



**Lead-Free Current Sensing Resistors**  
**RLM Series**  
**AEC-Q 200-Ver D qualified**

Document No	TRLM-200S014C
Issued date	2016/09/28
page	1/6

**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 :**

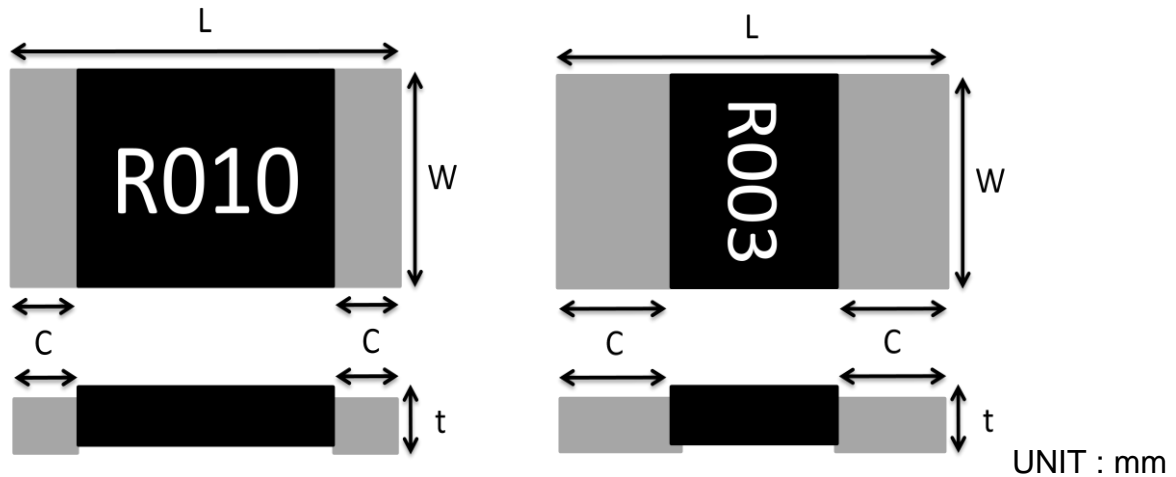
<u>RLM</u> Item	<u>20</u> Series No	<u>F</u> Resistance tolerance	<u>E</u> Packaging	<u>C</u> Power Rating	<u>R010</u> Resistance
	20:2010 (5025)	F:±1% G:±2% J:±5%	E: Embossed Tape	I=3/4W D=3/2W S=1/2W C=1W	e.g : R010=10mΩ

**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)		



**Lead-Free Current Sensing Resistors**  
**RLM Series**  
**AEC-Q 200-Ver D qualified**

Document No	TRLM-200S014C
Issued date	2016/09/28
page	2/6

**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*R) <sup>1/2</sup>

**5. Reliability Tests :**

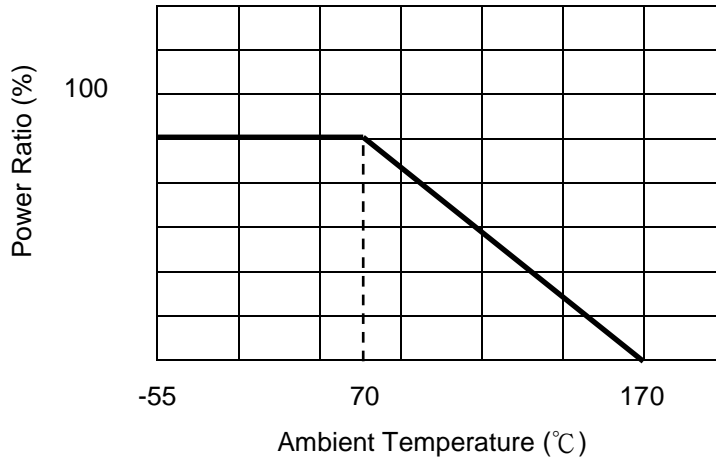
Test Items	Reference	Condition of Test	Test Limits
Temperature Coefficient of Resistance	IEC60115-1 4.8	+25 ~ 125℃	Refer 4.0
High Temperature Exposure(Storage)	MIL-STD-202 Method 108	T=125℃,1000hrs,Measurement at 24hrs after test conclusion.	< ±1%
Low temperature operation	IEC60115-1 4.23.4	-55 °C for 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	



**Lead-Free Current Sensing Resistors**  
**RLM Series**  
**AEC-Q 200-Ver D qualified**

Document No	TRLM-200S014C
Issued date	2016/09/28
page	3/6

**5.1 Derating Curve**



**5.2 Rated Voltage**

The rated voltage is calculated by the following formula:

