

SPECIFICATION FOR APPROVAL

1W, 2010, Low Resistance Chip Resistor (Lead / Halogen Free)

1. Scope

This specification applies to 2.5mm x 5.0mm size 1W, fixed metal film chip resistors rectangular type for use in electronic equipment.

2. Type Designation

RL2550 W - □□□□ □
 (1) (2) (3) (4)

Where

(1) Series No.

(2) W = W Type

(3) Resistance value :

For example - -

R005 = 5mΩ

R050 = 50mΩ

(4) Resistance tolerance

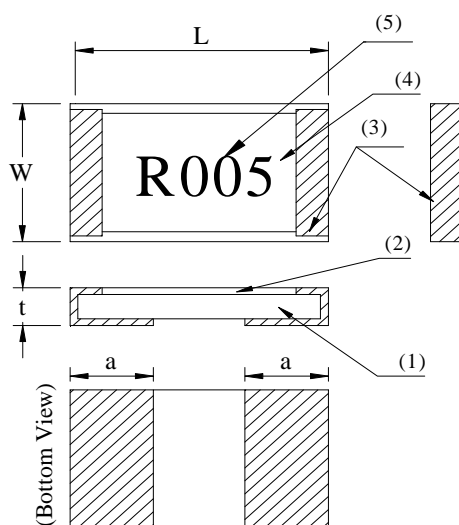
F = ± 1%

G = ± 2%

J = ± 5%

3. Outline Construction and Marking

3-1 Outline Construction



(1) Substrate	Alumina 96%
(2) Resistor	Cu alloy
(3) Terminals	Sn (on Cu)
(4) Protection coat	Heat resistive epoxy resin
(5) Marking	Epoxy resin

Code Letter	Dimensions (mm)
	RL2550
L	5.0 ± 0.20
W	2.5 ± 0.20
a	1.00 ± 0.15
t	0.80 ± 0.15

Figure 1. Construction and Dimensions



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3-2 Marking

Resistance value is marked on the top surface.

Ex.) 5mΩ → R005

50mΩ → R050

4. Ratings

4-1 Specification

Power Rating*	1W
Resistance Value	5 ~ 50mΩ
Temperature Coefficient of Resistance	(≤10mΩ) ±100ppm/°C (>10mΩ) ± 50ppm/°C
Resistance Tolerance	±1% , ± 2% , ±5%
Insulation Resistance	Over 100MΩ
Maximum Working Voltage (V)	(P*R) ^{1/2}

Note * :

Power rating is based on continuous full load operation at rated ambient temperature of 70°C.

For resistors operated at ambient temperature in excess of 70°C, the maximum load shall be derated in accordance with the following curve.

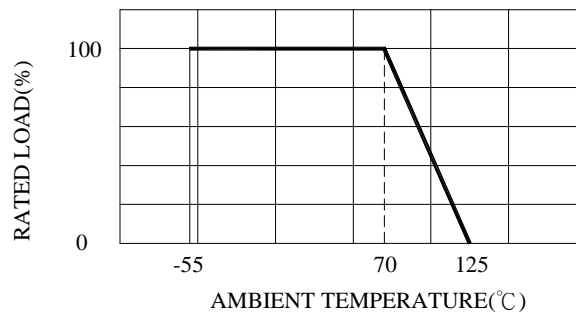


Figure 2. : Power Temperature Derating Curve

4-2 Rated Voltage

The rated voltage shall be determined by the following expression.

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

Where V : Rated voltage (V)

R : Nominal resistance value (Ω)

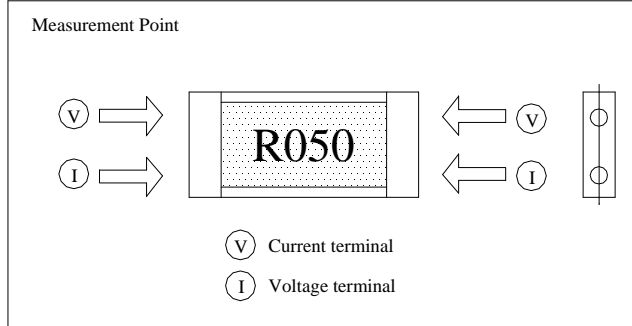
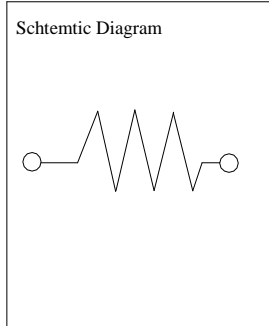
P : Rated dissipation (W)

4-3 Operation and Storage Temperature Range

-55°C to +125°C

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5. Schematic Diagram. Measurement Point





