

FD-4030-15A-(C1~C5)-C

Features / Applications :

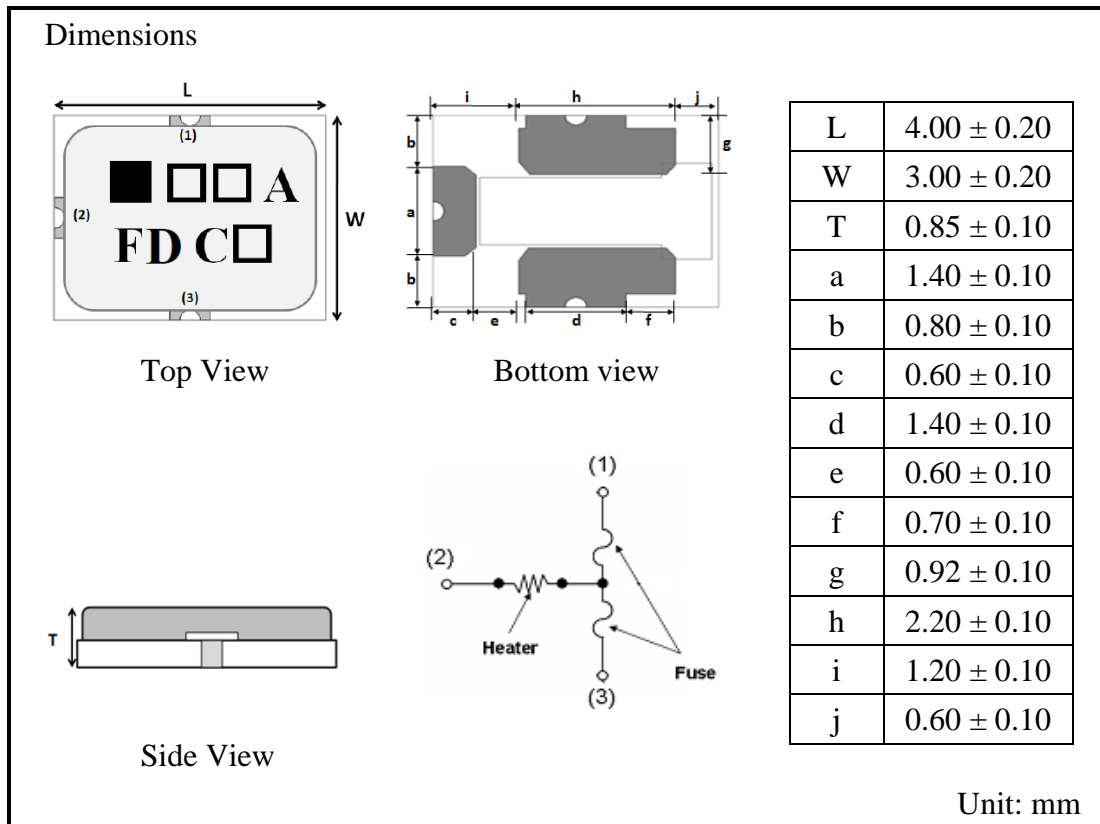
- OverCurrent Protection: Protect batteries from abnormal overcurrent behavior.
- OverVoltage Protection: Protect batteries from abnormal overvoltage behavior.
- Surface mountable fuse
- Halogen free
- Fast response time
- UL certificated: E314624 / TUV file number: TA50201483

Electrical Specifications :

Characteristics	Feature
Rated Voltage(*1)	36VDC
Rated Breaking Capacity	50A
Re-flow Temp.(MAX)	260°C
Fuse Resistance(Typical)	1~3mΩ
Heater Resistance	C1: 0.63~1.35Ω
	C2: 2.2~3.3Ω
	C3: 5.5~8.4Ω
	C4: 10.4~15.8Ω
	C5: 17.9~29.1Ω
Operating Voltage	C1: 3.00~4.50V
	C2: 5.00~9.00V
	C3: 7.40~13.80V
	C4: 10.50~19.60V
	C5: 14.40~23.50V

Note:

1. Maximum voltage is not the operating voltage for the heater.

Outline Drawing :

Type Designation :

