	Lead-Free Current Sensing Resistors RLSL Series (Halogen-Free) AEC-Q 200-Ver D qualified	Document No	TRLSL-XX0S002B
		Issued date	2021/02/20
		page	1/9

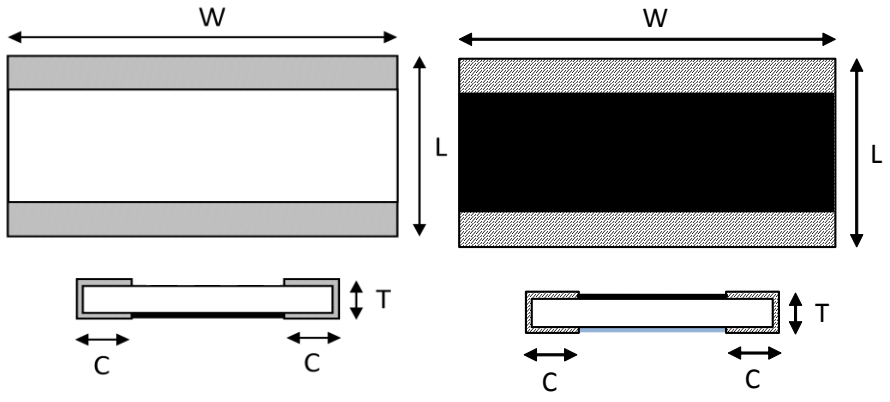
1. Scope :

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

2. Type Designation :

RLSL05	F	T	S	R010
Series No.	**Tolerance**	**Packaging**	**Power**	**Resistance**
05→0508 06→0612	F = ± 1% G = ± 2% J = ± 5%	T=Paper	A = 0.25 W S = 0.5 W C = 1 W D=1.5W	R0025=2.5mΩ R005=5 mΩ R010=10 mΩ

3. Dimension :



RLSL05 Series　　RLSL06 Series

3.1 Marking

Resistance value is expressed by 3-4 digits.

05 series no marking

E.G.:

0025=0.0025Ω=2.5 mΩ

005 = 0.005Ω = 5 mΩ

010 = 0.010Ω = 10 mΩ

Series	L	W	C	T
RLSL05	1.25±0.20	2.00±0.20	0.40±0.20	0.50±0.20
RLSL06	1.60±0.20	3.20±0.20	0.40±0.20	0.50±0.20

UNIT : mm

4. Features:

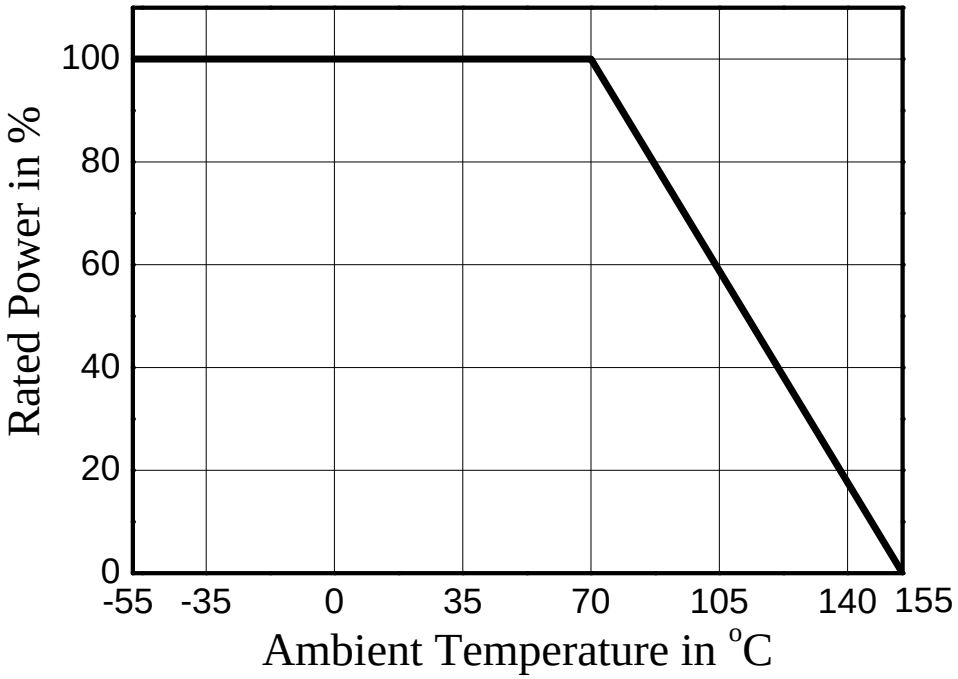
Series	Size	Power (W)	Resistance Value	Operation Temperature Range	TCR	Tolerance
RLSL05	0508	1.0	1≦R<5 mΩ 5≦R≦10 mΩ	-55℃~+155℃	±75ppm/℃ ±50ppm/℃	±1% ±2% ±5%
RLSL06	0612	1.5	1≦R<5 mΩ 5≦R≦20 mΩ		±75ppm/℃ ±50ppm/℃	

