



**RLM Series**  
**0mΩ (JUMPER)**  
**(Halogen-Free)**  
**AEC-Q 200-Ver E qualified**

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**1. Scope**

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

**2. Type Designation**

<b>RLM25</b>	<b>J</b>	<b>E</b>	<b>E</b>	<b>R000</b>
<b>Series No.</b>	<b>Tolerance</b>	<b>Packaging</b>	<b>Power</b>	<b>Resistance</b>
10 : 0805 12 : 1206 20 : 2010 25 : 2512	J= ±5%	T= Paper E= Embossed Tape	A= 0.25W S= 0.5W C= 1.0W D= 1.5W E= 2.0W	R000=Jumper

**3. Features**

Series	Size	Resistance Value (Max.)	Power (W)	Operation Temperature Range	Max Rated Current	TCR (ppm/°C)
RLM10	0805	≦0.2mΩ	0.5	-55°C~+170°C	50 (A)	3800
RLM12	1206	≦0.2mΩ	1.0	-55°C~+170°C	70 (A)	3800
RLM20	2010	≦0.2mΩ	1.5	-55°C~+170°C	86 (A)	3800
RLM25	2512	≦0.2mΩ	2.0	-55°C~+170°C	100 (A)	3800

\*Measurement : Resistance shall be measured with 25°C in the 4-wire resistance test

\*Note : The specifications and characteristics of this product are not suitable for series and parallel use.



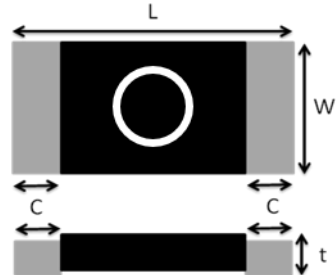
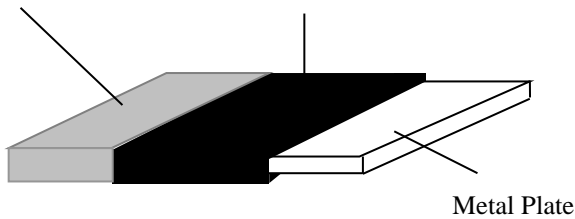
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**4. Construction and Dimension**

Ni/Sn Plating  
 (Matte Sn)

Over-Coat



Type	L	W	C	t
RLM 10	2.00±0.20	1.25±0.20	0.40±0.20	0.70±0.20
RLM 12	3.20±0.20	1.60±0.20	0.55±0.20	0.70±0.20
RLM 20	5.00±0.20	2.50±0.20	0.65±0.20	0.70±0.20
RLM 25	6.40±0.20	3.20±0.20	0.90±0.20	0.70±0.20

UNIT: mm

**Marking**

For RLM Jumper series :