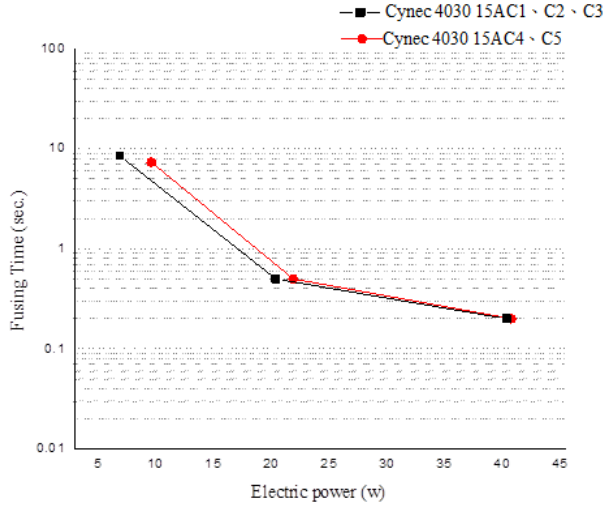
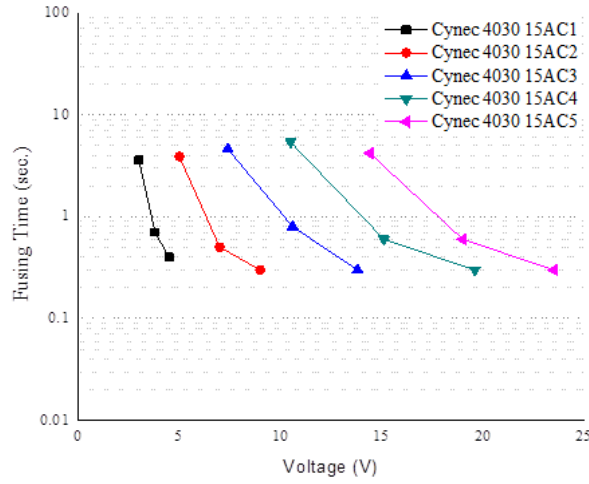
FD - 4030 - 15A - C□ - C
 (1) (2) (3) (4) (5)

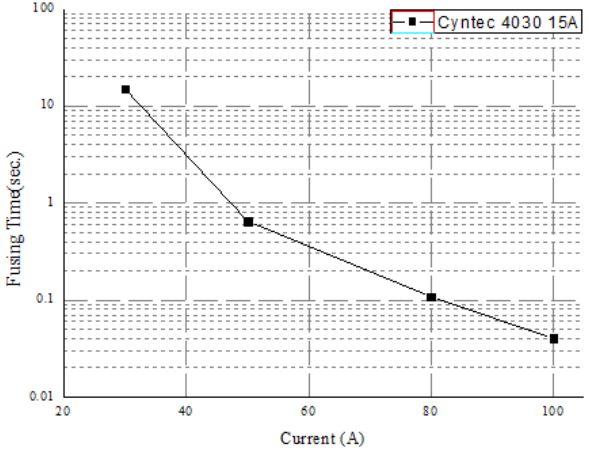
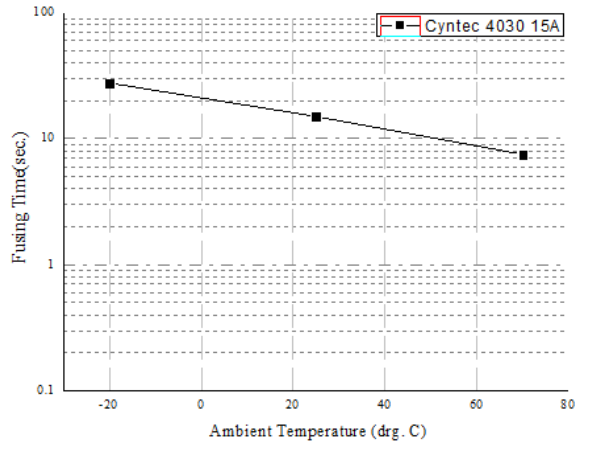
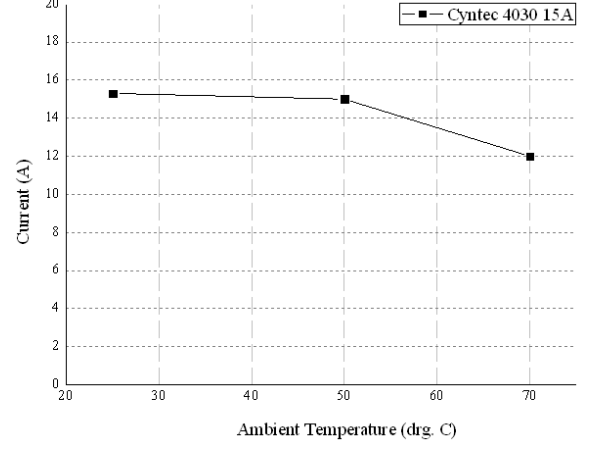
Note:

