



**Current Sensing Resistors**  
**RLM Series**  
**( Halogen-Free )**  
**AEC-Q 200-Ver D qualified**

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### 1. Scope :

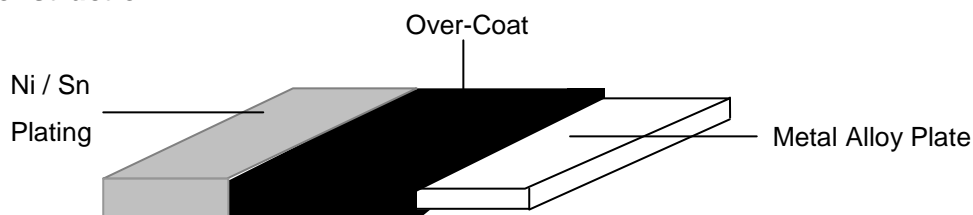
This specification applied to the products of current sensing resistor of metal foil for Lead-Free RLM series manufactured by TA-I TECHNOLOGY CO., LTD.

### 2. Type Designation :

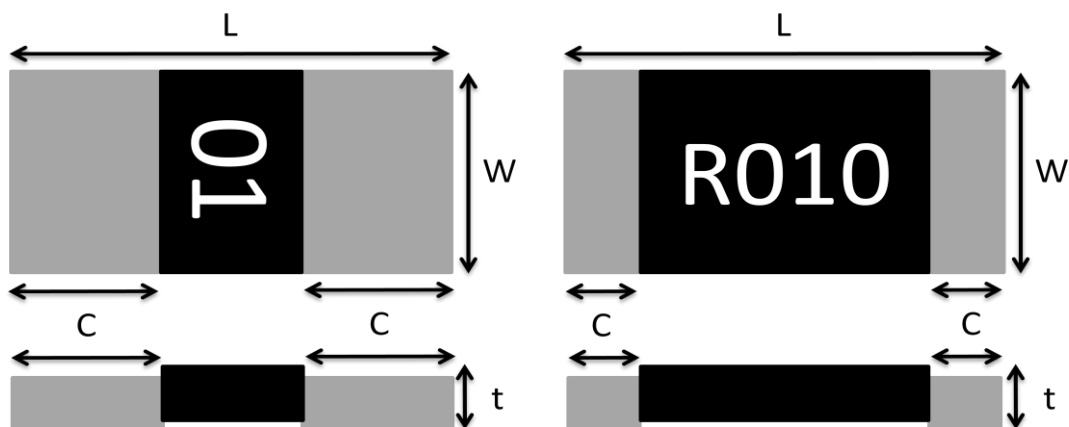
<u>RLM</u> Item	<u>12</u> Series No	<u>E</u> Resistance tolerance	<u>I</u> Packaging	<u>C</u> Power Rating	<u>M</u> Metal	<u>R001</u> Resistance
	12:1206 (3216)	F:±1% G:±2% J:±5%	T: Paper Tape	A=1/4W S=1/2W C=1W	M= Metal	e.g: R001=1mΩ R030=30mΩ

### 3. Construction and Dimension :

#### 3.1 Construction:



#### 3.2 Dimension:



UNIT: mm

Style	L	W	C	t	Material
RLM12	3.2±0.20	1.6±0.20	1.1 ± 0.30 (R=1mΩ)	0.75 ± 0.20 (R=1mΩ)	Metal : Alloy Over Coating : molding Compound UL-94 grade
			0.5 ± 0.30 (2mΩ ≤ R ≤ 30mΩ)	0.6 ± 0.20 (2mΩ ≤ R ≤ 30mΩ)	



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#### 4. Features:

Type	RLM12
Power Rating	1/4W & 1/2W & 1W
Resistance Value	1~30mΩ
Operation Temperature Range	-55℃~+170℃
Temperature Coefficient of Resistance	±50ppm/℃
Tolerance	±1%、±2%、±5%
Insulation Resistance	Over 100MΩ
Maximum Working Voltage(V)	$(P \times R)^{1/2}$

