



## Lead-Free Current Sensing Resistors RLM Series

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### 1. Scope :

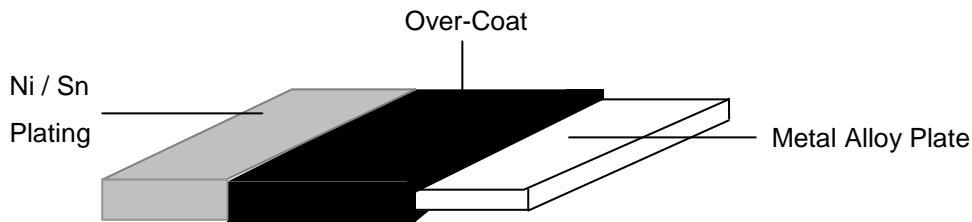
This specification applied to the products of Lead-Free current sensing resistor of metal foil for Lead-Free RLM series manufactured by TA-I TECHNOLOGY CO., LTD.

### 2. Type Designation :

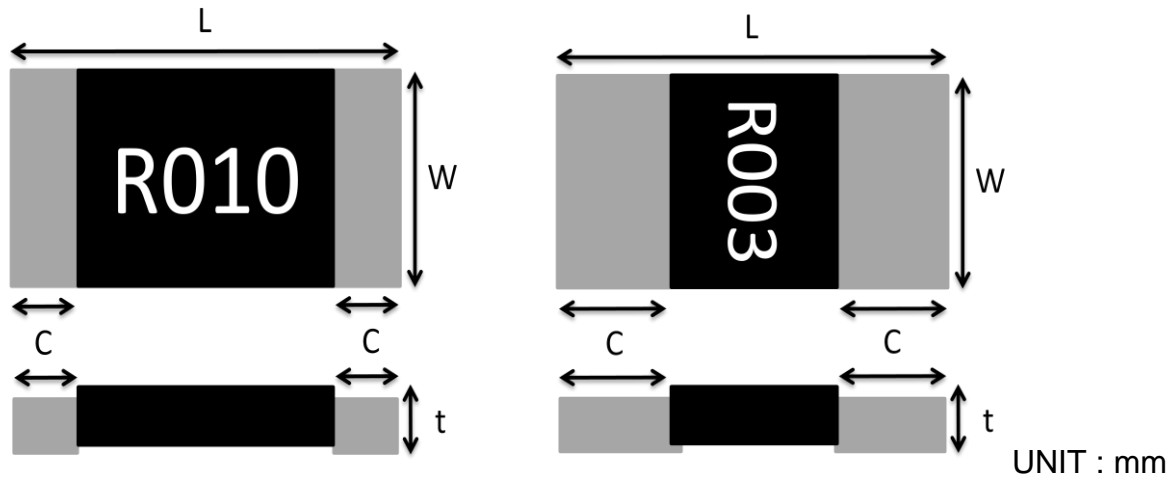
<u>RLM</u> Item	<u>20</u> Series No	<u>F</u> Resistance tolerance	<u>E</u> Packaging	<u>C</u> Power Rating	<u>R010</u> Resistance
	20:2010 (5025)	F:±1% G:±2% J:±5%	E: Embossed Tape	I=3/4W D=3/2W S=1/2W C=1W	e.g : R010=10mΩ

### 3. Construction and Dimension :

#### 3.1 Construction:



#### 3.2 Dimension:



Style	L	W	C	T	Material
RLM20	5.0±0.2	2.5±0.2	1.5±0.3(≤3mΩ)	0.60 ±0.20	Strip : Alloy Over Coating : Polymer Compound UL-94V-0 grade
			0.6±0.3(R>3mΩ)		



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### 4. Features:

Type	RLM20
Power Rating	3/2W、3/4W、1/2W、1W
Resistance Value	2~50mΩ
Operation Temperature Range	-55℃~+170℃
Temperature Coefficient of Resistance	±50ppm/℃
Tolerance	±1%,±2%,±5%
Insulation Resistance	Over 100MΩ
Maximum Working Voltage(V)	$(P \cdot R)^{1/2}$

