



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

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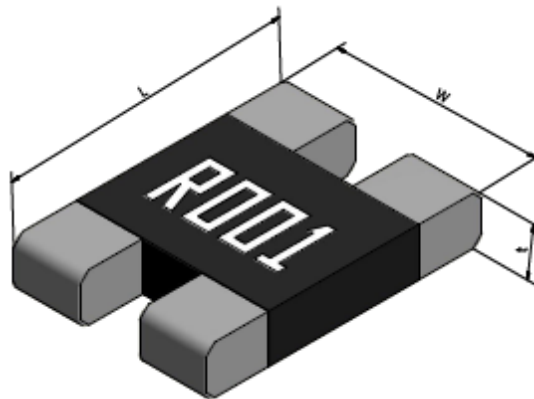
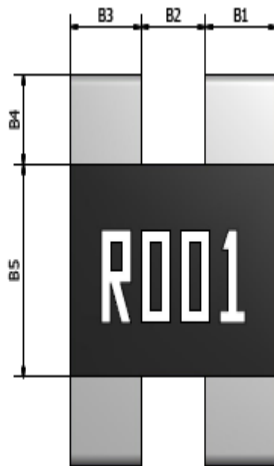
1. Scope :

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

2. Type Designation :

RLF12	D	E	E	R001
Series No.	Tolerance	Packaging	Power	Resistance
F = 4-Wire 12 = 1225	D = ± 0.5% F = ± 1% G = ± 2%	E=Embossed	E = 2W	R001= 1mΩ

3. Dimension :



Metal Alloy Construction

RLF 1225	Dimension	L	W	t	B1
	SPEC (mm)	6.40±0.20	3.20±0.20	0.70±0.20	0.70±0.20
	Dimension	B2	B3	B4	B5
	SPEC (mm)	1.4±0.20	0.7±0.20	2.0±0.20	2.3±0.20

Unit: mm



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4. Features:

Series	Size	Power (W)	Resistance Value	Operation Temperature Range	TCR	Tolerance
RLF12	1225	2.0	1 mΩ	-40°C ~+125°C	±100ppm/°C	±0.5% ±1% ±2%

5. Reliability Tests:

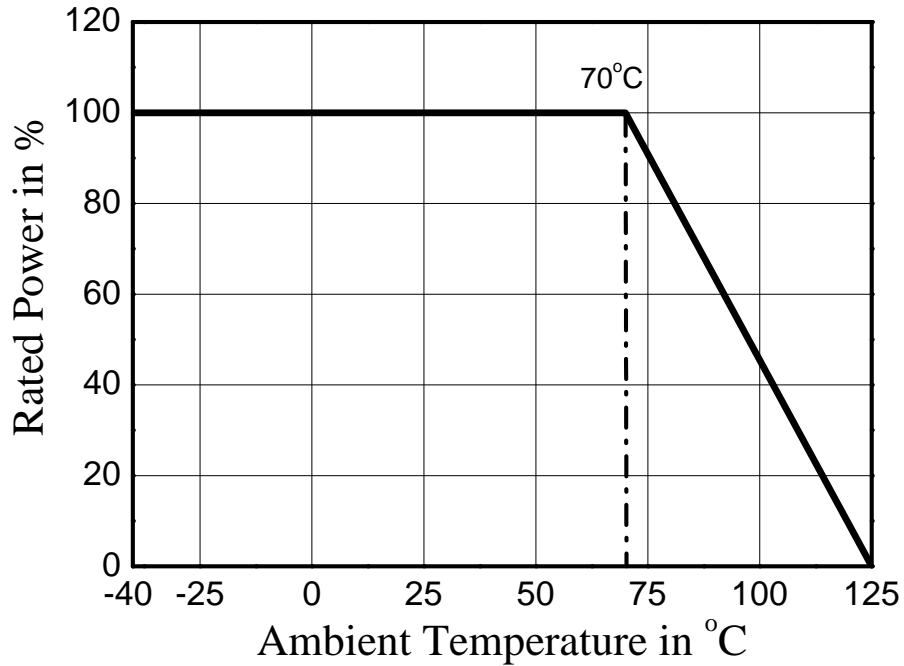
Test Items	Condition of Test	Test Limits
Temperature Coefficient of Resistance	+25°C ~ +125°C	Refer 4.0
Load Life	1000 Hours, 70°C, Rated Power	< ±0.5%
Short Time Overload	Rated voltage x 1.5 for 5s	< ±0.5%
Moisture no Load	60°C±2°C, 90%~95% RH, Rated voltage 1.5h ON, 0.5h OFF, 1000h	< ±0.5%
Temperature cycle	-40°C (30min.)/+125°C (30min.), 5 cycles	< ±0.5%
Resistance to Soldering Heat	260°C±5°C for 10s±1s	< ±0.5%
High Temperature Exposure	MIL-PRF-55342 100 Hours, 125°C, No Power	< ±0.5%
Low Temperature Storage	MIL-PRF-55342 100 Hours, -40°C, No Power	< ±0.5%
Leach Resistance	Molten Solder 250°C	90 seconds minimum
Substrate bending	Bending width: 2mm for 10s±1s, Glass epoxy substrate with thickness of 1.6mm	< ±0.5%
Solderability	245°C±5°C for 3s±0.5s	95% or more of the electrode surface shall be covered with new solder