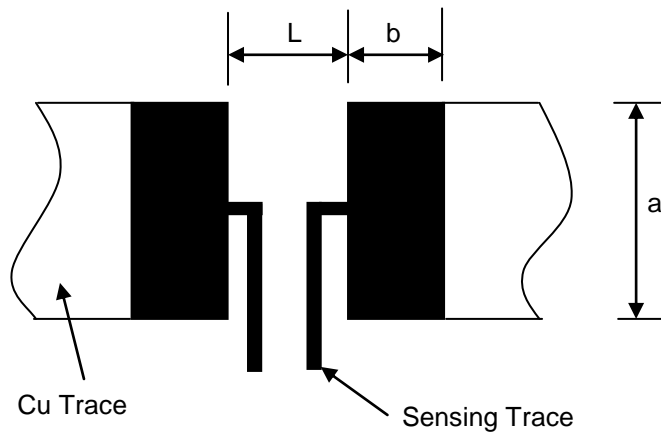
$$V = \sqrt{P \times R}$$

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 $\pm$ 0.2	3.5 $\pm$ 0.2	2.0 $\pm$ 0.2
0.004-0.050	3.4 $\pm$ 0.2	1.5 $\pm$ 0.2	3.5 $\pm$ 0.2

Unit: mm



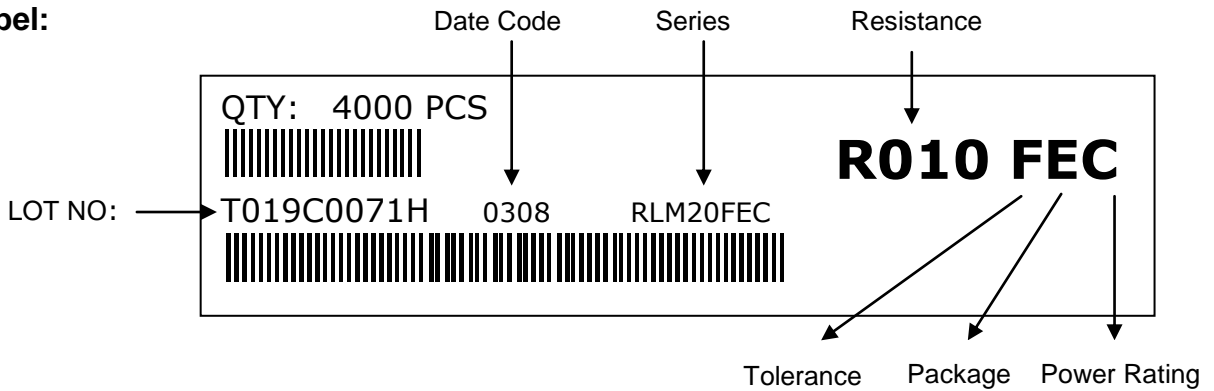
**Lead-Free Current Sensing Resistors**  
**RLM Series**  
**AEC-Q 200-Ver D qualified**

Document No	TRLM-200S014C
Issued date	2016/09/28
page	4/6

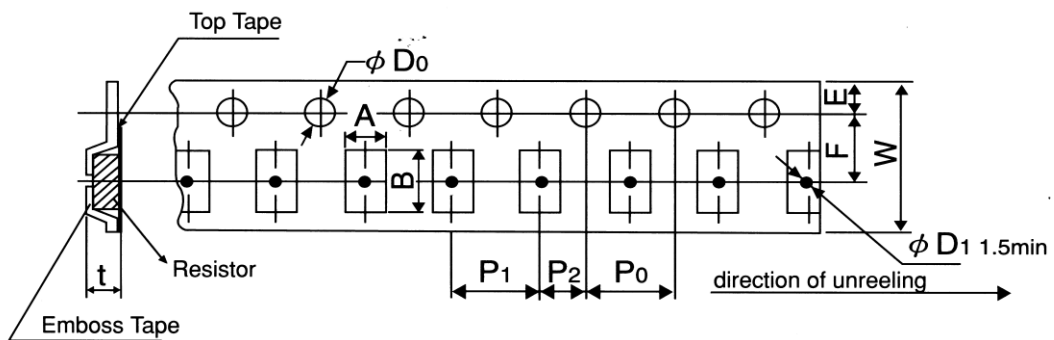
**7. Number of Package:**

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±0.2	5.3±0.2	12.±0.2	5.5±0.05	1.75±0.1	4.0±0.1	2.0±0.05	4.0±0.05	$\phi 1.5$ (+0.1/-0.1)	0.85±0.15

