



High Power Low Resistance Chip Resistors (RLH12 Series)

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1. Scope :

The specification applies for the RLH12 Series of low resistance chip resistors made by TA-I.

2. Features:

- ◆ Low Resistance and High Accuracy Resistor for Current Detection
- ◆ Large Electrode (All series)
- ◆ Good Performance for Heat Dissipation
- ◆ High Purity Alumina Substrate for High Power Dissipation
- ◆ Pb-free to Meet RoHS Requirements

3. Applications:

- ◆ Power Management Applications
- ◆ Switching Power Supply
- ◆ DC-DC Converter, Battery Pack, Charger, Adaptor
- ◆ Portable Instruments (PDA and Cell Phone)
- ◆ Voltage Regulation Module (VRM)
- ◆ Computer

4. Type Designation:

RLH	12	F	T	C	R100
High Power Low Resistance Chip Resistors	Size	Tolerance of Resistance at	Packaging	Power Rating (70°C)	Nominal Resistance
	12:1206	F:±1.0% G:±2.0% J:±5.0%	T: Paper	C=1W	R100 : 100mΩ



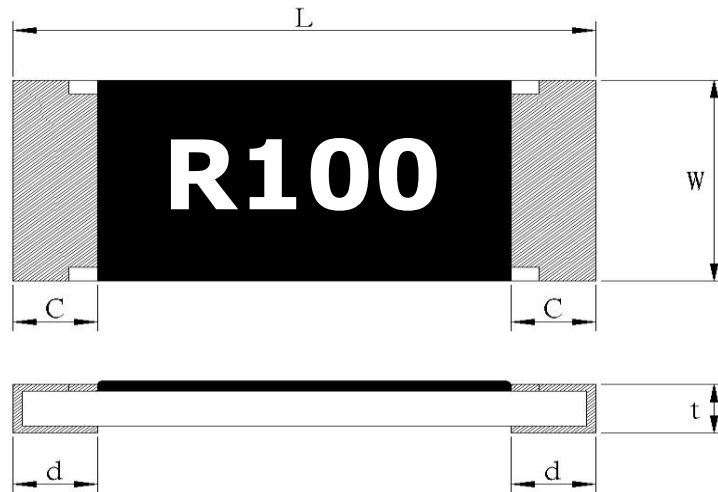
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5. Dimensions:



Unit: mm

Item	L	w	c	d	t
RLH12	3.10±0.20	1.55±0.20	0.50±0.30	0.40±0.20	0.55±0.10

6. Derating Curve :

For resistors operated at ambient temperature over 70°C, power rating shall be derated in accordance with figure 1.

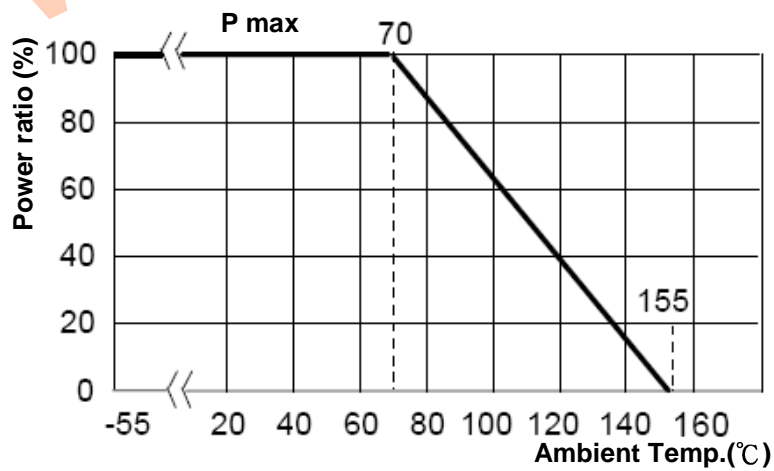


Figure 1



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7. Electrical Characteristics