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**5. Reliability Tests**

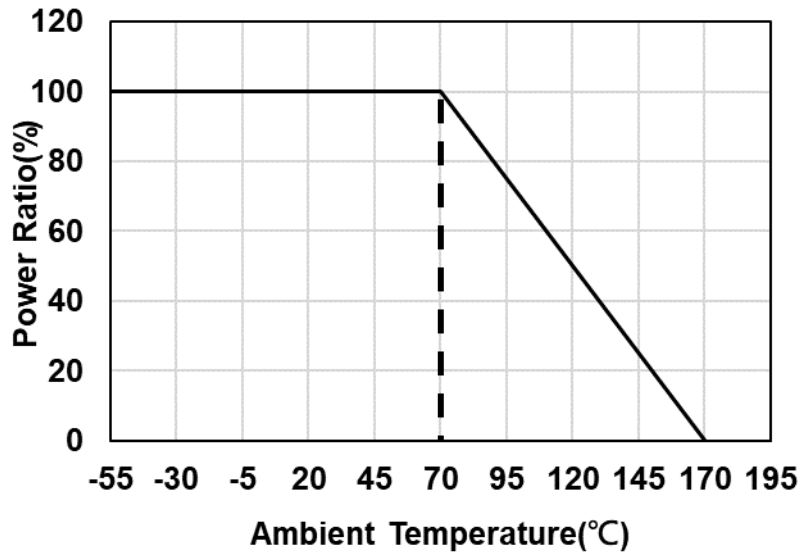
Test Items	Reference	Condition of Test	Test Limits
Temperature Coefficient of Resistance	IEC60115-1 4.8	+25 ~ 125°C	Refer 4.0
High Temperature Exposure (Storage)	AEC-Q200-REV E-Test 3 MIL-STD202 Method 108	T=170°C,1000hrs, Measurement at 24hrs after test conclusion.	0805 ≤ 0.2mΩ 1206 ≤ 0.2mΩ 2010 ≤ 0.2mΩ 2512 ≤ 0.2mΩ
Temperature Cycling	AEC-Q200-REV E-Test 4 JESD22 Method JA-104	1000Cycle (-55°C to 155°C), Measurement at 24hrs after test conclusion.	
Short time overload	IEC60115-1 4.13	5 X rated power for 5s	
Biased Humidity	AEC-Q200-REV E-Test 7 MIL-STD-202 Method 103	10% Rated power at 85°C, RH:85% ,1000Hrs, Measurement at 24hrs after test conclusion.	
Operation life	AEC-Q200-REV E-Test 8 MIL-STD-202 Method 108	1000 hours TA=70°C at 100% rated power. 90min ON and 30 min OFF. Measurement at 24±4 hours after test conclusion.	
External Visual	AEC-Q200-REV E-Test 9 MIL-STD-883 Method 2009	Electrical test not required. Inspect device construction, marking and workmanship.	
Physical Dimension	AEC-Q200-REV E-Test 10 JESD22 Method JB-100	Verify physical dimensions to the applicable device detail specification. Note: User(s) and Suppliers spec. Electrical test not required.	
Resistance to Solvents	AEC-Q200-REV E-Test 12 MIL-STD-202 Method 215	a: Isopropyl Alcohol : Mineral Spirits = 1 : 3 b: Terpene Defluxer c: Deionized water : Propylene Glycol Monomethyl Ether : monoethanolamine = 42 : 1 : 1	Marking and protective layer cannot be detached
Resistance to Soldering Heat	AEC-Q200-REV E-Test 15 MIL-STD-202 Method 210	T=260+/-5°C solder,10+/-1 sec dwell.	0805 ≤ 0.2mΩ 1206 ≤ 0.2mΩ 2010 ≤ 0.2mΩ 2512 ≤ 0.2mΩ
Mechanical Shock	AEC-Q200-REV E-Test 13 MIL-STD-202 Method 213	100g's, Normal duration is 6ms, half sine shock pulse.	
Resistance to vibration	AEC-Q200-REV E-Test 14 MIL-STD-202 Method 204	5g's for 20min.12cycles, 10-2000Hz.	
Board Flex	AEC-Q200-REV E-Test 21 AEC-Q200-005	Min 2mm deflection ,60sec.	
ESD	AEC-Q200-REV E-Test 17 AEC-Q200-002 or ISO/DIS 10605	verify the voltage setting at 500V	
Terminal Strength (SMD)	AEC-Q200-REV E-Test 22 AEC-Q200-006	Force of 1.8kg for 60 seconds Remarks: 0201-NA	
Low Temperature Storage	EC60115-1 4.23.4 JIS C 5201-1 4.23.4	-55°C, 1000hrs	
Flammability	AEC-Q200-REV E-Test 20 UL-94	V-0 or V-1are acceptable, Electrical test not required	V-0
Solderability	AEC-Q200-REV E-Test 18 J-STD-002	Method B, aging 4 hours at 155 °C dry heat Lead-free solder bath at 235±3 °C Dipping time: 3±0.5 seconds	> 95% area covered with tin



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### 5.1 Derating Curve



### 5.2 Rated Current

The rated Current are calculated by the following formula:

$$I = \sqrt{P \div R}$$

I : Rated Current (A)

P : Rated Power(W)

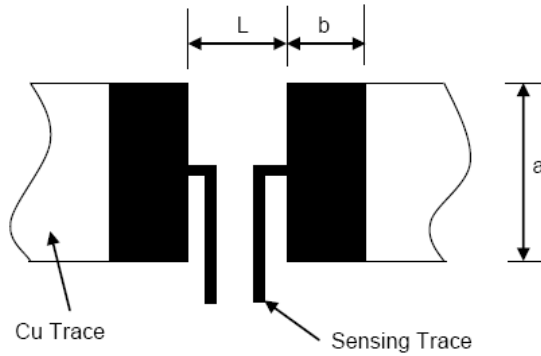
R : Resistance Value(Ω)



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**6. Recommended Solder Pad Dimension**



Series	Resistance Range	a	b	L
RLM10	$\leq 0.2\text{m}\Omega$	1.4±0.1	1.2±0.1	1.2±0.1
RLM12	$\leq 0.2\text{m}\Omega$	1.8±0.1	1.7±0.1	1.6±0.1
RLM20	$\leq 0.2\text{m}\Omega$	3.4±0.1	1.5±0.1	3.5±0.1
RLM25	$\leq 0.2\text{m}\Omega$	4.0±0.1	2.1±0.1	4.1±0.1