Note\*:1 Watts with total solder pad and trace size of 300mm<sup>2</sup>

#### 5. Reliability Tests:

Test Items	Reference	Condition of Test	Test Limits
Temperature Coefficient of Resistance	IEC60115-1 4.8	+25 ~ 125℃	Refer 4.0
High Temperature Exposure(Storage)	MIL-STD-202 Method 108	T=125℃,1000hrs,Measurement at 24hrs after test conclusion.	< ±1%
Low temperature operation	IEC60115-1 4.23.4	-55 °C for 45 min	< ±0.5%
Temperature Cycling	JESD22 Method JA-104	1000Cycle (-55℃ to 125℃),Measurement at 24hrs after test conclusion.	< ±0.5%
Short time overload	IEC60115-1 4.13	5 X rated power for 5s	< ±0.5%
Biased Humidity	MIL-STD-202 Method 103	10% Rated voltage at 85℃,RH:85% ,1000Hrs, Measurement at 24hrs after test conclusion.	< ±0.5%
Operation life	MIL-STD-202 Method 108	1000 h at +70 °C, 1.5 h "ON", 0.5 h "OFF"	< ±1%
Resistance to Soldering Heat	IEC60115-1 4.18	T=260+/-5℃ solder,10+/-1 sec dwell	< ±0.5%
Mechanical Shock	MIL-STD-202 Method 213	100g's , Normal duration is 6ms , half sine shock pulse	< ±0.5%
Resistance to vibration	MIL-STD-202 Method 204	5g's for 20min.12cycles, 10-2000Hz	<±0.5%
Board Flex	AEC-Q200-005	Min 2mm deflection ,60sec.	< ±0.5%
Flammability	UL-94	V-0 or V-1are acceptable, Electrical test not required	



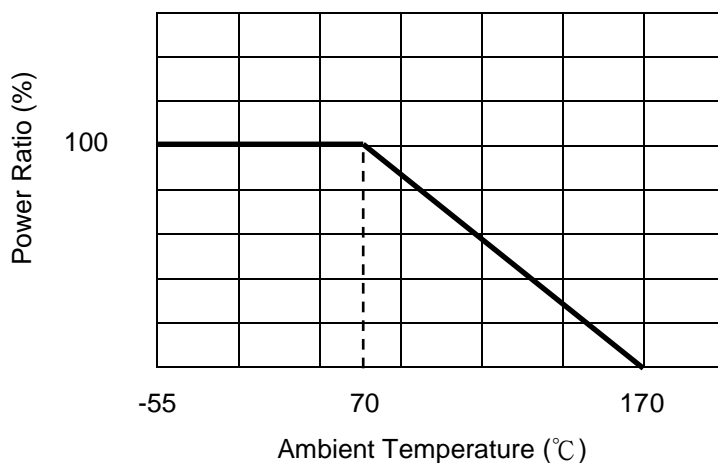
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### 5.1 Derating Curve



### 5.2 Rated Voltage

The rated voltage is calculated by the following formula:

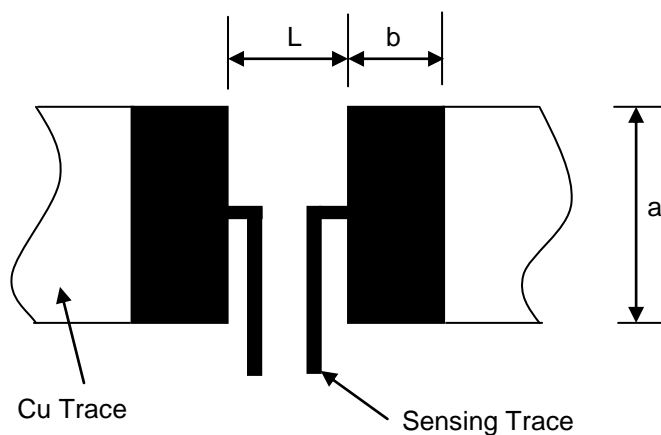
$$V = \sqrt{P \times R}$$

V: Rated Voltage (V)

P: Rated Power (W)

