



# High Power Low Resistance Chip Resistors (RLH25 Series)

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## 1. Scope :

The specification applies for the RLH25 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:

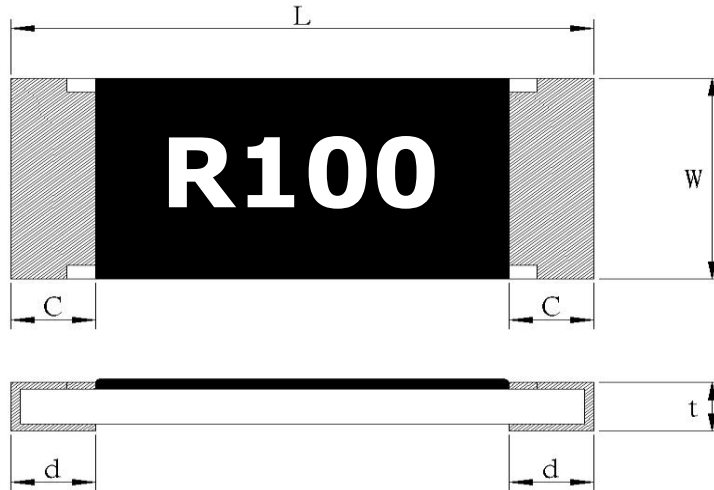
RLH	25	F	E	E	R100
High Power Low Resistance Chip Resistors	Size 25:2512 (6.4x3.2mm)	Tolerance of Resistance at F:±1.0% G:±2.0% J:±5.0%	Packaging E:Embossed Tape	Power Rating (70°C) C=1W D=1.5W E=2W	Nominal Resistance R100 : 100mΩ



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## 5. Dimensions:



Unit: mm

Item	L	w	c	d	t
RLH25	6.30±0.2	3.20±0.2	0.6±0.3	0.5±0.25	0.55±0.1

## 6. Derating Curve :

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

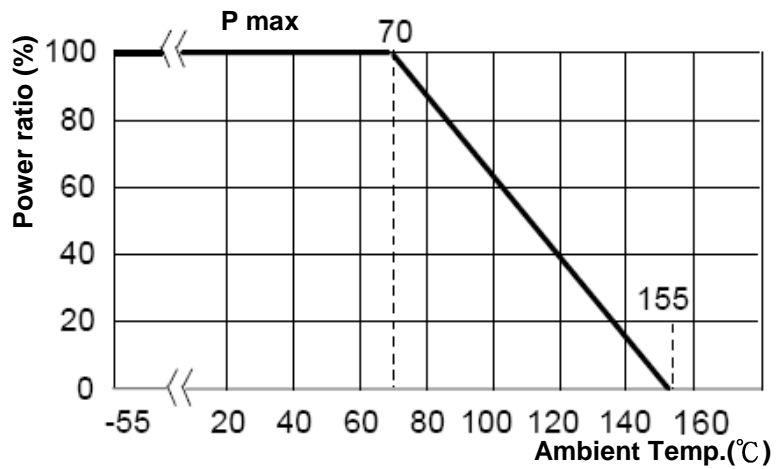


Figure 1



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## 7. Electrical Characteristics

Type	RLH 25
Power Rating	1W&1.5W&2W
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)	$(P \cdot R)^{1/2}$

## 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 2512:

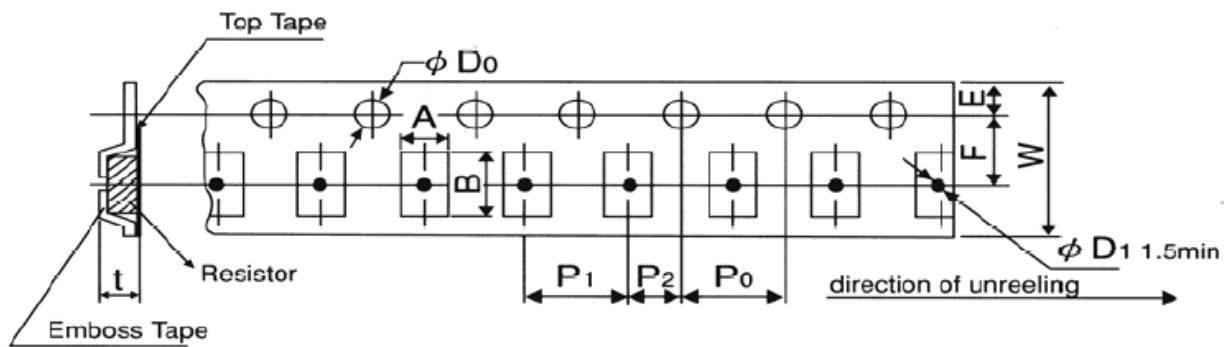
Resistance value is expressed by 4 digits, the first "R" means decimal point and the other digits represent for the normal resistance in  $\Omega$ .

