



Lead-Free Current Sensing Resistors RLSL Series (Halogen-Free)

Document No	TRLSL-XX0S001H
Issued date	2020/03/25
page	1/8

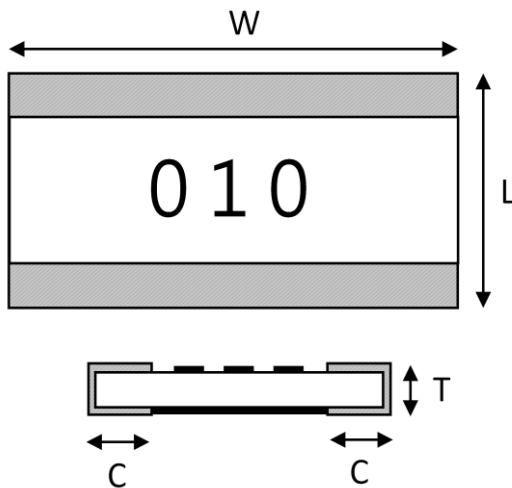
1. Scope :

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 :



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	0.30±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



Lead-Free Current Sensing Resistors RLSL Series (Halogen-Free)

Document No	TRLSL-XX0S001H
Issued date	2020/03/25
page	2/8

4. Features:

Series	Size	Power (W)	Resistance Value	Operation Temperature Range	TCR	Tolerance
RLSL05	0508	1.0	$1 \leq R < 5 \text{ m}\Omega$	-55°C ~ +155°C	±75ppm/°C ±50ppm/°C	±1%
RLSL06	0612	1.5	$5 \leq R \leq 10 \text{ m}\Omega$			±2%
						±5%

5. Reliability Tests :

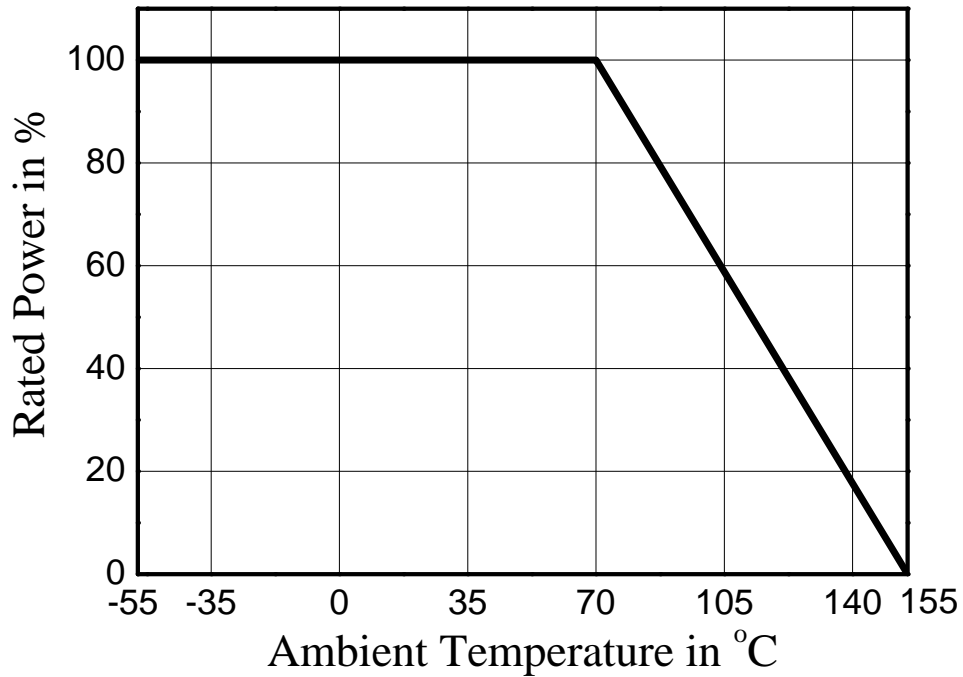
Test Items	Reference standard	Condition of Test	Test Limits
Temperature Coefficient of Resistance	IEC60115-1-4.8 JIS-C5201-4.8	+25°C ~ +125°C	Refer 4.0
Load Life	IEC60115-1-4.25.1 JIS-C5201-4.25.1	1000hours at rated power, 70°C, 1.5hours "ON", 0.5hour "OFF"	< ±2%
Short Time Overload	IEC60115-1-4.13 JIS-C5201-4.13	5 X rated power for 5s	< ±1%
Moisture no Load	IEC60115-1- 4.24.2.1a) JIS-C5201- 4.24.2.1a)	85°C , 85%RH, 1000hrs	< ±2%
Temperature cycle	IEC60115-1-4.19 JIS-C5201-4.19	-55°C & +125°C, 100cycle, 15min per extreme condition	< ±1%
Resistance to Soldering Heat	IEC60115-1-4.18 JIS-C5201-4.18	260±5°C for 10±1 sec	< ±1%
Solderability	IEC60115-1-4.17 JIS-C5201-4.17	245±5°C , 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-C5201-4.23.2	155°C , 1000hrs	< ±2%
Low Temperature Storage	IEC60115-1- 4.23.4 JIS-C5201-4.23.4	-55°C , 1000hrs	<±2%
Substrate Bending	IEC60115-1-4.33 JIS-C5201-4.33	Bending width 2mm	< ±1%
Insulation Resistance	IEC60115-1-4.6 JIS-C5201-4.6	100V DC for 1 minute	>100 MΩ