Type	RLH 12
Power Rating	1W
Resistance Value	100mΩ ~ 910mΩ
Operation Temperature Range	-55°C ~ +155°C
Temperature Coefficient of Resistance	100ppm/°C
Tolerance	±1% , ±2% , ±5%
Insulation Resistance	Over 100MΩ
Maximum Working Voltage(V)	(P*R) ^{1/2}

8. Reliability Tests:

Test Item	Reference standard	Condition of Test	Test Limits
Temperature Coefficient of Resistance	IEC60115-1-4.8 JIS-C5201-1-4.8	25°C ~ 125°C	Refer to paragraph 6
Short Time Overload	IEC60115-1-4.13 JIS-C5201-1-4.13	5 X rated power, 5s	±(1.0%+0.5m Ω)
Load Life	IEC60115-1-4.25.1 JIS-C5201-1-4.25.1	1000 hours at rated power, at 70°C	±(5.0%+0.5m Ω)
Load Life with Humidity	IEC60115-1-4.24 JIS-C5201-1-4.24	1000 hours at rated power , 40 ± 2°C , 90~95% RH	±(5.0%+0.5m Ω)
Thermal Shock	IEC60115-1-4.19 JIS-C5201-1-4.19	-55°C (15 min.) / +155 °C (15 min.) 5 cycles	±(1.0%+0.5m Ω)
Resistance to Solder Heat	IEC60115-1-4.18 JIS-C5201-1-4.18	270 ± 5°C solder , 10 ± 1 sec dwell .	±(1.0%+0.5m Ω)
Solder ability	IEC60115-1-4.17 JIS-C5201-1-4.17	245±5°C solder, 2±0.5 sec dwell. Solder : Sn96.5 / Ag3.0 / Cu0.5	At least 95% of surface area of electrode shall be covered with new solder.
Bending Test	IEC60115-1-4.33 JIS-C5201-1-4.33	1mm deflection	±(1.0%+0.5m Ω)
Resistance to Dry Heat	IEC60115-1-4.23.2 JIS-C5201-1-4.23.2	155 ± 5°C for 96 ± 4hrs	±(1.0%+0.5m Ω)



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9. Marking:

From 1206:

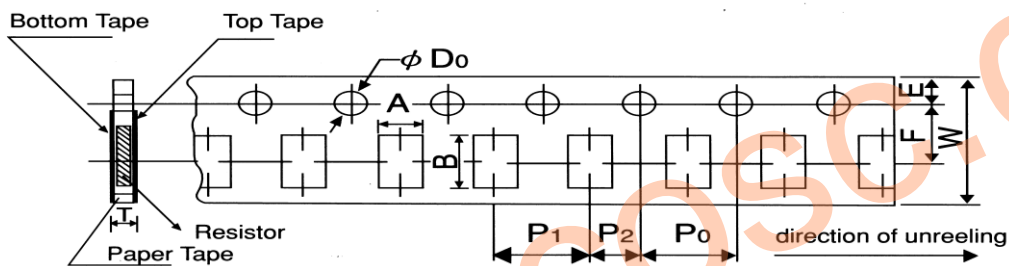
Resistance value is expressed by 4 digits, the first "R" means decimal point and the other digits represent for the normal resistance in Ω .

eg., $100\text{m}\Omega = \text{R}100$

10. Taping & Reel

10.1 Taping Dimensions

10.1.1 4 mm pitch paper



UNIT: mm

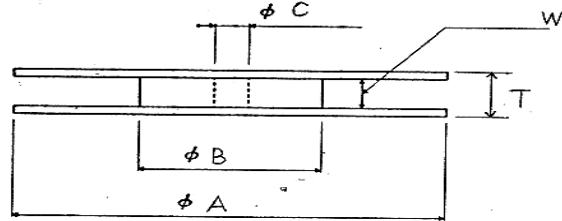
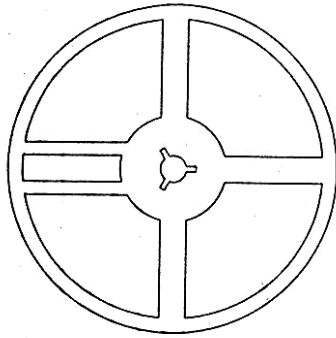
Packing	Type	A	B	W	F	E	P ₁	P ₂	P ₀	D ₀	T
Paper Tape	RLH12	2.0 ± 0.15	3.6 ± 0.2	8.0 ± 0.2	3.5 ± 0.05	1.75 ± 0.1	4.0 ± 0.1	2.0 ± 0.1	4.0 ± 0.1	$\Phi 1.5$	0.84 ± 0.1