eg.,  $100m\Omega = R100$

## 10. Taping & Reel

### 10.1 Taping Dimensions

#### 10.1.1 4 mm pitch Emboss



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	RLH25	$3.6 \pm 0.2$	$6.9 \pm 0.2$	$12.0 \pm 0.2$	$5.5 \pm 0.05$	$1.75 \pm 0.1$	$4.0 \pm 0.1$	$2.0 \pm 0.05$	$4.0 \pm 0.05$	$+0.1$ $\Phi 1.5$ $-0.1$	$0.85 \pm 0.15$

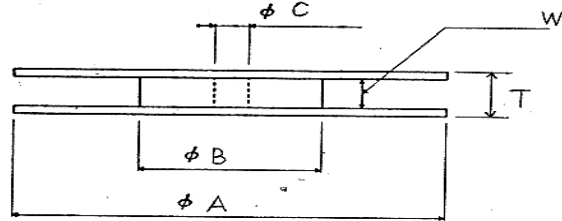
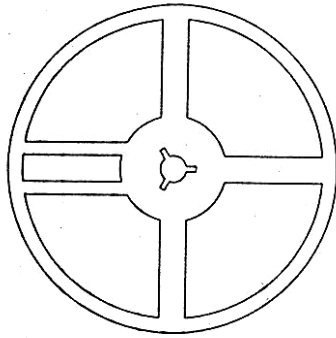
UNIT: mm



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## 10.2 Reel Specifications

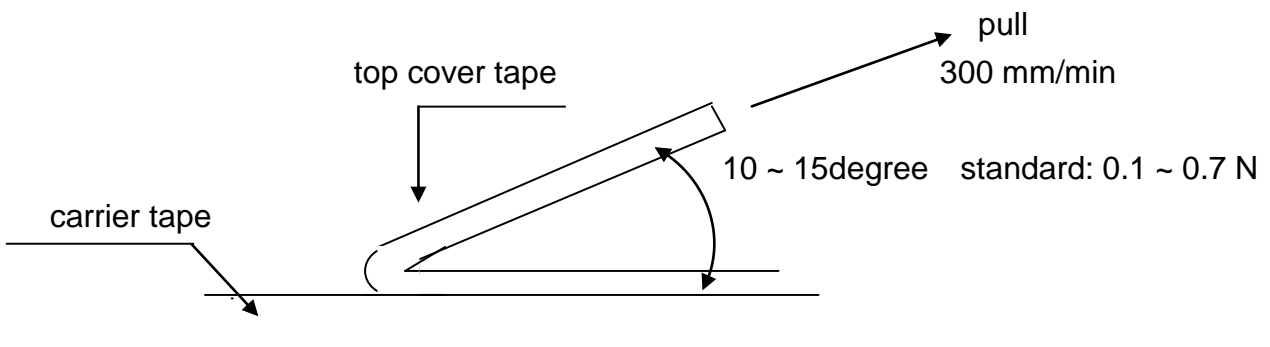


UNIT: mm

Type	ΦA	ΦB	ΦC	W	T
RLH25	178.0±2.0	60.0 ±1.0	13.0 ±1.0	13.0 ±1.0	15.5 ±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

