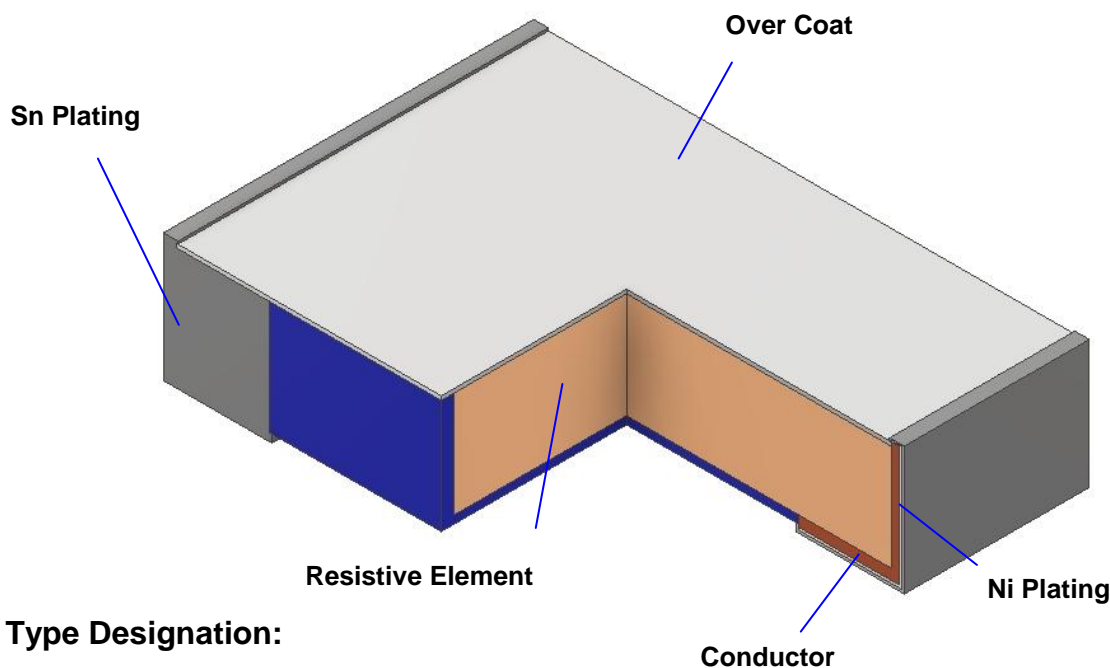


**1. Scope :**

This specification applied to the products of current sensing resistor of metal foil for Lead-Free RLT series manufactured by TA-I TECHNOLOGY CO., LTD.

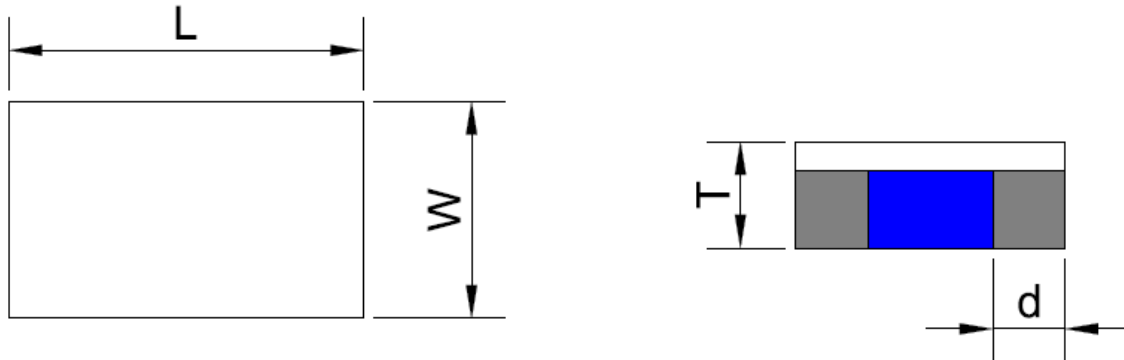
**2. Construction:**



**3. Type Designation:**

<b><u>RLT</u></b>	<b><u>10</u></b>	<b><u>F</u></b>	<b><u>I</u></b>	<b><u>S</u></b>	<b><u>R002</u></b>
Product Code	Size	Tolerance	Packaging	Power Rating	Nominal Resistance
RLT : Chip Resistor					
06-0603(1608) 10-0805(2012)	J - ±5% G - ±2% F - ±1%	T - Paper Tape	S = 1 / 2 W I = 3 / 4 W	4 Digits e.g., R002=2mΩ	