**Lead-Free Current Sensing Resistors
RLSL Series
(Halogen-Free)**

Document No	TRLSL-XX0S001H
Issued date	2020/03/25
page	3/8

5.1 Derating Curve



5.2 Rated Current & Voltage

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

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

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

I: Rated Current(I)

V: Rated Voltage(V)

P: Rated Power(W)

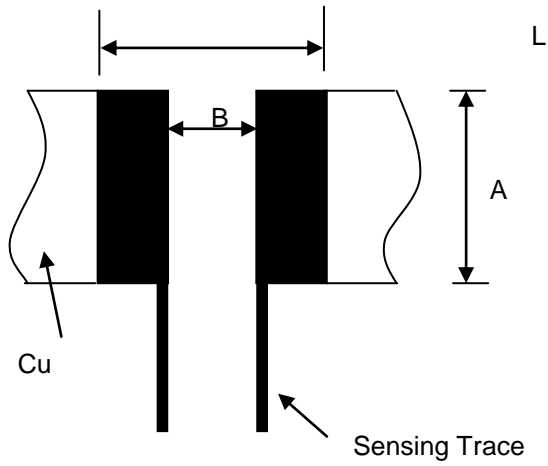
R: Resistance Value(Ω)



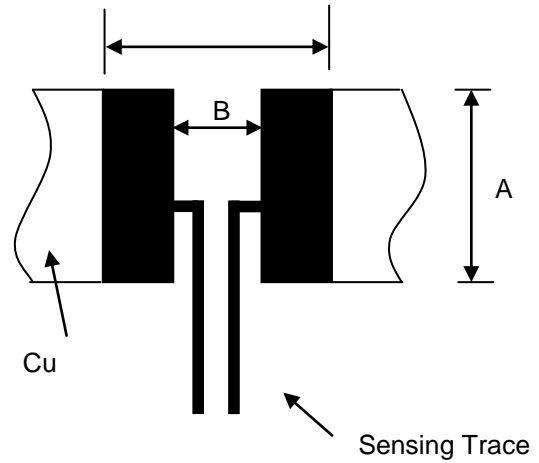
**Lead-Free Current Sensing Resistors
RLSL Series
(Halogen-Free)**

Document No	TRLSL-XX0S001H
Issued date	2020/03/25
page	4/8

6. Recommended Solder Pad Dimension



RLSL05



RLSL06

7

Unit: mm

Series	Resistance (mΩ)	A	L	B
RLSL05	$1 \leq R \leq 10$	2.4±0.2	2.2±0.2	0.35-0.6
RLSL06	$1 \leq R \leq 10$	3.8±0.2	2.1±0.2	0.70-0.85