- (1) FD : Series number
- (2) 4030 : 4.0 mm * 3.0 mm size
- (3) 15A : Rated current
- (4) C□ : Cells
 C1 : One cell
 C2 : Two cells
 C3 : Three cells
 C4 : Four cells
 C5 : Five cells
- (5) C : C version

Characteristics :

Electric performance

Item	Specification and Requirement																																																																								
Fusing Time vs Electric Power	 <p> ■ Cyneec 4030 15AC1、C2、C3 ● Cyneec 4030 15AC4、C5 </p> <table border="1"> <caption>Data for Fusing Time vs Electric Power</caption> <thead> <tr> <th>Electric power (w)</th> <th>Fusing Time (sec.) (15AC1, C2, C3)</th> <th>Fusing Time (sec.) (15AC4, C5)</th> </tr> </thead> <tbody> <tr> <td>8</td> <td>10</td> <td>10</td> </tr> <tr> <td>10</td> <td>8</td> <td>8</td> </tr> <tr> <td>20</td> <td>0.5</td> <td>0.5</td> </tr> <tr> <td>40</td> <td>0.2</td> <td>0.2</td> </tr> </tbody> </table>	Electric power (w)	Fusing Time (sec.) (15AC1, C2, C3)	Fusing Time (sec.) (15AC4, C5)	8	10	10	10	8	8	20	0.5	0.5	40	0.2	0.2																																																									
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Fusing Time vs Voltage	 <p> ■ Cyneec 4030 15AC1 ● Cyneec 4030 15AC2 ▲ Cyneec 4030 15AC3 ▼ Cyneec 4030 15AC4 ◆ Cyneec 4030 15AC5 </p> <p> ※ 15AC1 Heater resistance is about 0.99Ω ※ 15AC2 Heater resistance is about 2.75Ω ※ 15AC3 Heater resistance is about 7.00Ω ※ 15AC4 Heater resistance is about 13.1Ω ※ 15AC5 Heater resistance is about 23.5Ω </p> <table border="1"> <caption>Data for Fusing Time vs Voltage</caption> <thead> <tr> <th>Voltage (V)</th> <th>Fusing Time (sec.) (15AC1)</th> <th>Fusing Time (sec.) (15AC2)</th> <th>Fusing Time (sec.) (15AC3)</th> <th>Fusing Time (sec.) (15AC4)</th> <th>Fusing Time (sec.) (15AC5)</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>4</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>4</td> <td>0.8</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>5</td> <td>0.4</td> <td>4</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>7</td> <td>-</td> <td>0.5</td> <td>5</td> <td>-</td> <td>-</td> </tr> <tr> <td>8</td> <td>-</td> <td>0.3</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>10</td> <td>-</td> <td>0.2</td> <td>1</td> <td>6</td> <td>-</td> </tr> <tr> <td>11</td> <td>-</td> <td>-</td> <td>0.5</td> <td>-</td> <td>-</td> </tr> <tr> <td>13</td> <td>-</td> <td>-</td> <td>0.3</td> <td>4</td> <td>-</td> </tr> <tr> <td>15</td> <td>-</td> <td>-</td> <td>0.2</td> <td>0.6</td> <td>3</td> </tr> <tr> <td>19</td> <td>-</td> <td>-</td> <td>-</td> <td>0.3</td> <td>0.6</td> </tr> <tr> <td>23</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>0.3</td> </tr> </tbody> </table>	Voltage (V)	Fusing Time (sec.) (15AC1)	Fusing Time (sec.) (15AC2)	Fusing Time (sec.) (15AC3)	Fusing Time (sec.) (15AC4)	Fusing Time (sec.) (15AC5)	3	4	-	-	-	-	4	0.8	-	-	-	-	5	0.4	4	-	-	-	7	-	0.5	5	-	-	8	-	0.3	-	-	-	10	-	0.2	1	6	-	11	-	-	0.5	-	-	13	-	-	0.3	4	-	15	-	-	0.2	0.6	3	19	-	-	-	0.3	0.6	23	-	-	-	-	0.3
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<p>Fusing Time vs Current</p>	 <p>※ 15A Fuse resistance is about 2.0 mΩ</p>
<p>Fusing Time by Current vs Ambient Temperature</p>	 <p>※ 15A Fuse resistance is about 2.0 mΩ (Fusing Current = 30A)</p>
<p>Current Carrying Capacity</p>	 <p>※ Measure the current to reach the surface temperature which is 100°C with different ambient temperature. ※ 15A Fuse resistance is about 2.0 mΩ</p>