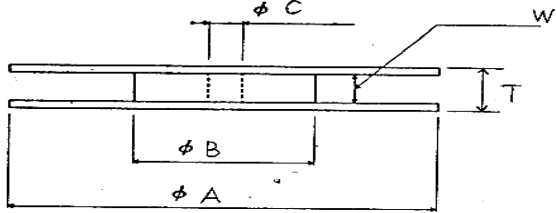
Unit: mm



**Lead-Free Current Sensing Resistors**  
**RLM Series**  
**AEC-Q 200-Ver D qualified**

Document No	TRLM-200S014C
Issued date	2016/09/28
page	5/6

**10. Reel Specification**

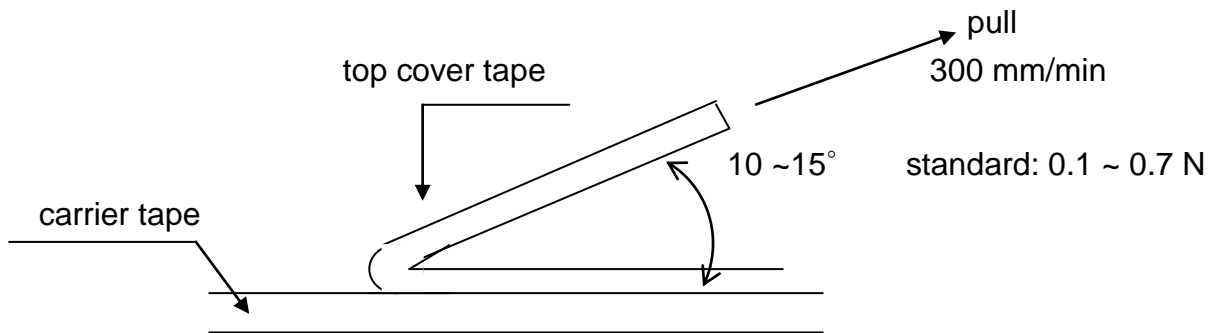


Series	$\phi A$	$\phi B$	$\phi C$	W	T
RLM 20	178.0 $\pm$ 2.0	60.0 $\pm$ 1.0	13.0 $\pm$ 1.0	13.0 $\pm$ 1.0	15.5 $\pm$ 1.0

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:**

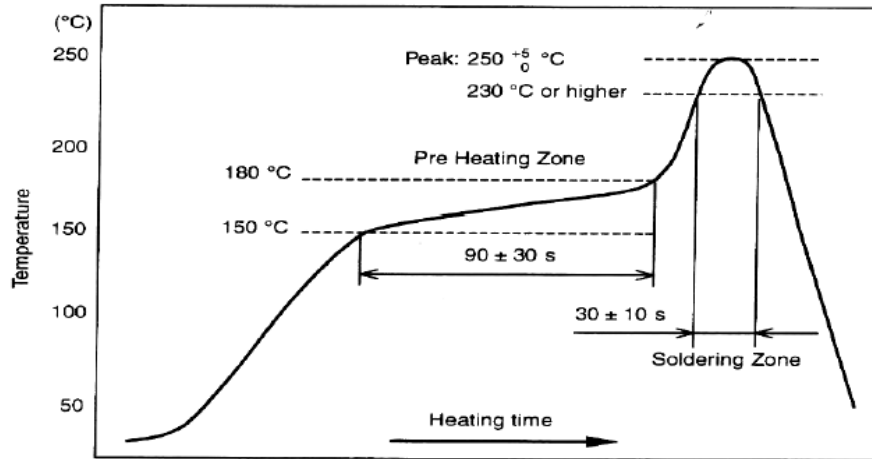
2 years from manufacturing date.



**Lead-Free Current Sensing Resistors**  
**RLM Series**  
**AEC-Q 200-Ver D qualified**

Document No	TRLM-200S014C
Issued date	2016/09/28
page	6/6

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



**Peak :**  $260^{+5}_{-5}$  °C ,  $10 \pm 1$  sec

**Pre – heat Zone :** 150 to 180 °C ,  $90 \pm 30$  sec

**Soldering Zone :** 230°C or higher ,  $30 \pm 10$  sec

**Iron Solder:**  $350 \pm 10$  °C ,  $3 + 1 / - 0$  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 )

Tel: (+886) 3-3246169 Fax : (+886) 3-3246167

**Associated companies :**

(1)TA-I TECHNOLOGY ( SU ZHOU ) CO., LTD. ( China – Su Zhou)

Tel :(+86) 512-63457879 Fax : (+86) 512-63457869

(2) TA-I TECHNOLOGY ELECTRONIC (DONGGUAN) CO., LTD. ( China –Dongguan )

Tel : (+86) 769-8339-4790~3 Fax : (+86) 769-8339-4794

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

Tel : (+86) 769-8339-4790~3 Fax : (+86) 769-8339-4794

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

Tel :(+60) 4- 3900480 Fax : (+60) 4-3901481

(5) P.T.TAI ELECTRONIC Indonesia ( Indonesia – Jakarta )

Tel :(+62) 21-44820254 Fax : (+62) 21-44820256