Unit: mm

**7. Number of Package**

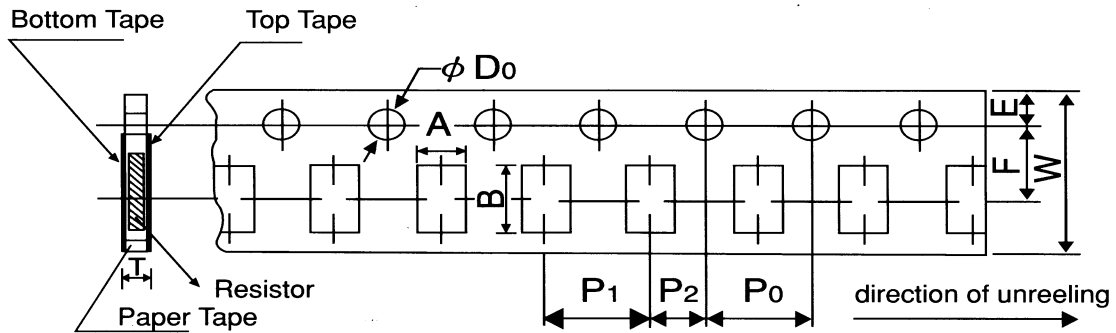
	RLM 10	RLM 12	RLM 20	RLM 25
Pieces/Reel	5000	5000	4000	4000



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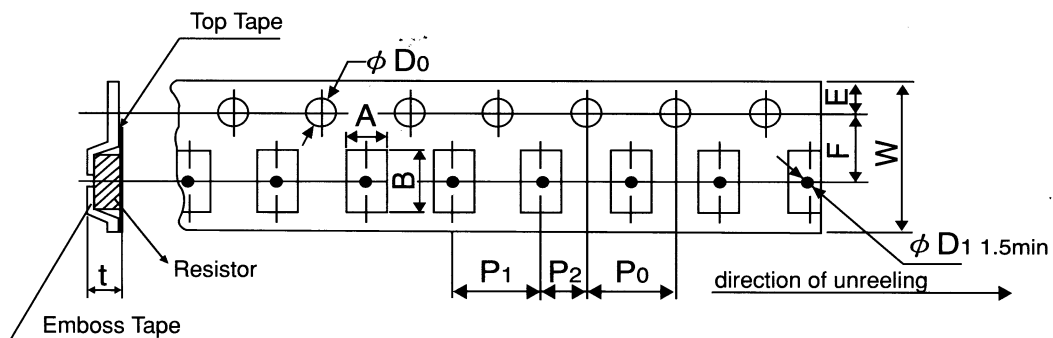
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**8. Packaging**



Packing	Type	A	B	W	F	E	P <sub>1</sub>	P <sub>2</sub>	P <sub>0</sub>	ψD <sub>0</sub>	T
Paper Tape	RLM10	1.6 ±0.15	2.4 ±0.2	8.0 ±0.2	3.5 ±0.05	1.75 ±0.1	4.0 ±0.1	2.0 ±0.1	4.0 ±0.1	ψ1.5 (+0.1/-0)	0.85 ±0.1
	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	ψ1.5 (+0.1/-0)	0.85 ±0.1

Unit: mm



Packing	Type	A	B	W	F	E	P <sub>1</sub>	P <sub>2</sub>	P <sub>0</sub>	D <sub>0</sub>	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	ψ1.5 (+0.1/-0.1)	0.85 ±0.15
	RLM25	3.6 (+0.2/-0.18)	6.9 ±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	ψ1.5 (+0.1/-0)	1.2 ±0.15