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10.2 Reel Specifications

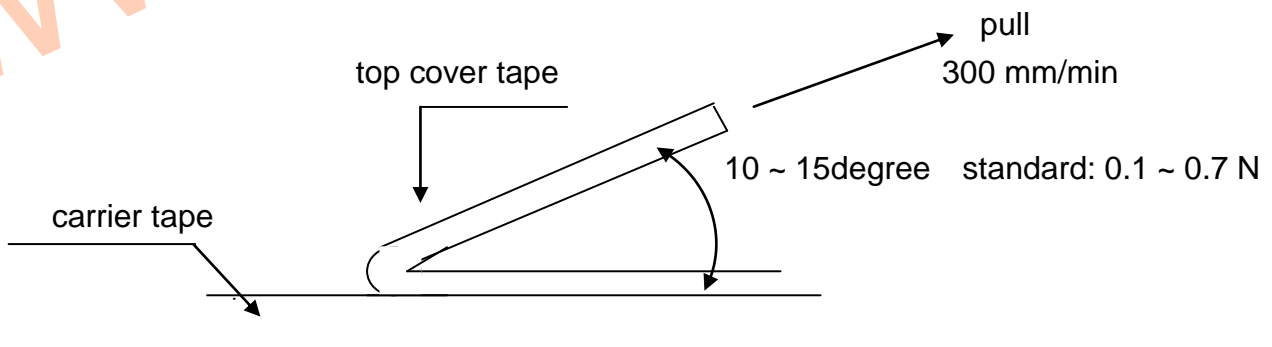


UNIT: mm

Type	ΦA	ΦB	ΦC	W	T
RLH12	178.0 ±2.0	60.0 ±1.0	13.0 ±1.0	9.0 ±1.0	11.4 ±1.0

10.3 Peel – off force :

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.