Reliability

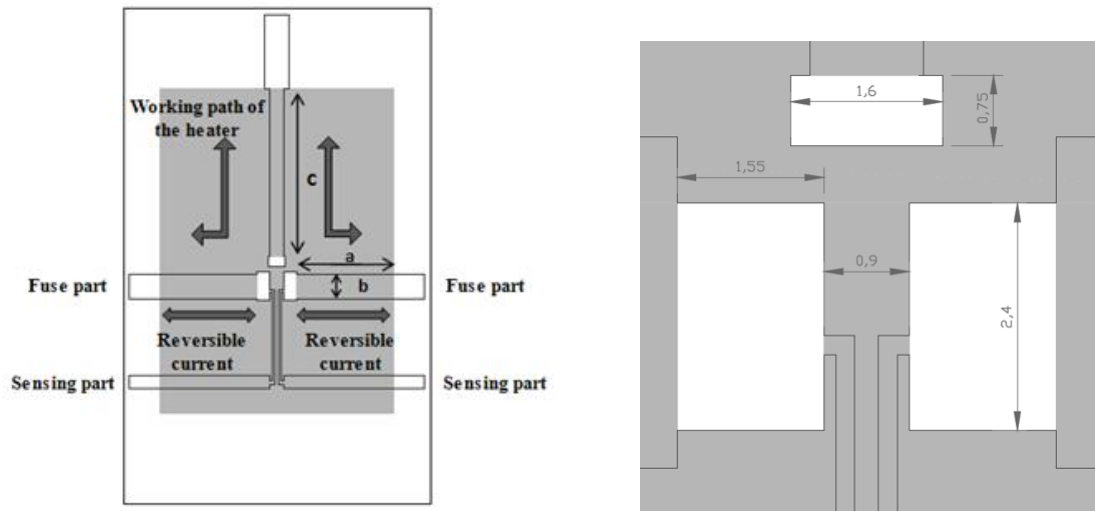
Test Item	Condition of Test	Requirements
Carrying capacity (UL248-14)	100% of rated current, 4hr	Without melting
Temperature Rise (UL248-14)	100% of rated current, measure of surface temperature.	$\Delta T < 75^{\circ}\text{C}$
Fusing time	200% rated current. Operating voltage shall be applied to heater.	Clearing time < 1 min
Interrupting Ability	After the fuse is interrupted, rated voltage applied for 30sec again.	No mechanical damages
Residual Resistance (UL248-14)	Measure DC resistance after fusing.	$> 0.1\text{M}\Omega$
Solderability (JEDEC J-STD-020D)	Temperature of Solder: $245 \pm 5^{\circ}\text{C}$ Immersion Duration: 3 ± 0.5 second Refer to JIS C 5201-1 4.17	Uniform coating of solder cover minimum of 95% surface being immersed
High Temperature Exposure (JESD22-A103C)	Kept at 100°C for 500 hours.	$\Delta R: \pm 10\%$ Without distinct damage in appearance
Thermal Shock (JESD22-A104C)	$-55^{\circ}\text{C}/25^{\circ}\text{C}/125^{\circ}\text{C}/25^{\circ}\text{C}$, 100 cycles.	$\Delta R < 10\%$ Without distinct damage in appearance
Current Rush Withstand	80A-10ms-On, 9990ms-Off, 500cycle.	No fusing

Recommended Solder Pad Dimensions:

The printed circuit board thickness is 0.6mm.

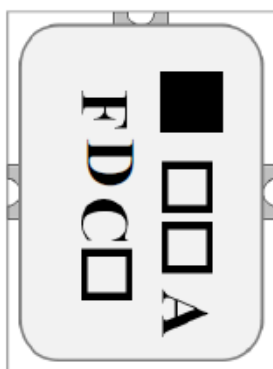
The thickness of tin plated copper layers is 2oz.

Recommended thickness of solder printing board is 0.12 mm at least.