Note: *The copper foil minimum thickness of PCB needs 3 oz



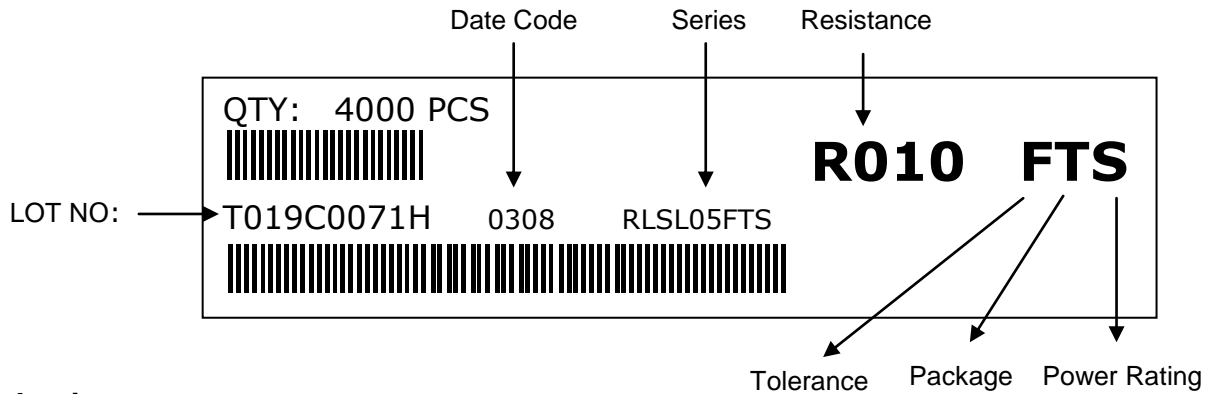
Lead-Free Current Sensing Resistors RLSL Series (Halogen-Free)

Document No	TRLSSL-XX0S001H
Issued date	2020/03/25
page	5/8

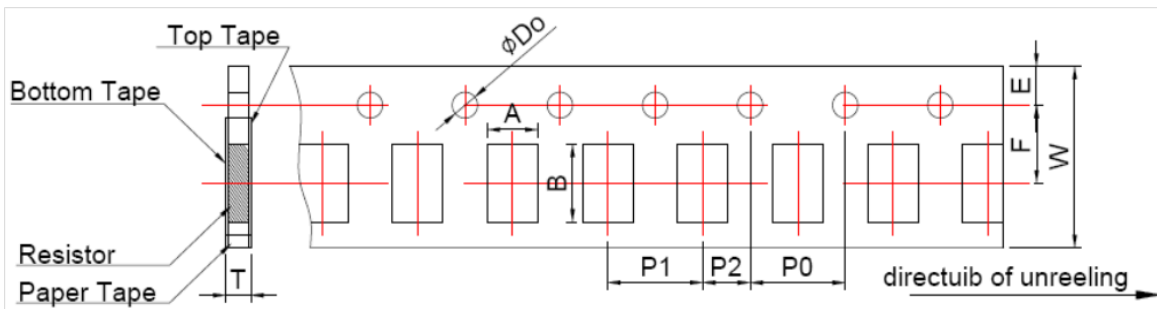
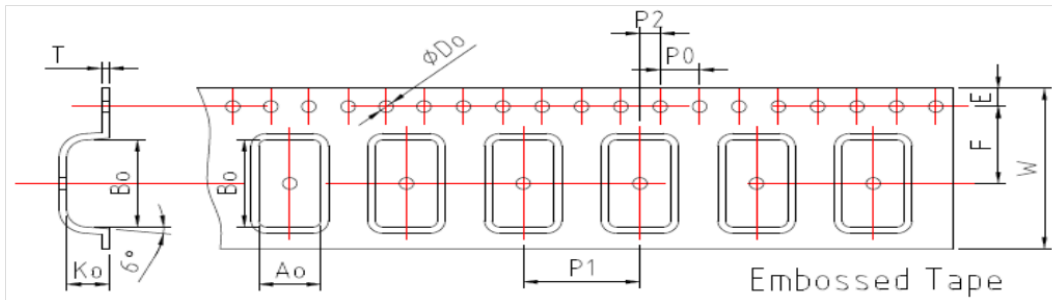
7. Number of Package:

Series	RLSL05	RLSL06
Pieces/Package	4000	4000

8. Label:



9. Packaging



Tape packaging dimension

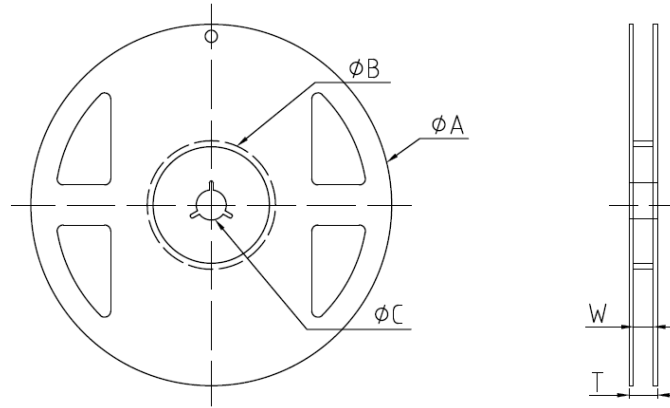
Packing	Type	A	B	W	F	E	P1	P2	P0	D0	T
Paper Tape	RLSL05	1.60	2.40	8.00	3.50	1.75	4.00	2.00	4.00	1.55	1.05
	RLSL06	2.00	3.60	8.00	3.50	1.75	4.00	2.00	4.00	1.55	1.05
Tolerance		±0.15	±0.20	±0.20	±0.05	±0.10	±0.10	±0.10	±0.10	±0.10	±0.10



Lead-Free Current Sensing Resistors RLSL Series (Halogen-Free)

Document No	TRLSL-XX0S001H
Issued date	2020/03/25
page	6/8

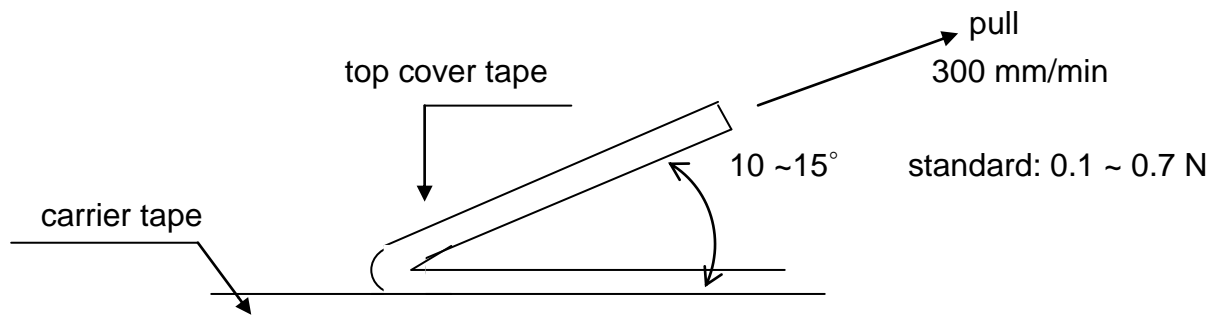
10. Reel Specification



Series	ϕA	ϕB	ϕC	W	T
RLSL05	178 \pm 2.0	60 \pm 1.0	13.0 \pm 1.0	9.0 \pm 1.0	11.4 \pm 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°C ~35°C, Humidity:40%~75%