#### 4. Dimensions:



UNIT: mm

Type	L	W	d	T
RLT06	1.60 ±0.15	0.80 ±0.20	0.35 ±0.20	0.40 ±0.10
RLT10	2.05 ±0.15	1.30 ±0.20	0.35 ±0.20	0.40 ±0.10

#### 5. Ratings & Characteristics :

Characteristics	Feature		Measurement Method
	RLT06	RLT10	
Power Ratings (W)	1/2W	3/4W	JIS Code 3A / JIS Code 3D
Resistance Value (mΩ)	1 ~ 5	1 ~ 5	Refer to JIS C 5201-1 4.5
T.C.R (ppm/°C)	±50		Refer to JIS C 5201-1 4.8
Operation Temperature Range (°C)	-55 ~ +155		
Resistance Tolerance (%)	± 1%, ± 2%, ± 5%		JIS C 5201 4.2.5
Insulation Resistance (MΩ)	Over 100		Refer to JIS C 5201-1 4.6
Maximum Working Voltage (V)	$(P * R)^{1/2}$		

### Derating Curve :

For resistors operated at ambient temperature over 70°C , power rating shall be derated in accordance with figure 1.

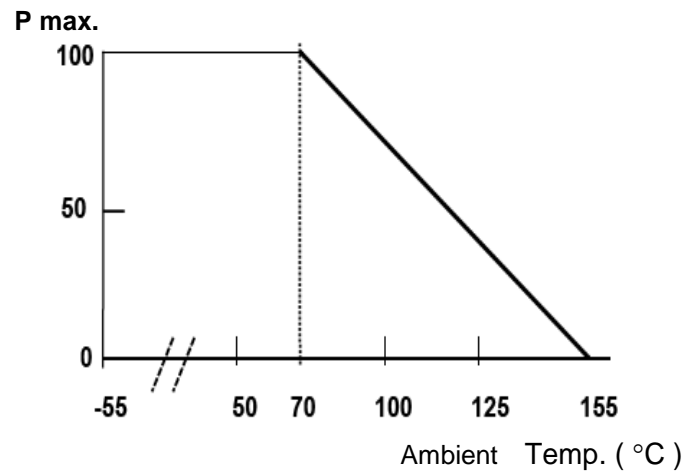


Figure 1

### Rated Voltage:

The rated voltage is calculated by the following formula:

$$E = \sqrt{P * R}$$

E=Rated Voltage(V)

P=Rated Power(W)

R=Resistance Value( $\Omega$ )

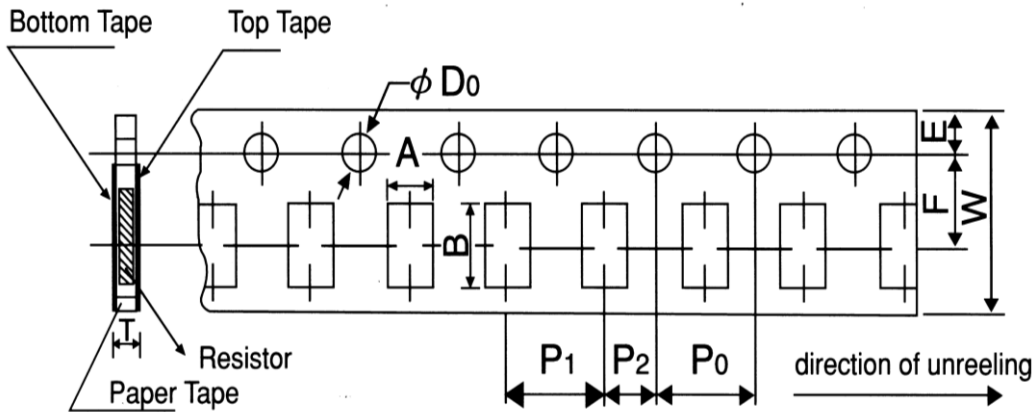
## 6. Reliability Tests:

Test Items	Reference standard	Condition of Test	Test Limits
Temperature Coefficient of Resistance	IEC60115-1-4.8 JIS-C5201-4.8	-55 ~ +125 °C	Refer to paragraph 5
Short Time Over Load	IEC60115-1-4.13 JIS-C5201-4.13	5 X rated power, 5s	< ± 1%
Load Life	IEC60115-1-4.25.1 JIS-C5201-4.25.1	1000 hours at rated power , 70°C , 1.5hours "ON " , 0.5hour "OFF"	< ± 1%
Load Life with Humidity	IEC60115-1-4.24 JIS-C5201-4.24	1000 hours at rated power , 40 ± 2°C , 90~95% RH 1.5hours "ON " , 0.5hour "OFF"	< ± 1%
Temperature cycle	IEC60115-1-4.19 JIS-C5201-4.19	-55°C (30 min. ) / +155 °C (30 min. ) 100 cycles	< ± 1%
Resistance to Soldering Heat	IEC60115-1-4.18 JIS-C5201-4.18	260 ± 5°C solder , 10 ± 1 sec dwell .	< ± 0.5%
Solderability	IEC60115-1-4.17 JIS-C5201-4.17	245±5°C solder, 2±0.5 sec dwell. Solder : Sn96.5 / Ag3.0 / Cu0.5	At least 95% of surface area of electrode shall be covered with new solder.
Robustness of Termination (Bending Strength)	IEC60115-1-4.33 JIS-C5201-4.33	Bending width 2mm	< ± 0.5%
High Temperature Exposure	IEC60115-1-4.23.2 JIS-C5201-4.23.2	155°C , 1000hrs	< ± 1%
Low Temperature Storage	IEC60115-1-4.23.4 JIS-C5201-4.23.4	-55°C , 1000hrs	< ± 1%
Insulation Resistance	IEC60115-1-4.6 JIS-C5201-4.6	100V DC for 1 minute	> 100 MΩ

8. Taping & Reel

8.1 Taping Dimensions

8.1.1 4 mm pitch paper

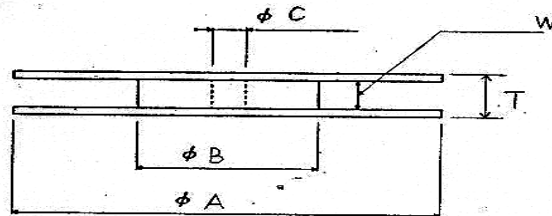
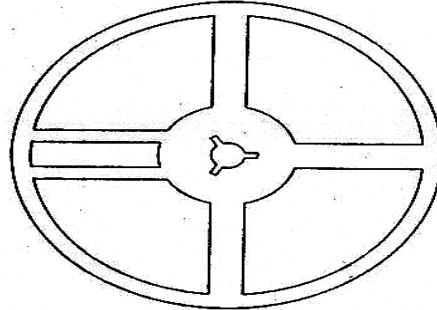


Packing	Type	A	B	W	F	E	P <sub>1</sub>	P <sub>2</sub>	P <sub>0</sub>	D <sub>0</sub>	T
Paper Tape	RLT06	1.1 ±0.1	1.9 ±0.1	8.0±0.2	3.5±0.05	1.75±0.1	4.0±0.1	2.0±0.05	4.0±0.1	φ 1.5	+0.1
	RLT10	1.6 ±0.15	2.4 ±0.2								-0