5. Reliability Tests :

Test Items	Reference standard	Condition of Test	Test Limits
Temperature Coefficient of Resistance	IEC60115-1 4.8	+25 ~ 125℃	Refer item 4
Short Time Overload	IEC60115-1 4.13	5 X rated power for 5s	< ±1%
High Temperature Exposure (Storage)	AEC-Q200-REV D-Test 3 MIL-STD-202 Method 108	1000 hrs. @ T=125°C. Unpowered. Measurement at 24±2 hours after test conclusion.	< ±1%
Temperature Cycling	AEC-Q200-REV D-Test 4 JESD22 Method JA-104	1000 Cycles (-55°Cto+125°C) Measurement at 24±4 hours after test conclusion. 30min maximum dwell time at each temperature extreme. 1 min. maximum transition time.	< ±1%
Moisture Resistance	AEC-Q200-REV D-Test 6 MIL-STD-202 Method 106	T=24 hours / Cycle ,10Cycles . Notes : Steps 7a& 7b not required. Unpowered	< ±1%
Biased Humidity	AEC-Q200-REV D-Test 7 MIL-STD-202 Method 103	1000 hours 85°C/85%RH. Note: Specified conditions: 10% of operating power(not exceeding max working voltage). Measurement at 24±2 hours after test conclusion.	< ±1%
Operational Life	AEC-Q200-REV D-Test 8 MIL-STD-202 Method 108	1000 hours TA=125°C at 35% rated power. Measurement at 24±4 hours after test conclusion.	< ±2%
External Visual	AEC-Q200-REV D-Test 9 MIL-STD-883 Method 2009	Electrical test not required. Inspect device construction, marking and workmanship.	
Physical Dimension	AEC-Q200-REV D-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 D-Test 12 MIL-STD-202 Method 215	a:Isopropyl Alcohol：Mineral Spirits= 1：3 b:Terpene Defluxer (Bioact EC-7R) c:Deionized water ：Propylene Glycol Monomethyl Ether : monoethanolamine = 42：1：1	Marking and protective layer can not be detached
Mechanical Shock	AEC-Q200-REV D-Test 13 MIL-STD-202 Method 213	Wave Form : Tolerance for half sine shock pluse. Peak value is 100g's. Normal duration(D) is 6(ms)	< ±1.0%
Vibration	AEC-Q200-REV D-Test 14 MIL-STD-202 Method 204	5 g's for 20 min., 12 cycles each of 3 orientations. Note: Test from 10-2000 Hz.	< ±1.0%
Resistance to Soldering Heat	AEC-Q200-REV D-Test 15 MIL-STD-202 Method 210	Condition B : Immerse the specimens in and eutectic solder at 260±5℃ for 10±1S .	< ±0.5%
Thermal Shock	AEC-Q200-REV D-Test 16 MIL-STD-202 Method 107	-55°C/+155°C. Note: Number of cycles required-300, Maximum transfer time-20 seconds, Dwell time-15 minutes. Air-Air.	< ±1.0%
ESD	AEC-Q200-REV D-Test 17 AEC-Q200-002 or ISO/DIS 10605	verify the voltage setting at 500V	< ±1.0%
Solderability	AEC-Q200-REV D-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
Flammability	AEC-Q200-REV D-Test 20 UL-94	V-0 or V-1 are acceptable. Electrical test not required.	V-0 or V-1
Board Flex (Bending)	AEC-Q200-REV D-Test 21 AEC-Q200-005	The duration of the applied forces shall be 60 (+ 5) Sec 3mm deflection	< ±1.0%
Terminal Strength (SMD)	AEC-Q200-REV D-Test 22 AEC-Q200-006	Force of 1.8kg for 60 seconds Remarks : 0201-NA	< ±1.0%

