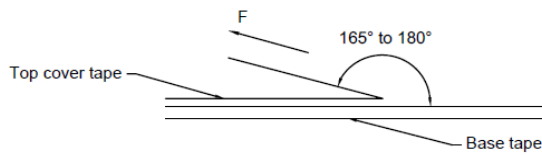
A0	B0	K0	P	W
4.40±0.10	4.40±0.10	2.30±0.10	8.00±0.10	12.00±0.30
F	T	D	C	-
5.50±0.10	0.35±0.10	1.50±0.10	4.00	-

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8-3. Packaging Quantity (Unit: Pcs)

Chip/ Reel	3,000
Inner Box	6,000
Carton	24,000

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.

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