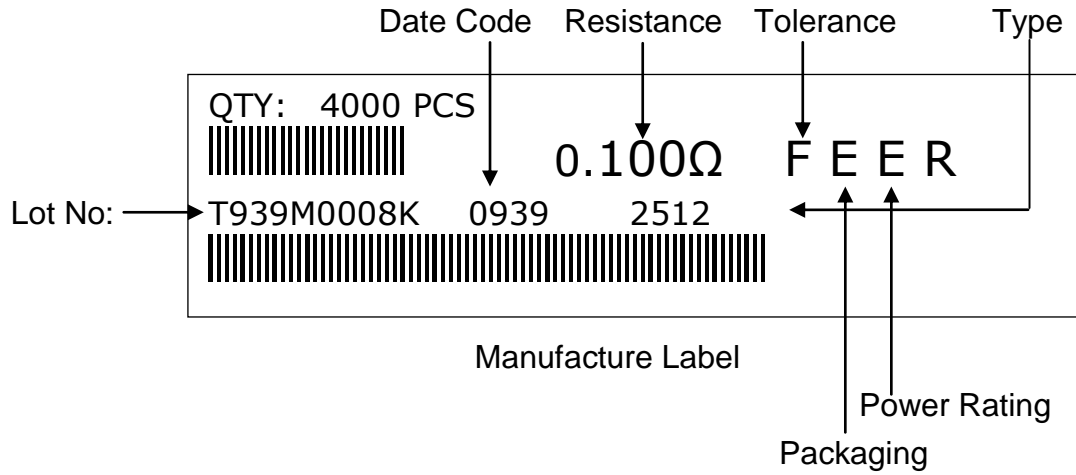


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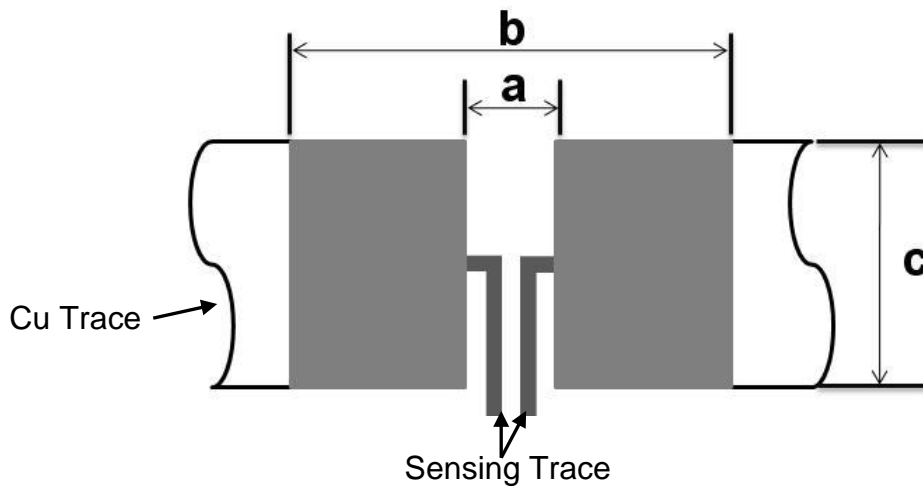
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## 11. Label

### 11.1 Normal Products :



## 12. Recommended land patterns



Land pattern		Dimension ( mm )		
Type	Size	a	b	c
RLH	25 (2512 )	1±0.20	7.5±0.20	4.2±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.

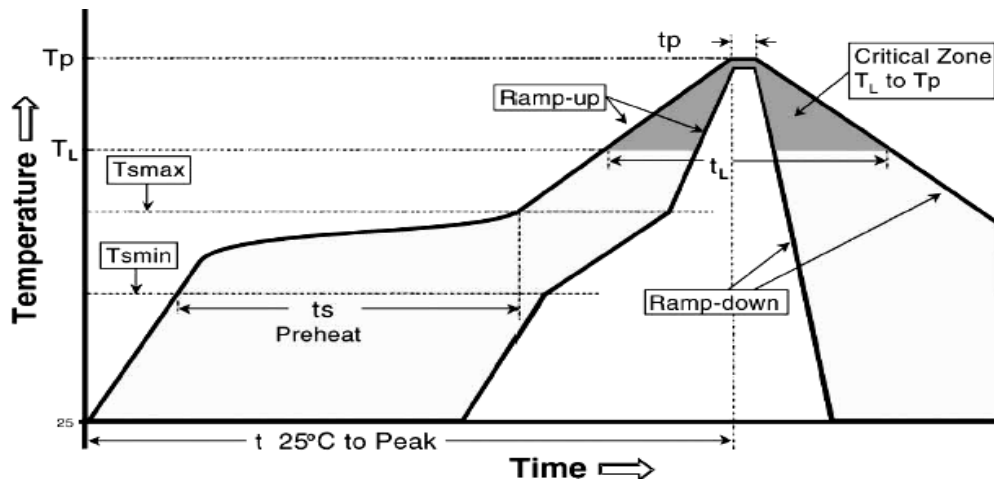
### 14. Storage Conditions:

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"> <li>- Temperature Min (<math>T_{smin}</math>)</li> <li>- Temperature Max (<math>T_{smax}</math>)</li> <li>- Time (<math>T_{smin}</math> to <math>T_{smax}</math>) (<math>t_s</math>)</li> </ul>	150°C 200°C 60 -150 seconds
Time maintained above : <ul style="list-style-type: none"> <li>- Temperature (<math>T_L</math>)</li> <li>- Time (<math>T_L</math>)</li> </ul>	217°C 60-120 seconds
Peak Temperature ( $T_p$ )	260°C
Time within $+0^\circ C$ to $-5^\circ C$ of actual Peak Temperature ( $t_p$ ) <sup>2</sup>	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 :

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

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

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(4) TAI OHM ELECTRONICS ( M ) SDN. BHD. ( Malaysia – Penang )

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