5.1Derating Curve



5.2 Rated Current & Voltage

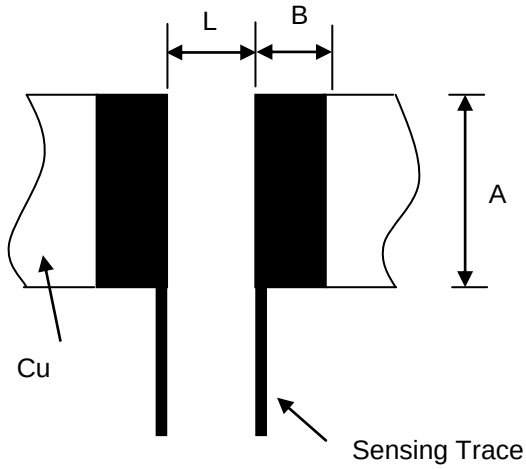
The rated Current and Voltage are calculated by the following formula:

$$I=\sqrt{P \div R} \qquad V=\sqrt{P \times R}$$

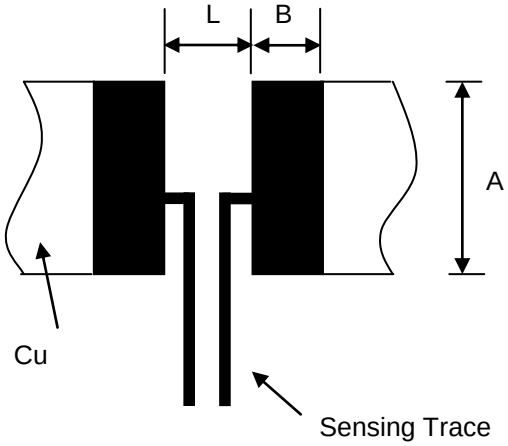
I: Rated Current(I) V: Rated Voltage(V)

P: Rated Power(W) R: Resistance Value(Ω)

6. Recommended Solder Pad Dimension



RLSL05



RLSL06

Unit: mm

Series	Resistance (mΩ)	A	L	B
RLSL05	1 ≦ R ≦ 10	2.4	0.45	0.875
RLSL06	1 ≦ R ≦ 10	3.8	0.85	0.625

Note:

*1.The copper foil minimum thickness of PCB needs 3 oz.