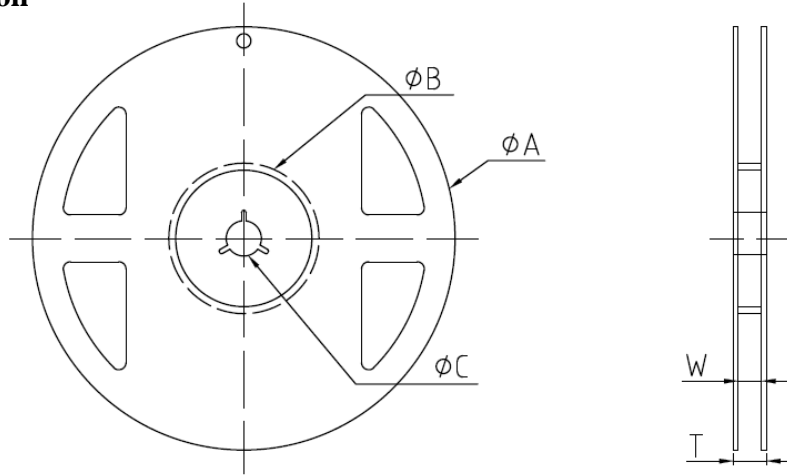
Unit: mm



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**9. Reel Specification**

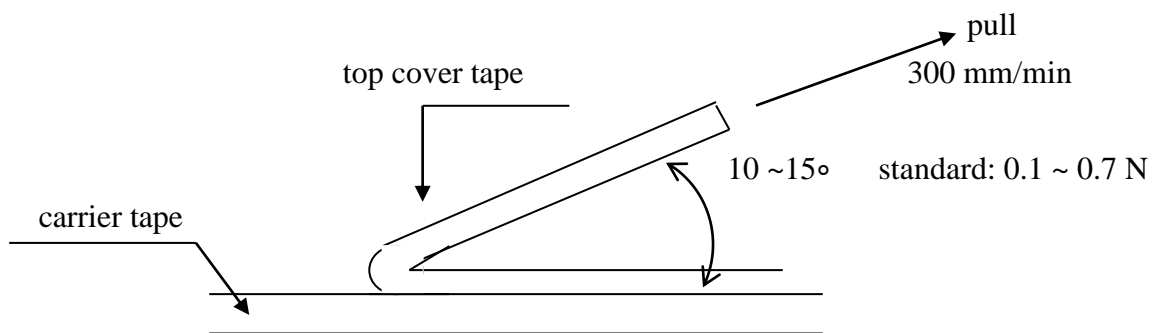


Series	$\phi A$	$\phi B$	$\phi C$	W	T
RLM 10	178.0 ±2.0	60.0 ±1.0	13.0 ±1.0	9.0 ±1.0	11.4 ±1.0
RLM 12	178.0 ±2.0	60.0 ±1.0	13.0 ±1.0	9.0 ±1.0	11.4 ±1.0
RLM 20	178.0 ±2.0	60.0 ±1.0	13.0 ±1.0	13.0 ±1.0	15.5 ±1.0
RLM 25	180.0 (+0/-3)	60.0 ±1.0	13.0±1.0	13.0±1.0	15.4±2.0

Unit: mm

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

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.



**11. Storage Conditions**

Temperature: 5°C~35°C, Humidity:40%~75%  
 Humidity storage level: Level 1

**12. Shelf Life**

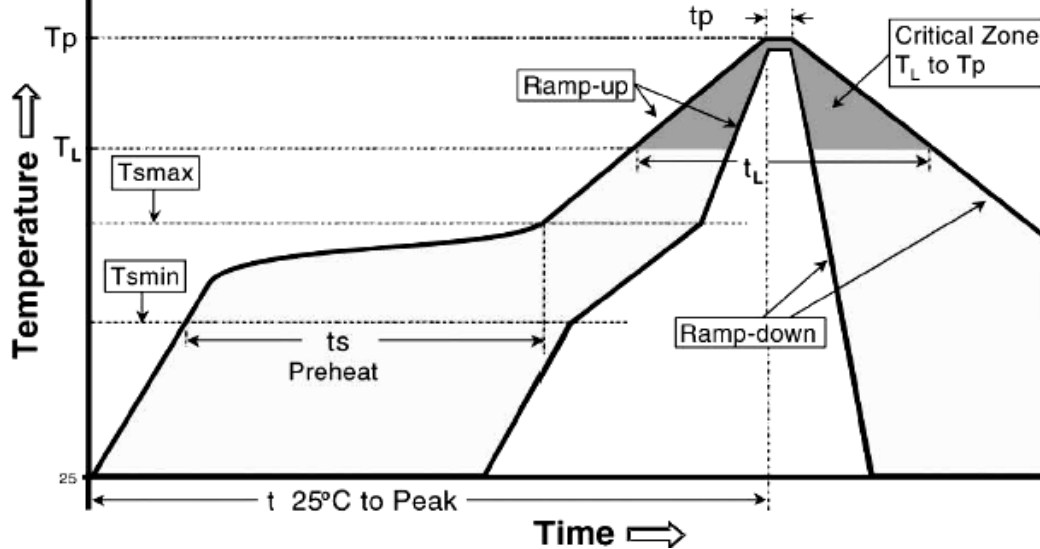
2 years from manufacturing date.



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



**Allowed Re-flow times: 3 times**

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

**Iron Solder: 350±10°C, 3+1/-0 sec**

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> ) (ts)	150°C 200°C 60 -120 seconds
Time maintained above: - Temperature (T <sub>L</sub> ) - Time (T <sub>L</sub> )	217°C 60-150 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	8minutes max.





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**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.

**15. Manufacturing Country & City:**

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

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**Associated companies:**

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

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(3) FORTUNE TASK ENTERPRISES LIMITED (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

单击下面可查看定价，库存，交付和生命周期等信息

[>>TA-I\(大毅\)](#)