### 5. Reliability Tests :

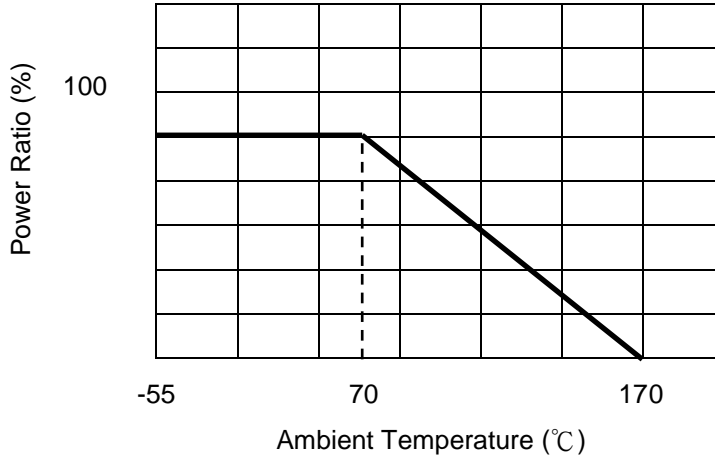
Test Items	Reference standard	Condition of Test	Test Limits
Temperature Coefficient of Resistance	IEC60115-1 4.8 JIS C 5201-1 4.8	+25℃ ~ +125℃	Refer 4.0
Load Life	IEC60115-1 4.25.1 JIS C 5201-1 4.25.1	1000hours at rated power, 70℃, 1.5hours "ON", 0.5hour "OFF"	< ±1%
Short Time Overload	IEC60115-1 4.13 JIS C 5201-1 4.13	5 X rated power for 5s	< ±0.5%
Moisture no Load	IEC60115-1 4.24.2.1a) JIS C 5201-1 4.24.2.1a)	85℃, 85%RH, 1000hrs	< ±1%
Temperature cycle	IEC60115-1 4.19 JIS C 5201-1 4.19	-55℃ & +155℃, 300cycle, 15min per extreme condition	< ±1%
Resistance to Soldering Heat	IEC60115-1 4.18 JIS C 5201-1 4.18	260±5℃ for10±1 sec	< ±0.5%
Solderability	IEC60115-1 4.17 JIS C 5201-1 4.17	245±5℃, 2±0.5sec	At least 95% of surface area of electrode shall be covered with new solder
High Temperature Exposure	IEC60115-1 4.23.2 JIS C 5201-1 4.23.2	170℃, 1000hrs	< ±1%
Low Temperature Storage	EC60115-1 4.23.4 JIS C 5201-1 4.23.4	-55℃, 1000hrs	<±0.5%
Substrate Bending	IEC60115-1 4.33 JIS C 5201-1 4.33	Bending width 2mm	< ±1%
Insulation Resistance	IEC60115-1 4.6 JIS C 5201-1 4.6	100V DC for 1 minute	>100 MΩ



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### 5.1 Derating Curve



### 5.2 Rated Voltage

The rated voltage is calculated by the following formula:

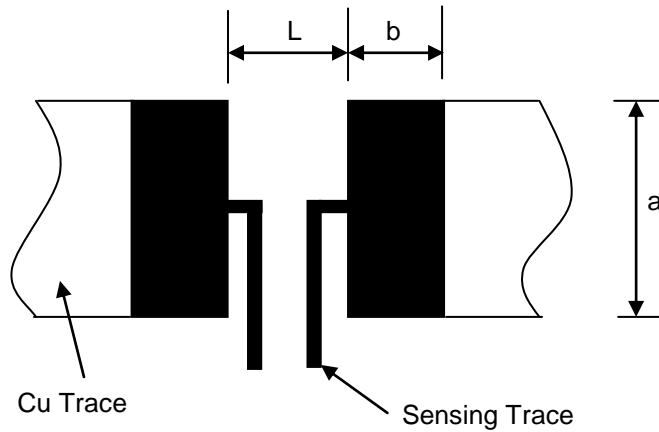
$$V = \sqrt{P \times R}$$

V: Rated Voltage (V)

P: Rated Power (W)

R: Resistance Value ( $\Omega$ )

### 6. Recommended Solder Pad Dimension



Resistance Range ( $\Omega$ )	a	b	L
0.002-0.003	3.4±0.2	3.5±0.2	2.0±0.2
0.004-0.050	3.4±0.2	1.5±0.2	3.5±0.2