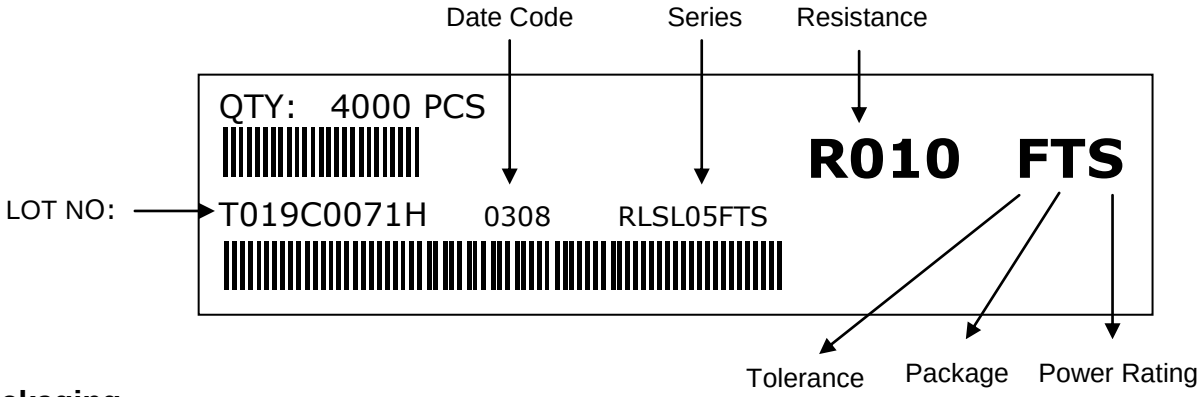
*2.PCB Dimension Tolerance is +/-0.1mm.

*3.The Resistance will change slightly after soldered, it is depend on PCB PAD size deign and it's necessary to consider the effect of the resistance increase or decrease.

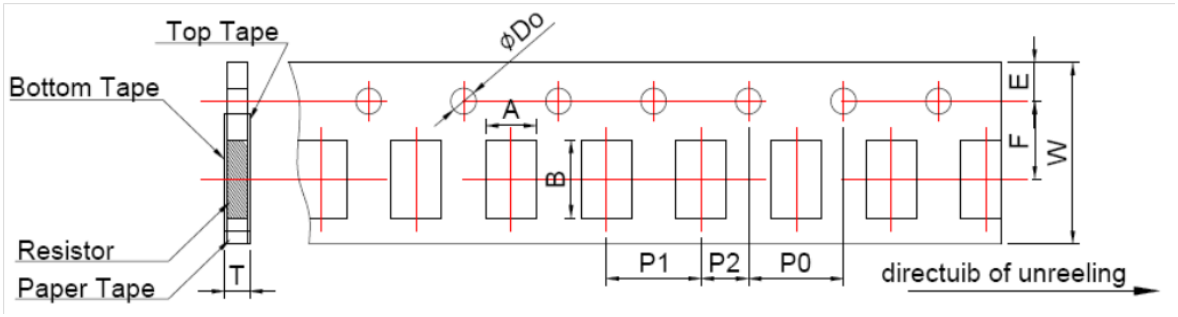
7. Number of Package:

Series	RLSL05	RLSL06
Pieces/Package	4000	4000

8. Label:

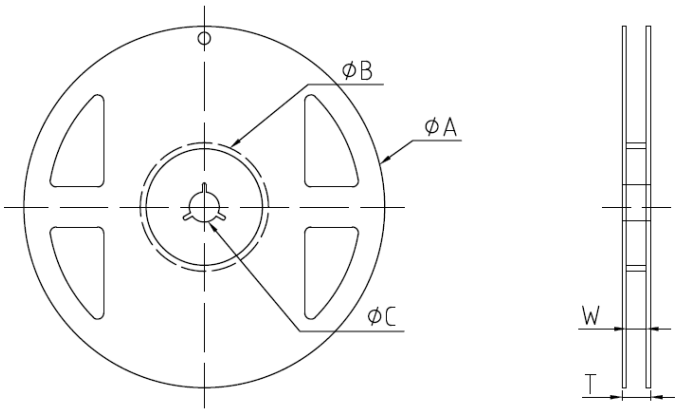


9. Packaging



Tape packaging dimension											
Packing	**Type**	**A**	**B**	**W**	**F**	**E**	**P1**	**P2**	**P0**	**D0**	**T**
Paper Tape	**RLSL05**	**1.60**	**2.40**	**8.00**	**3.50**	**1.75**	**4.00**	**2.00**	**4.00**	**1.55**	**1.05**
	RLSL06	**2.00**	**3.60**	**8.00**	**3.50**	**1.75**	**4.00**	**2.00**	**4.00**	**1.55**	**1.05**
Tolerance		**±0.15**	**±0.20**	**±0.20**	**±0.05**	**±0.10**	**±0.10**	**±0.10**	**±0.10**	**±0.10**	**±0.10**