R: Resistance Value ( $\Omega$ )

### 6. Recommended Solder Pad Dimension



Resistance Range ( $\Omega$ )	a	b	L
0.001	1.8	2.3	1.0
0.002~0.030	1.8	1.7	1.6

Unit: mm



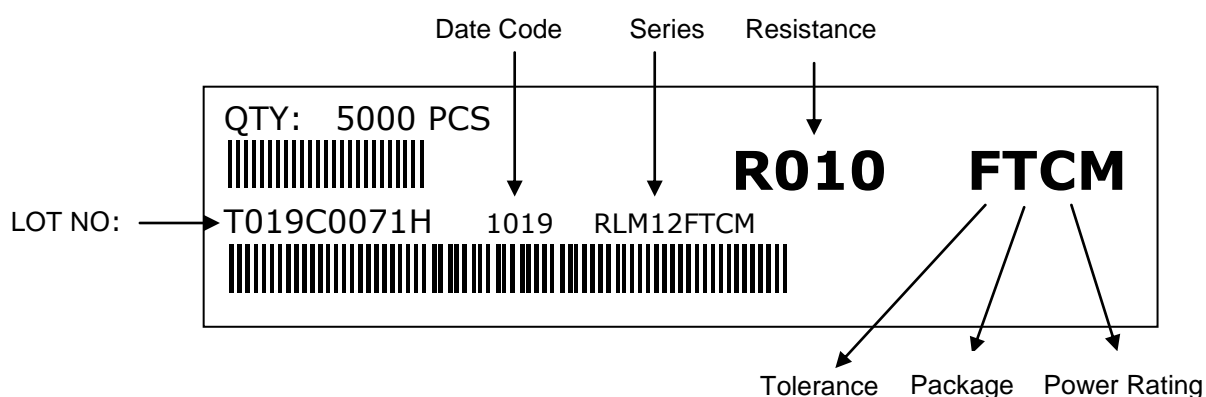
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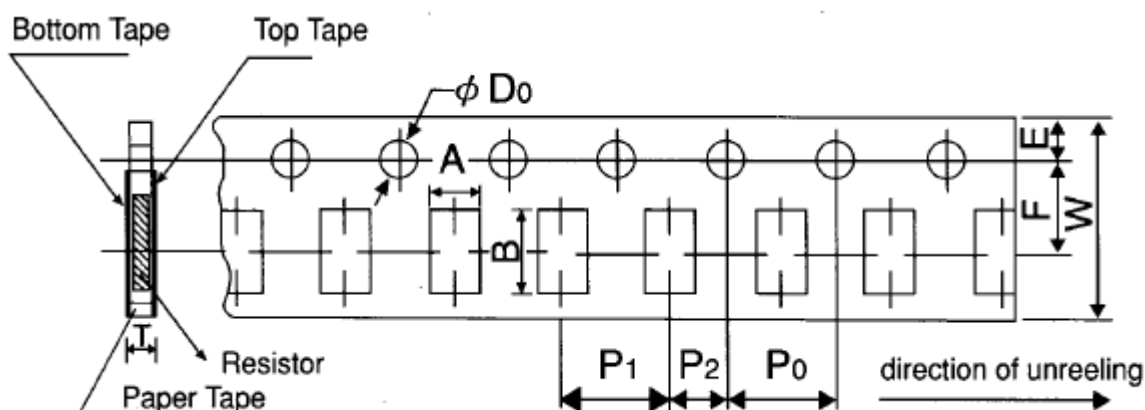
## 7. Number of Package:

5000 Pieces / package

## 8. Label:



## 9. Taping



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	RLM12	2.0±0.15	3.6±0.2	8.0±0.2	3.5±0.05	1.75±0.1	4.0±0.1	2.0±0.05	4.0±0.1	$\phi 1.5$ (+0.1/-0)	0.84±0.1