UNIT: mm

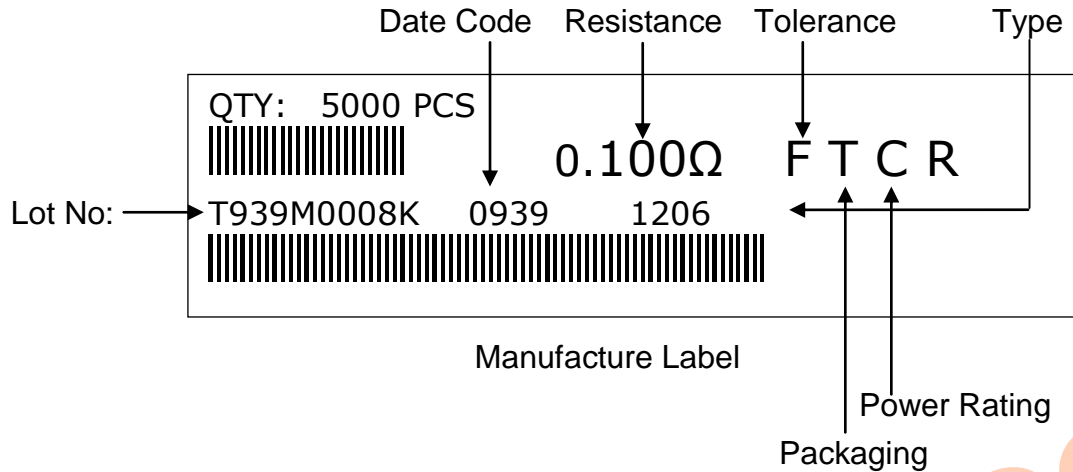


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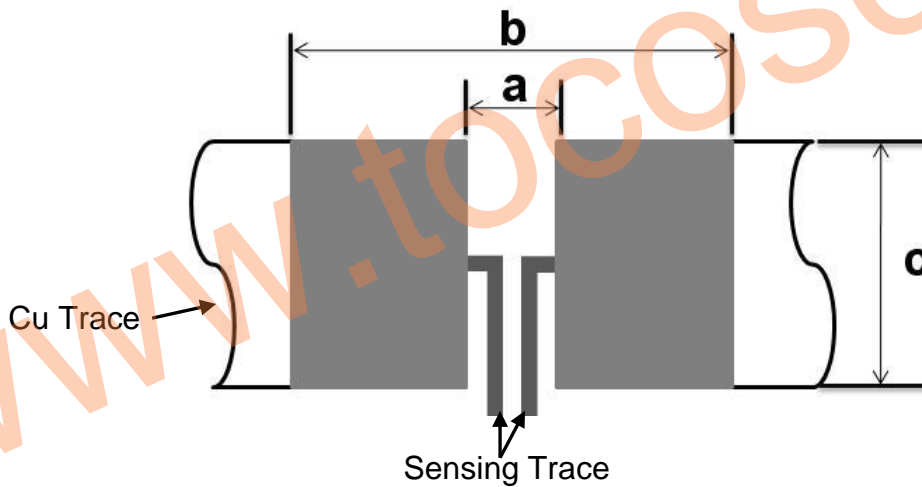
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11. Label

11.1 Normal Products :



12. Recommended land patterns



Land pattern		Dimension (mm)		
		a	b	c
Type	Size			
RLH	12 (1206)	0.70±0.20	5.10±0.20	2.50±0.20



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13. 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.

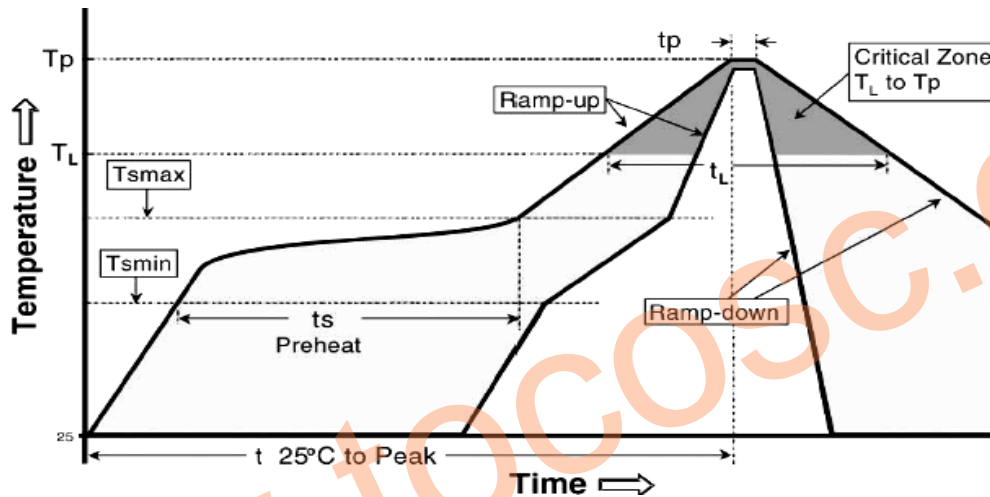
14. Storage Conditions:

Temperature: 5°C~35°C, Humidity: 40%~75%

15. Shelf Life:

2 years from manufacturing date.

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



Profile Feature	Lead (Pb)-Free Assembly
Average ramp-up rate (T _{smax} to T _p)	3°C / second max.
Preheat <ul style="list-style-type: none"> - 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 : <ul style="list-style-type: none"> - 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	8minutes max.



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17. Manufacturing Country & City :

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