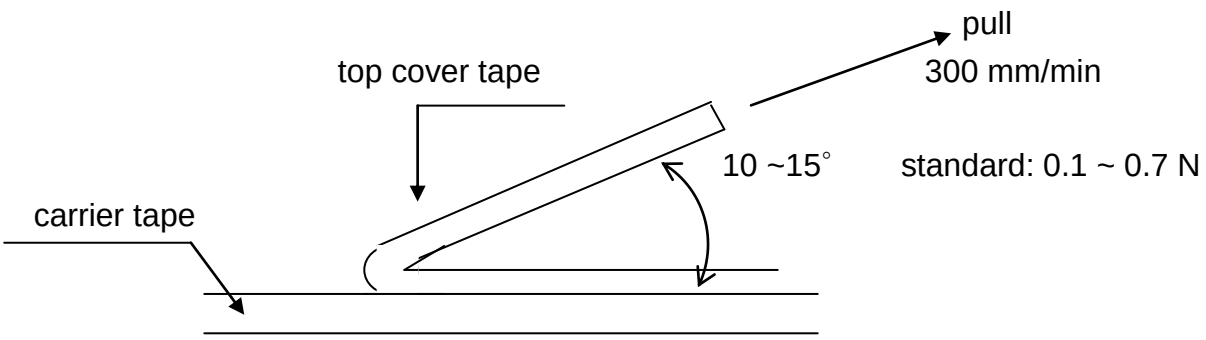
10. Reel Specification



Series	ϕA	ϕB	ϕC	W	T
RLSL05	178 ±2.0	60 ±1.0	13.0±1.0	9.0±1.0	11.4±1.0
RLSL06					

11. Peeling Strength of Top Cover Tape

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



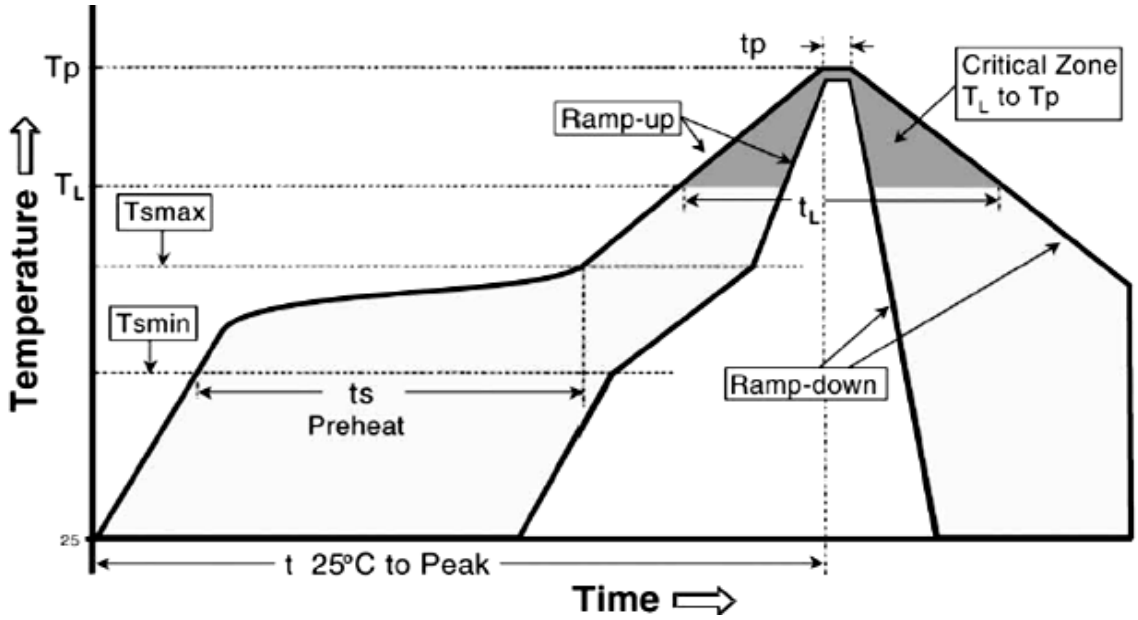
12. Storage Conditions:

Temperature: 5℃~35℃,Humidity:40%~75%

13. Shelf Life:

2 years from manufacturing date.

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



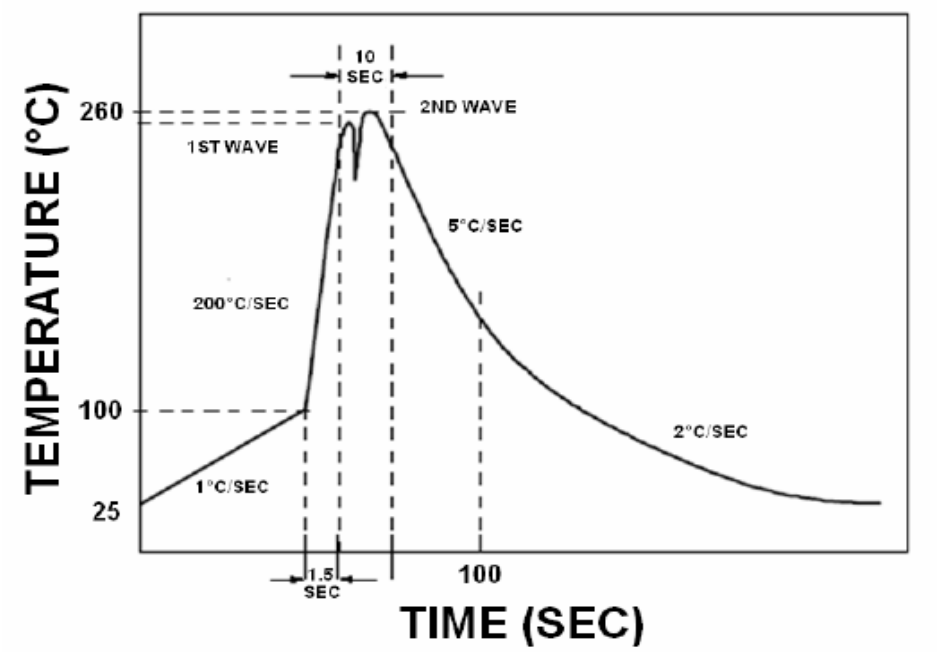
Alloyed Re-flow times : 3 times

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

Iron Solder:350±10℃ , 3+1/-0 sec, 1 time

Profile Feature	Lead (Pb)-Free Assembly
Average ramp-up rate (Tsmax to Tp)	3℃ / second max.
Preheat - Temperature Min (Ts_{min}) - Temperature Max (Ts_{max}) - Time (Ts_{min} to Ts_{max}) (ts)	 150℃ 200℃ 60 -150 seconds
Time maintained above : - Temperature (T_L) - Time (T_L)	 217℃ 60-120 seconds
Peak Temperature (Tp)	260℃
Time within $^{+0}_{-5}$ ℃ of actual Peak Temperature (tp)[2]	10 seconds
Ramp-down Rate	6℃/second max.
Time 25℃ to Peak Temperature	8mimutes max.

15. Recommend Wave-Solder profile : (solder : Sn96.5 / Ag3 / Cu0.5)



16. 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.

17. 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

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)