13. Shelf Life:

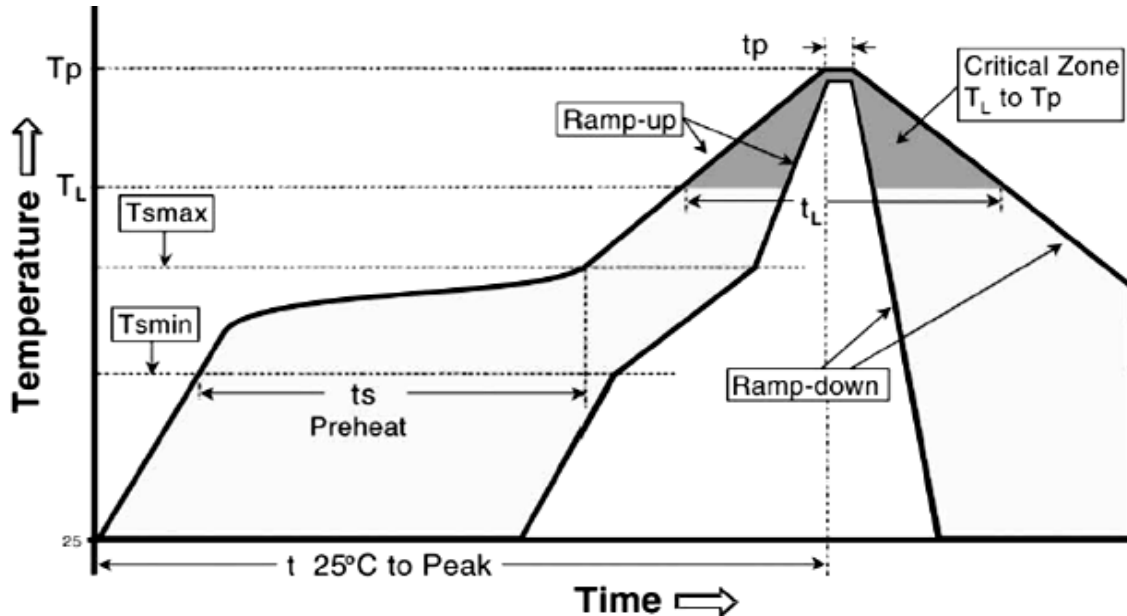
2 years from manufacturing date.



**Lead-Free Current Sensing Resistors
RLSL Series
(Halogen-Free)**

Document No	TRLSL-XX0S001H
Issued date	2020/03/25
page	7/8

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°C , 3+1/-0 sec, 1 time

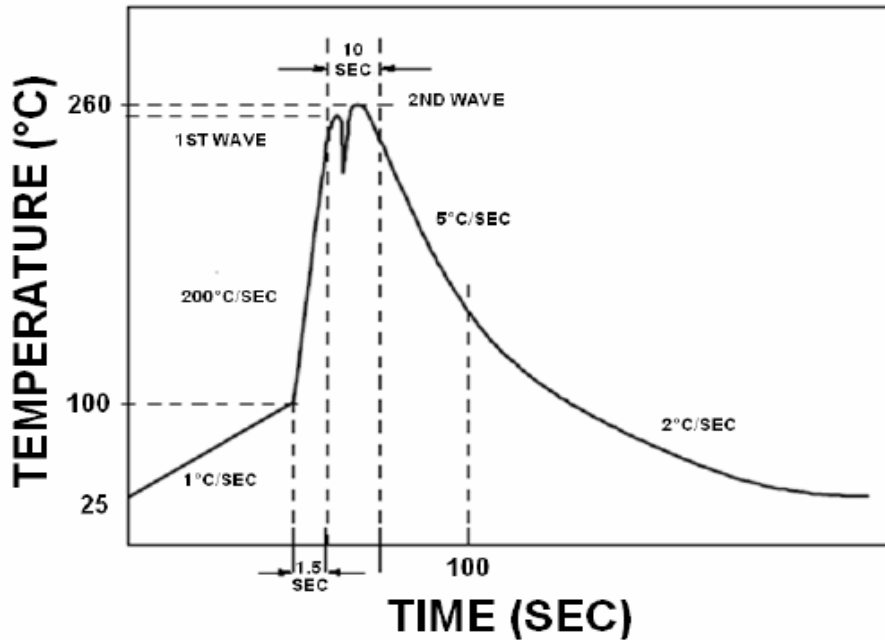
Profile Feature	Lead (Pb)-Free Assembly
Average ramp-up rate (T _{smax} to T _p)	3°C / second max.
Preheat - Temperature Min (T _{smin}) - Temperature Max (T _{smax}) - Time (T _{smin} to T _{smax}) (t _s)	150°C 200°C 60 -150 seconds
Time maintained above : - Temperature (T _L) - Time (T _L)	217°C 60-120 seconds
Peak Temperature (T _p)	260°C
Time within $\begin{matrix} +0 \\ -5 \end{matrix}$ °C of actual Peak Temperature (t _p) ²	10 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8mimutes max.



**Lead-Free Current Sensing Resistors
RLSL Series
(Halogen-Free)**

Document No	TRLSL-XX0S001H
Issued date	2020/03/25
page	8/8

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.