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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 (A)

V: Rated Voltage (V)

P: Rated Power(W)

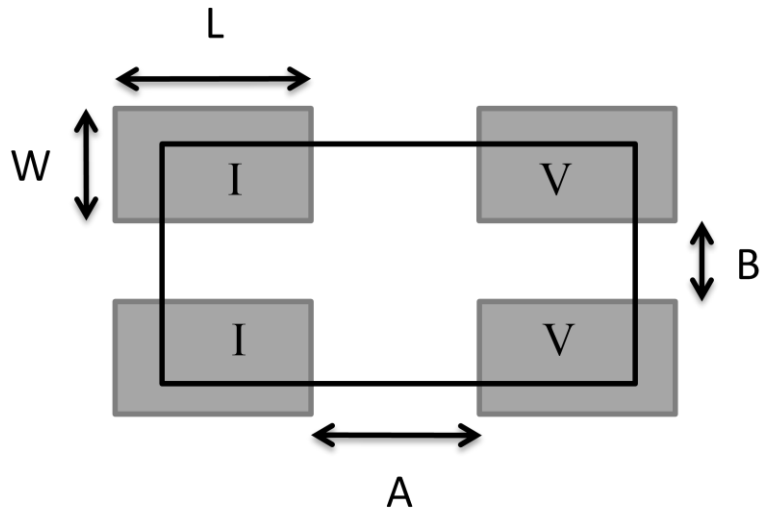
R: Resistance Value(Ω)



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6. Recommended Solder Pad Dimension



Unit: mm

Series	Resistance (mΩ)	A	B	L	W
RLF12	1	2.3	1.4	2.6	1.5

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



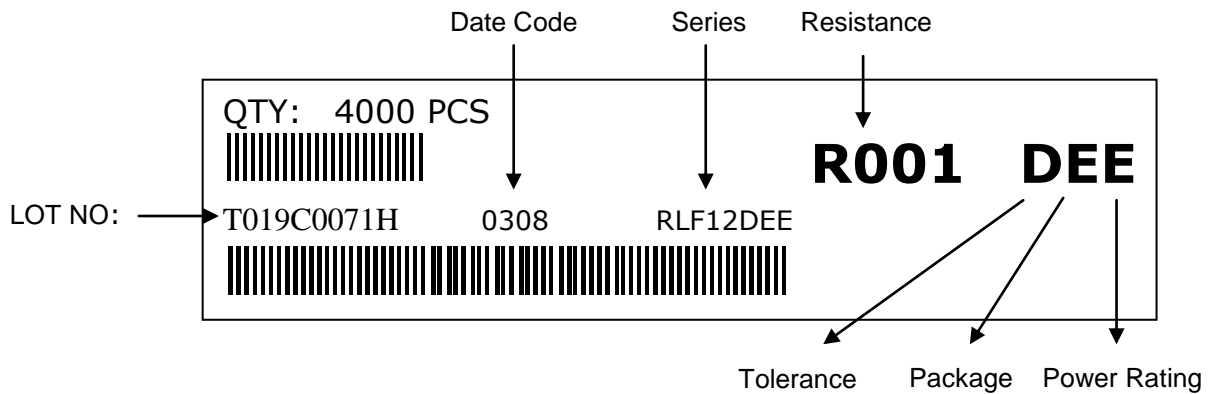
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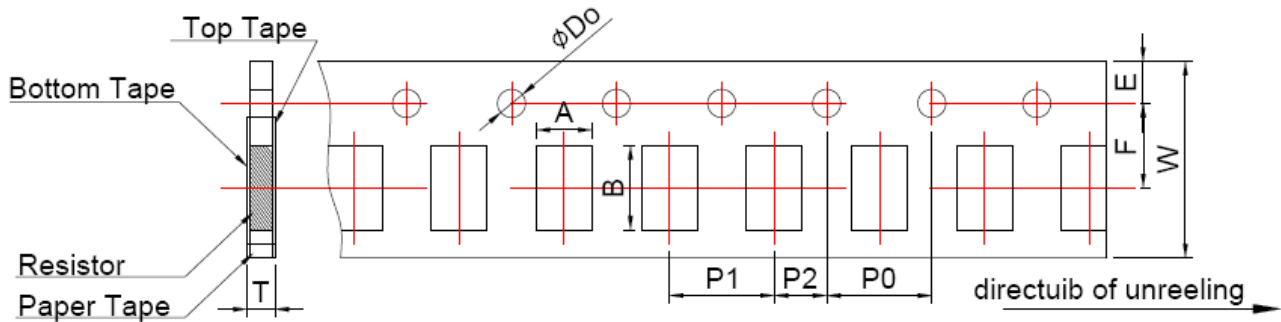
7. Number of Package:

Series	RLF12
Pieces/Package	4000

8. Label:



9. Packaging



Tape packaging dimension

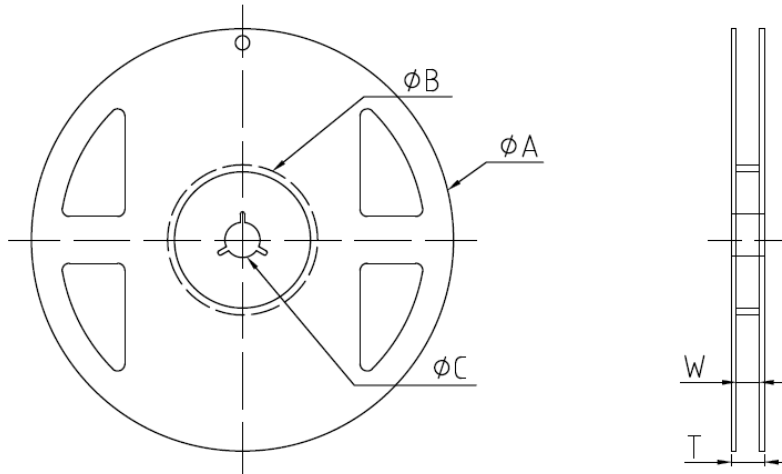
Packing	Type	A	B	W	F	E	P1	P2	P0	D0	T
Embossed Tape	RLF12	3.60	6.90	12.0	5.50	1.75	4.00	2.00	4.00	1.55	0.85
Tolerance		±0.20	±0.20	±0.20	±0.05	±0.10	±0.10	±0.10	±0.10	±0.10	±0.15



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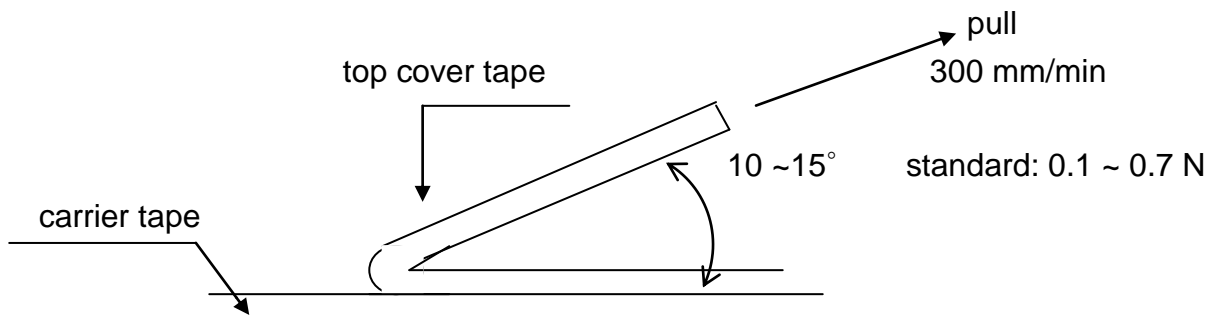
10. Reel Specification



Series	ϕA	ϕB	ϕC	W	T
RLF12	178 ±2.0	60 ±1.0	13.0±1.0	13.0±1.0	15.5±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:

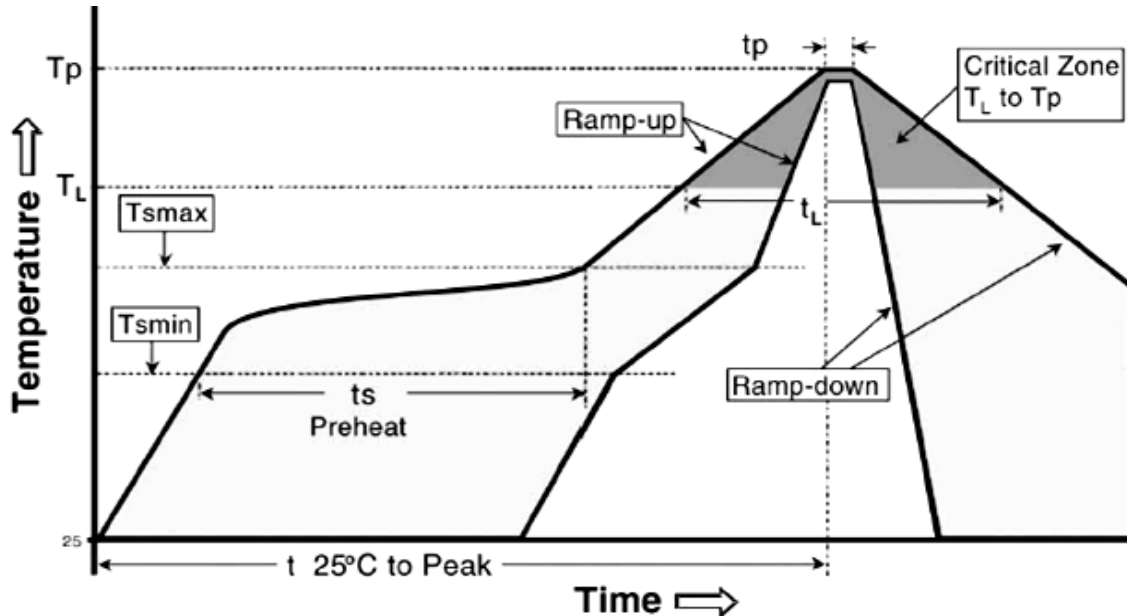
2 years from manufacturing date.



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



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

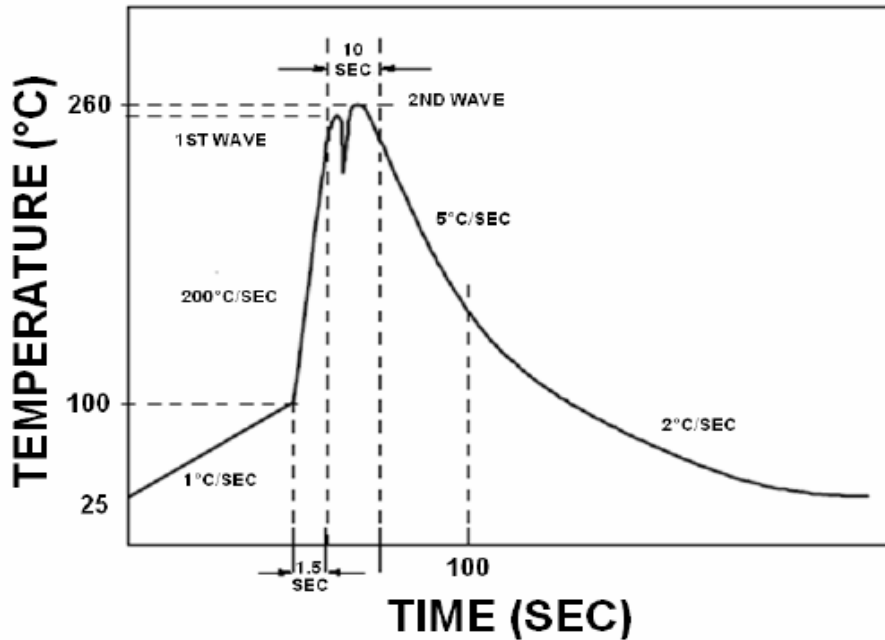
Profile Feature	Lead (Pb)-Free Assembly
Average ramp-up rate (T _{smax} to T _p)	3°C / second max.
Preheat - Temperature Min (T _{smin}) - Temperature Max (T _{smax}) - Time (T _{smin} to T _{smax}) (t _s)	150°C 200°C 60 -150 seconds
Time maintained above : - Temperature (T _L) - Time (T _L)	217°C 60-120 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.



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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.