Unit: mm



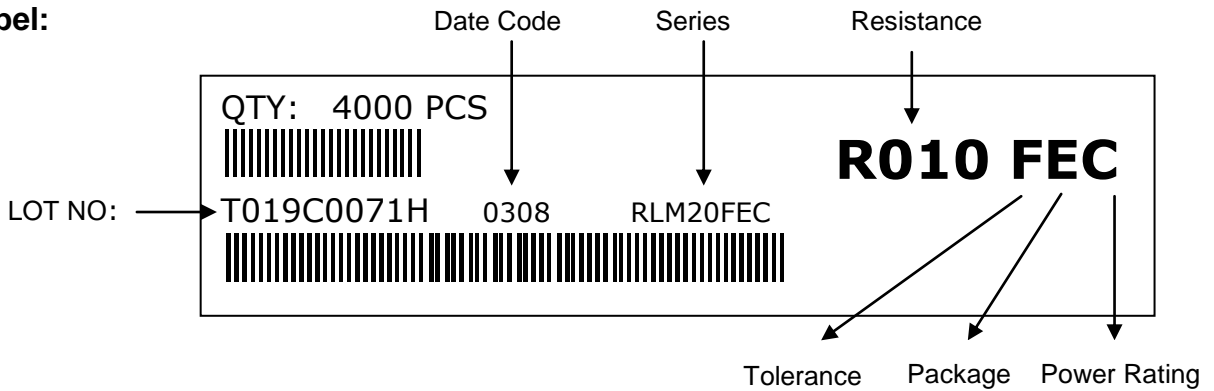
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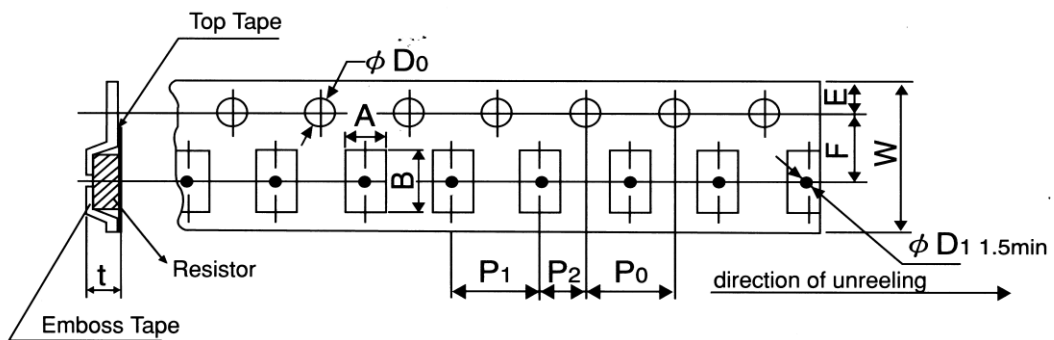
### 7. Number of Package:

4000 Pieces / package

### 8. Label:



### 9. Taping



Packing	Type	A	B	W	F	E	$P_1$	$P_2$	$P_0$	$D_0$	T
Emboss	RLM20	$2.8 \pm 0.2$	$5.3 \pm 0.2$	$12 \pm 0.2$	$5.5 \pm 0.05$	$1.75 \pm 0.1$	$4.0 \pm 0.1$	$2.0 \pm 0.05$	$4.0 \pm 0.05$	$\phi 1.5$ ( $+0.1/-0.1$ )	$0.85 \pm 0.15$

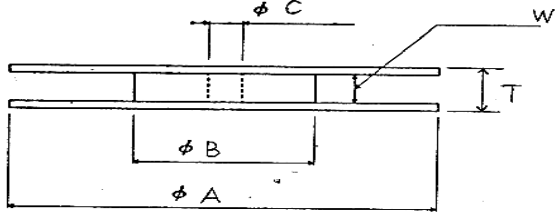
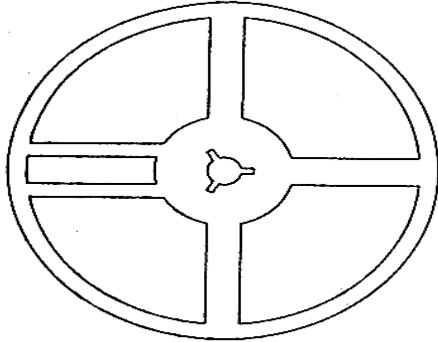
Unit: mm