Type	a	b	c
15A	8.0	3.5	14

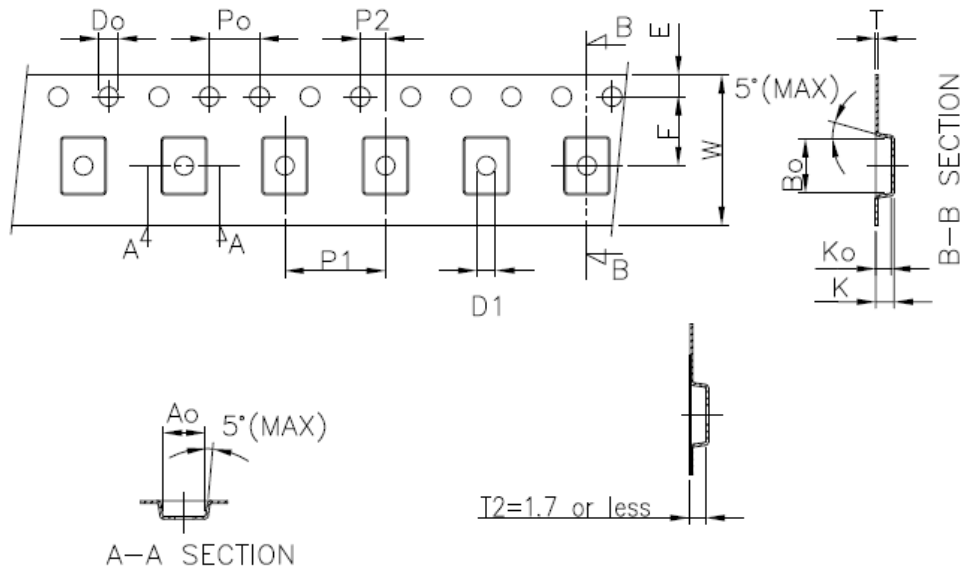
Unit: mm



Chip setting

Packaging :

Tape packaging dimensions

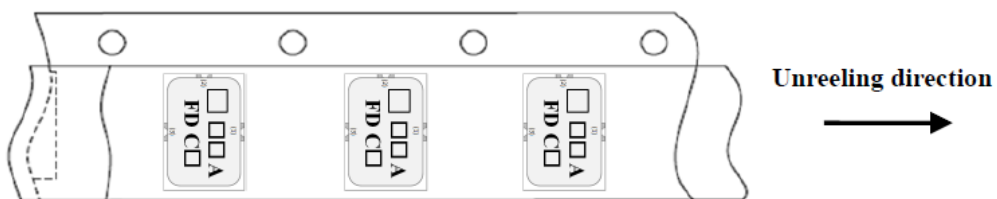


UNIT:mm

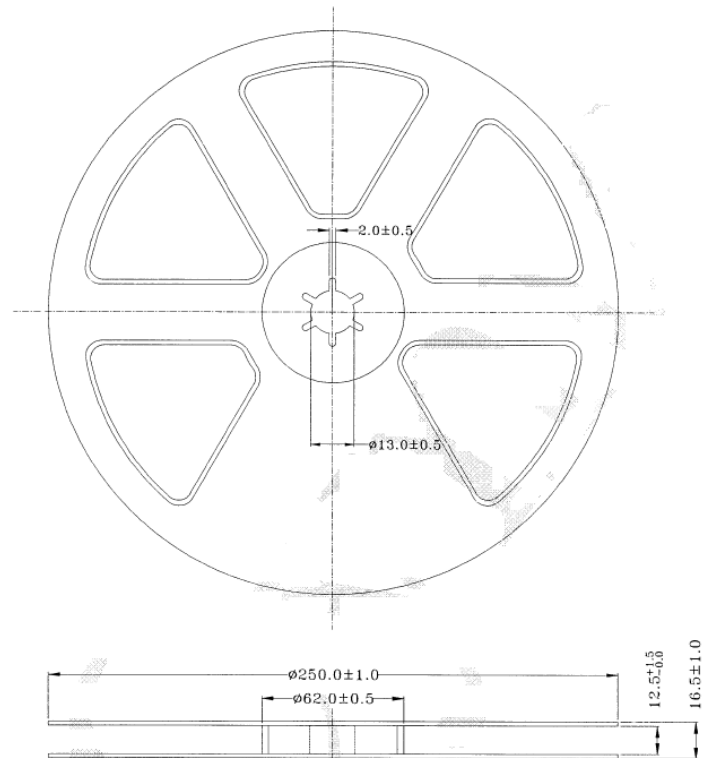
symbol	Ao	Bo	Ko	Po	P1	P2	T
spec	3.50±0.10	4.50±0.10	1.25±0.10	4.00±0.10	8.00±0.10	2.00±0.05	0.30±0.10
symbol	E	F	Do	D1	W	10Po	K
spec	1.75±0.10	5.50±0.05	1.55±0.05	1.50±0.10	12.0±0.30	40.0±0.20	1.60 or less

Direction

The direction shall be seen from the top cover tape side.