UNIT: mm

Type Size		Paper Tape
		4 mm pitch
		178mm/R
RLT	06 / 10	5000

8.2 Reel Specifications

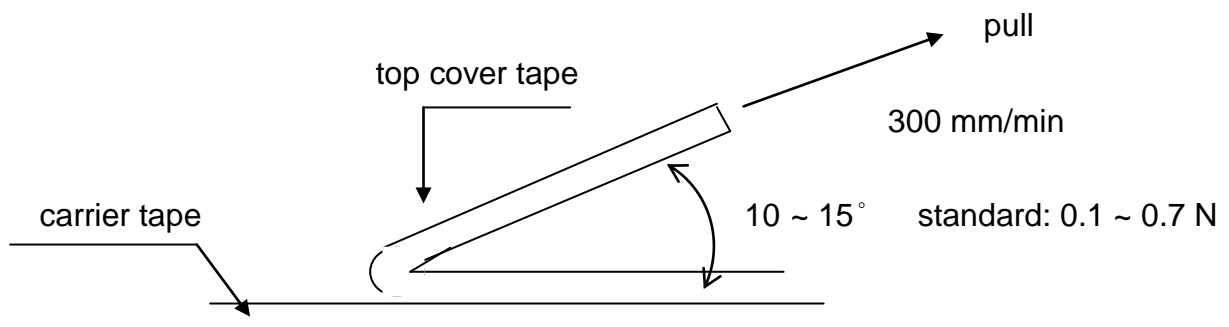


UNIT: mm

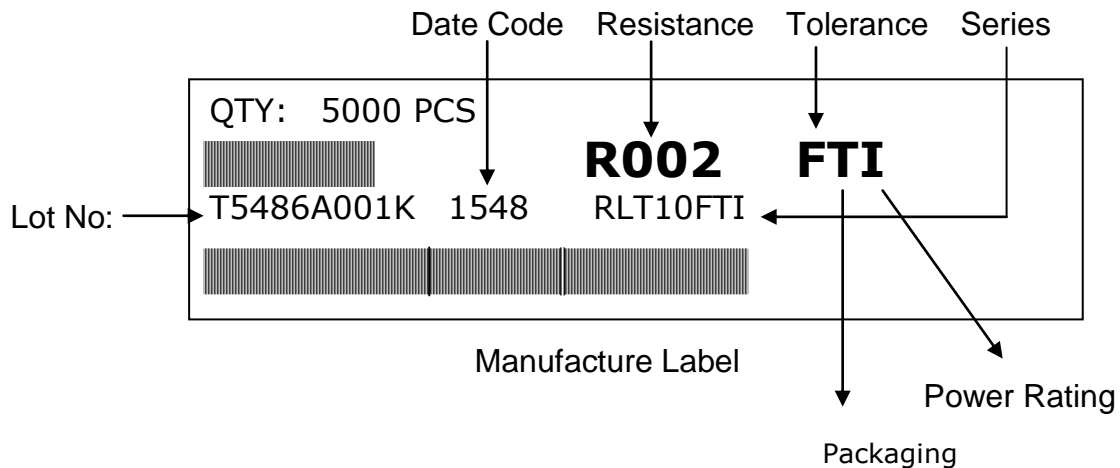
Series	$\phi A$	$\phi B$	$\phi C$	W	T
RLT 06 / 10	$178 \pm 2.0$	$60.0 \pm 1.0$	$13.0 \pm 1.0$	$9.0 \pm 1.0$	$11.5 \pm 1.0$

8.3 Peel – off force :

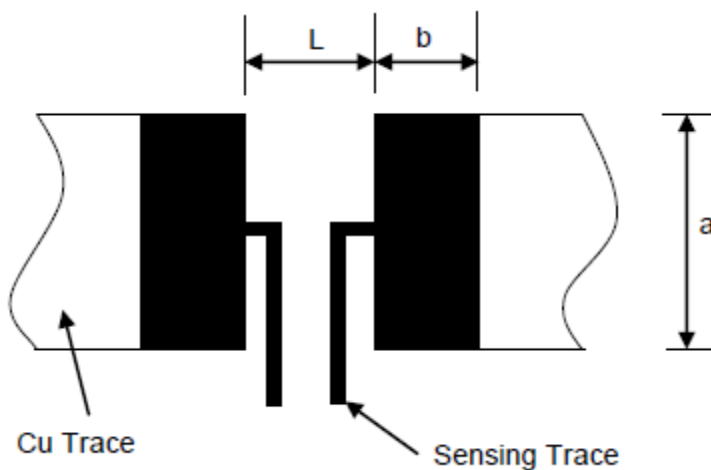
Peel - off force of paper and blister tape is in accordance with “JIS ” that is , 0.1 to 0.7 N at a peel - off speed of 300 mm / minute.