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**10. Reel Specification**

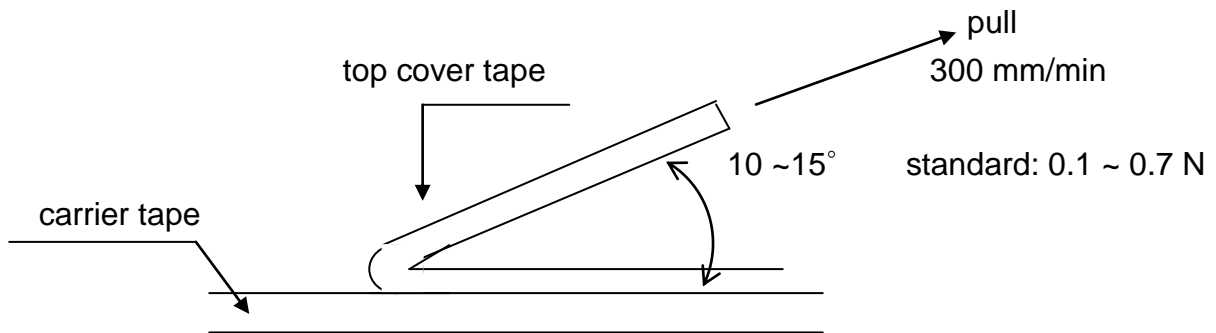


Series	$\phi A$	$\phi B$	$\phi C$	W	T
RLM 20	178.0 $\pm$ 2.0	60.0 $\pm$ 1.0	13.0 $\pm$ 1.0	13.0 $\pm$ 1.0	15.5 $\pm$ 1.0

Unit: mm

**11. Peeling Strength of Top Cover Tape**

Test Condition: 0.1 to 0.7 N at a peel-off speed of 300 mm / min.



**12. Storage Conditions:**

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

**13. Shelf Life:**

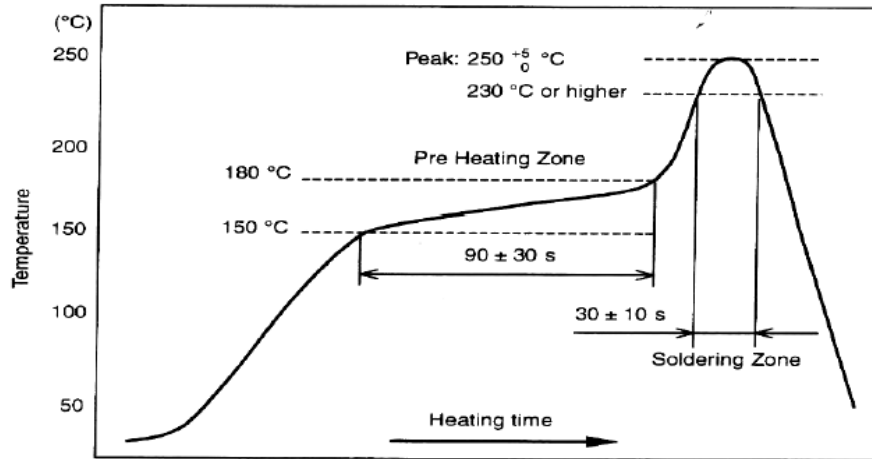
2 years from manufacturing date.



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### 14. Recommend IR – Reflow profile : (solder : Sn96.5 / Ag3 / Cu0.5)



Peak :  $260 \begin{matrix} +5 \\ -5 \end{matrix} \text{ }^{\circ}\text{C}$  ,  $10 \pm 1 \text{ sec}$

Pre – heat Zone : 150 to 180  $^{\circ}\text{C}$  ,  $90 \pm 30 \text{ sec}$

Soldering Zone : 230 $^{\circ}\text{C}$  or higher ,  $30 \pm 10 \text{ sec}$

Iron Solder:  $350 \pm 10^{\circ}\text{C}$  ,  $3 + 1 / - 0 \text{ sec}$

### 15. 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.

### 16. Manufacturing Country & City :

TA-I TECHNOLOGY CO., LTD. ( Taiwan– Tao Yuan )

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#### Associated companies :

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(3) FORTUNE TASK RESISTOR FACTORY ( China – Dongguan )

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(4) TAI OHM ELECTRONICS ( M ) SDN. BHD. ( Malaysia – Penang )

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[PR2512FKF7W0R004L](#) [RC1005F124CS](#) [RL73K3AR56JTDF](#) [RL7520WT-R001-F](#) [RL7520WT-R009-G](#) [RL7520WT-R020-F](#) [LRC-](#)  
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[SR731ERTTP1R00F](#) [SR731ERTTP10R0F](#) [SR731ERTTP2R00F](#) [SR731ERTTP8R20F](#) [SR731ERTTP3R9J](#) [SR731ERTTP8R2J](#)  
[SR731ERTTP2R0J](#) [SR731ERTTP4R7J](#) [SR731ERTTP9R1J](#) [SR731ERTTP1R0J](#) [SR731ERTTP2R2J](#) [SR731ERTTP5R1J](#) [SR731ERTTP6R8J](#)  
[SR731ERTTP9R10F](#) [RCWE2512R180FKEA](#) [FCSL64R007JER](#) [LRF1206-R018FW](#) [TLR2B10DR022FTDG](#)