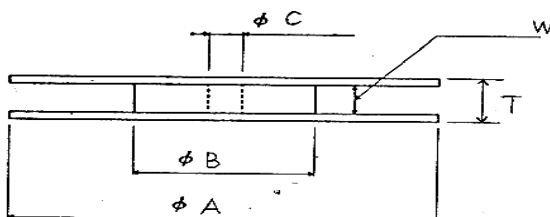
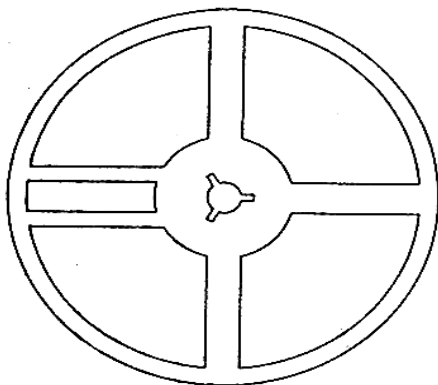
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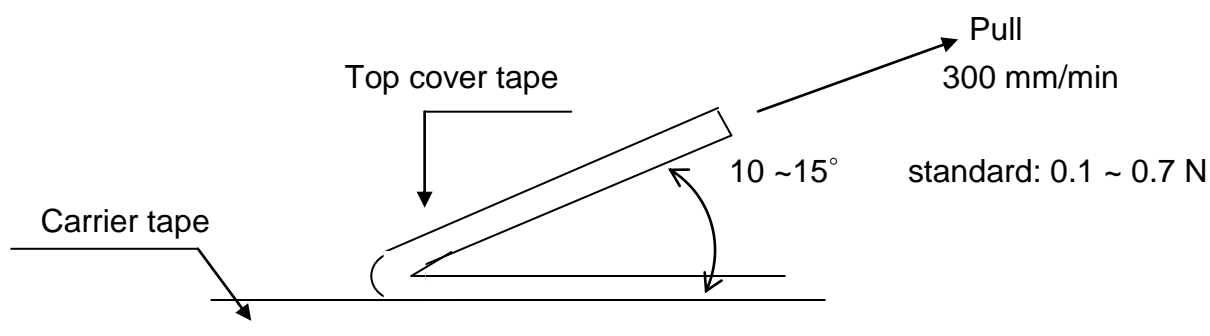
## 10. Reel Specification



Series	$\phi A$	$\phi B$	$\phi C$	W	T
RLM12	178 $\pm$ 2.0	60.0 $\pm$ 1.0	13.0 $\pm$ 1.0	9.0 $\pm$ 1.0	11.5 $\pm$ 1.0

## 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:

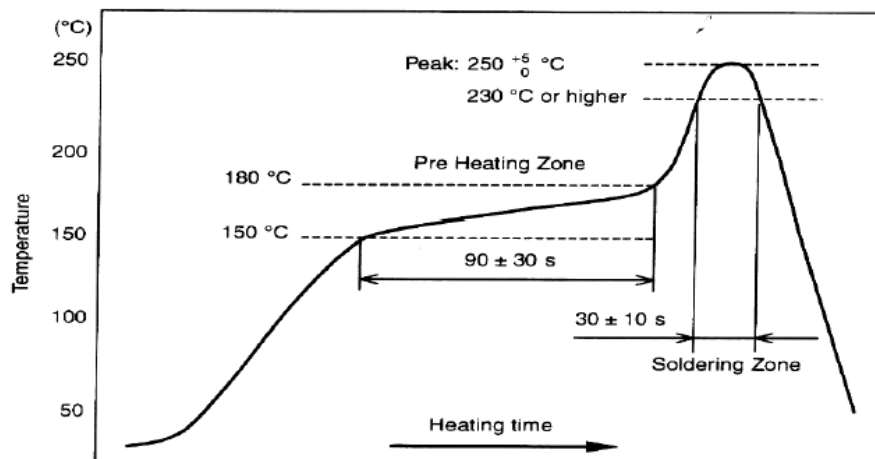
2 years from manufacturing date.



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



Peak : 250  $\pm 5$  °C , 5 sec  
-0

Pre-heat zone : 150 to 180 °C , 90±30 sec

Soldering zone : 230°C or higher , 30±10 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:**

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

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