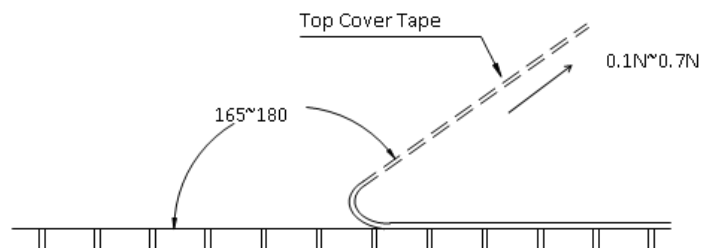
Reel dimensions



Number of Taping: 2,000 pieces/reel

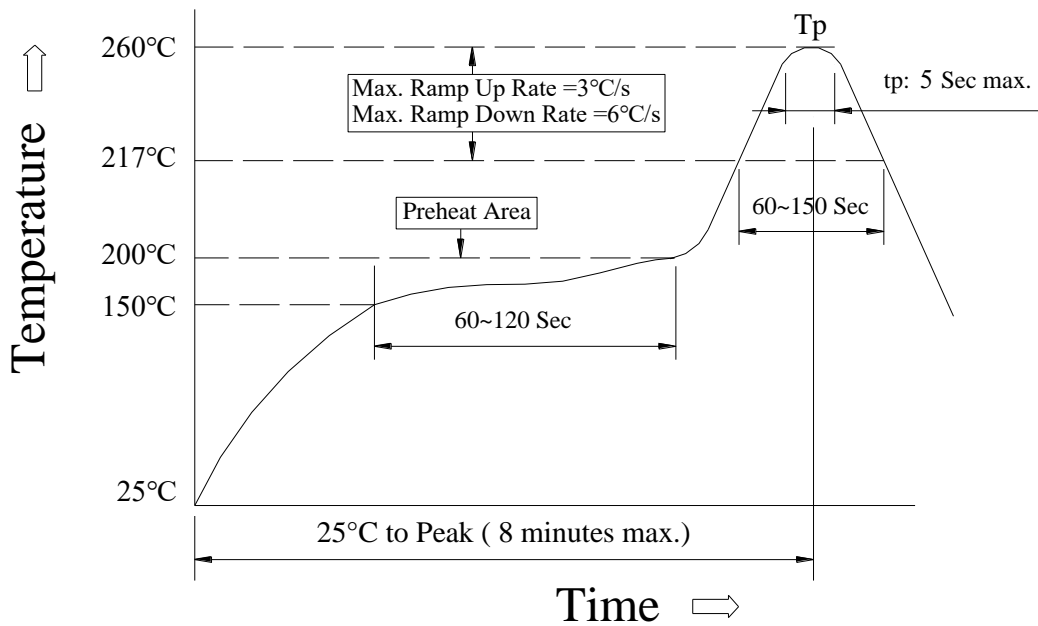
Peel strength of top cover tape :

The peel speed shall be about 300mm/min.


Label Marking:

The following items shall be marked on the reel:

1. Type designation
2. Quantity
3. Manufacturing date code
4. Manufacturer's name
5. The country of origin

Sn plating Reflow Profile :

Reflow Soldering Method:

Reflow Soldering	Tp: 255~260°C	Max. 5 seconds
	217°C	60~150 seconds
Pre-Heat	150~200°C	60~120 seconds
Time 25°C to peak temperature	8 minutes max.	

Note: Meet JEDEC J-STD-020D

Characteristics :

Functional temperature range: -25~85°C

Operating temperature range: -10~65°C (Fusing time <1min)

Test temperature range: 25 ± 5°C

Ambient condition

Relative humidity: 45~85%

Air Pressure: 86~106kPa

Other Information :

Soldering iron method

Bit temperature: $300 \pm 5^{\circ}\text{C}$

Application of soldering iron: 3 seconds MAX

Apply the soldering iron to the electrode.

The specimen shall be stored at standard atmospheric condition for 24h, after which the measurements shall be made. Do not suggest products for re-work.

Product storage conditions

This product should be dark and at ambient temperature is less than 40°C or relative humidity less than 60% RH place, in the above storage conditions the storage period of 6 months.

Precautions on use

Avoid contact with the resin film with this product, its resin may seep into the product, so the product does not apply to the resin material relevance, its properties can't be fully guaranteed.