9. Label

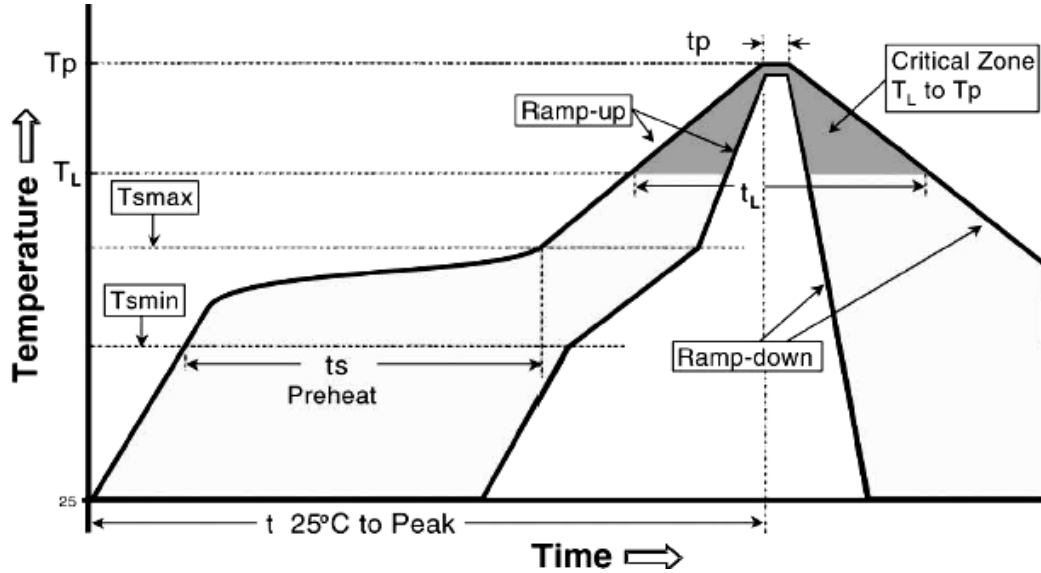


10. Recommended land patterns



Land pattern		Dimension ( mm )		
		a	b	L
RLT	06 (0603 )	1.0	0.75	0.8
RLT	10 (0805 )	1.4	1.2	0.8

**11. Recommend IR – Reflow profile :** ( Lead-Free solder : Sn96.5 / Ag3 / Cu0.5 )



Profile Feature	Lead (Pb )-Free Assembly
Average ramp-up rate (T <sub>smax</sub> to T <sub>p</sub> )	3°C / second max.
Preheat - Temperature Min (T <sub>smin</sub> ) - Temperature Max (T <sub>smax</sub> ) - Time (T <sub>smin</sub> to T <sub>smax</sub> ) (t <sub>s</sub> )	150°C 200°C 60 -150 seconds
Time maintained above : - Temperature (T <sub>L</sub> ) - Time (T <sub>L</sub> )	217°C 60-120 seconds
Peak Temperature (T <sub>p</sub> )	260°C
Time within $\begin{matrix} +0 \\ -5 \end{matrix}$ °C of actual Peak Temperature (t <sub>p</sub> ) <sup>2</sup>	10 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8mimutes max.

Allowed Re-flow times : 3 times

Remark : To avoid discoloration phenomena of chip on terminal electrodes, please use N2 Re-flow furnace .



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**12. Storage Conditions:**

Temperature: 5°C ~35°C, Humidity: 40%~75%

**13. Shelf Life:**

2 years from manufacturing date

**14. ECN**

Engineering Change Notice: The customer will be informed with ECN if there is significant modification on the characteristics and materials described in Approval Sheet.