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6. Characteristics

Test Item	Condition of Test	Requirements
Short Time Overload	2.5 * rated voltage for 5 seconds Refer to JIS C 5201-1 4.13	$\Delta R : \pm (0.5\% + 0.0005\Omega)$ Without significant damage by flashover (spark, arching), burning or breakdown etc.
Insulation Resistance	The resistor shall be cramped in the metal block and tested , as shown below. Test voltage : $100 \pm 15V_{DC}$ for 1 minute Refer to JIS C 5201-1 4.6 Mounting condition G.	Between Electrode and Protection Film $100M\Omega$ or over Between Electrode and Substrate $1,000M\Omega$ or over
Voltage Proof	The voltage : $100V_{AC}$ (rms.) for 1 minute Refer to JIS C 5201-1 4.7	$\Delta R : \pm (0.5\% + 0.0005\Omega)$ Without damage by flashover, fire or breakdown, as shown below.
Thermal Shock	$-55 \sim 125^{\circ}C$ 5 cycles, 15 min at each extreme condition Refer to JIS C 5201-1 4.19	$\Delta R : \pm (1.0\% + 0.0005\Omega)$ Without distinct damage in appearance
Low Temperature Storage	Kept at $-55^{\circ}C$, 1,000 hours Refer to JIS C 5201-1 4.23.4	$\Delta R : \pm (1.0\% + 0.0005\Omega)$ Without distinct damage in appearance
High Temperature Exposure	Kept at $125^{\circ}C$ for 1,000 hours Refer to JIS C 5201-1 4.23.2	$\Delta R : \pm (1.0\% + 0.0005\Omega)$ Without distinct damage in appearance
Solderability	Temperature of Solder : $245 \pm 5^{\circ}C$ Immersion Duration : 3 ± 0.5 second Refer to JIS C 5201-1 4.17	Uniform coating of solder cover minimum of 95% surface being immersed
Resistance to Soldering Heat	Dipped into solder at $270 \pm 5^{\circ}C$ for 10 ± 1 seconds Refer to JIS C 5201-1 4.18	$\Delta R : \pm (0.5\% + 0.0005\Omega)$ Without distinct deformation in appearance

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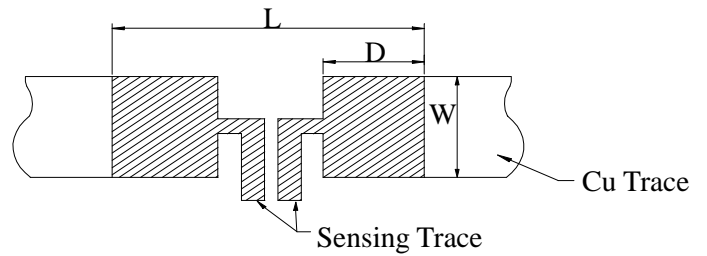
Test Item	Condition of Test	Requirements
Load Life	Rated voltage for 1.5 hours followed by a pause 0.5 hour at $70 \pm 2^{\circ}\text{C}$. Cycle repeated 1000 hours Refer to JIS C 5201-1 4.25	$\Delta R : \pm (1.0\% + 0.0005\Omega)$ Without distinct damage in appearance
Damp Heat with Load	$40 \pm 2^{\circ}\text{C}$ with relative humidity 90% to 95%. D.C. rated voltage for 1.5 hours ON and 30 minutes OFF. Cycle repeated 1,000 hours Refer to JIS C 5201-1 4.24	$\Delta R : \pm (0.5\% + 0.0005\Omega)$ Without distinct damage in appearance
Mechanical Shock	100 G's for 6 milliseconds. 5 pulses Refer to JIS C 5201-1 4.21	$\Delta R : \pm (0.5\% + 0.0005\Omega)$ Without mechanical damage such as break
Bending Test	Glass-Epoxy board thickness : 1.6mm Bending width : 2mm Between the fulcrums : 90mm Refer to JIS C 5201-1 4.33	$\Delta R : \pm (0.5\% + 0.0005\Omega)$ Without mechanical damage such as break

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7. Recommended Solder Pad Dimensions

	W	L	D
2550	3.05	6.12	1.56

Unit : mm



Note : We recommend there is no circuit design
between pads to avoid circuit short

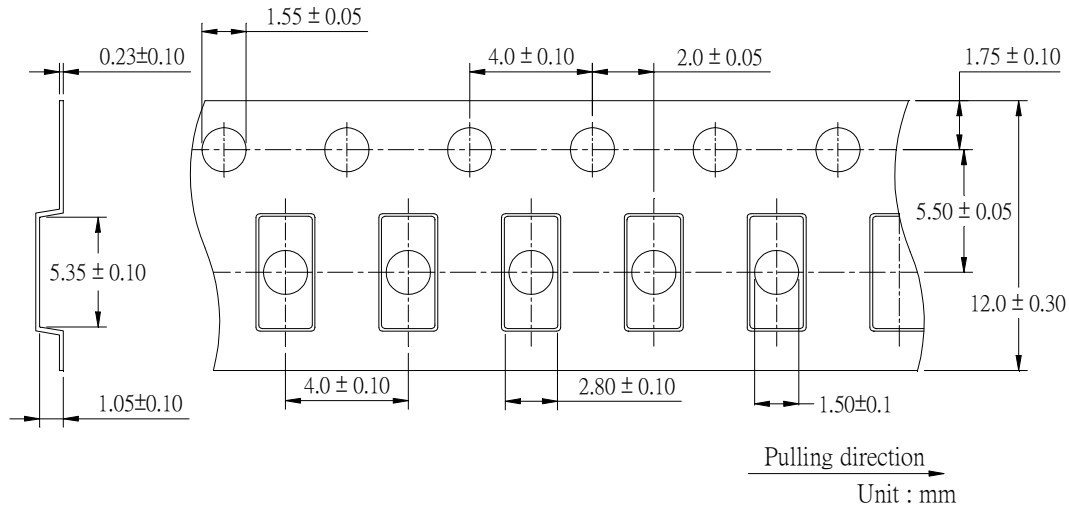


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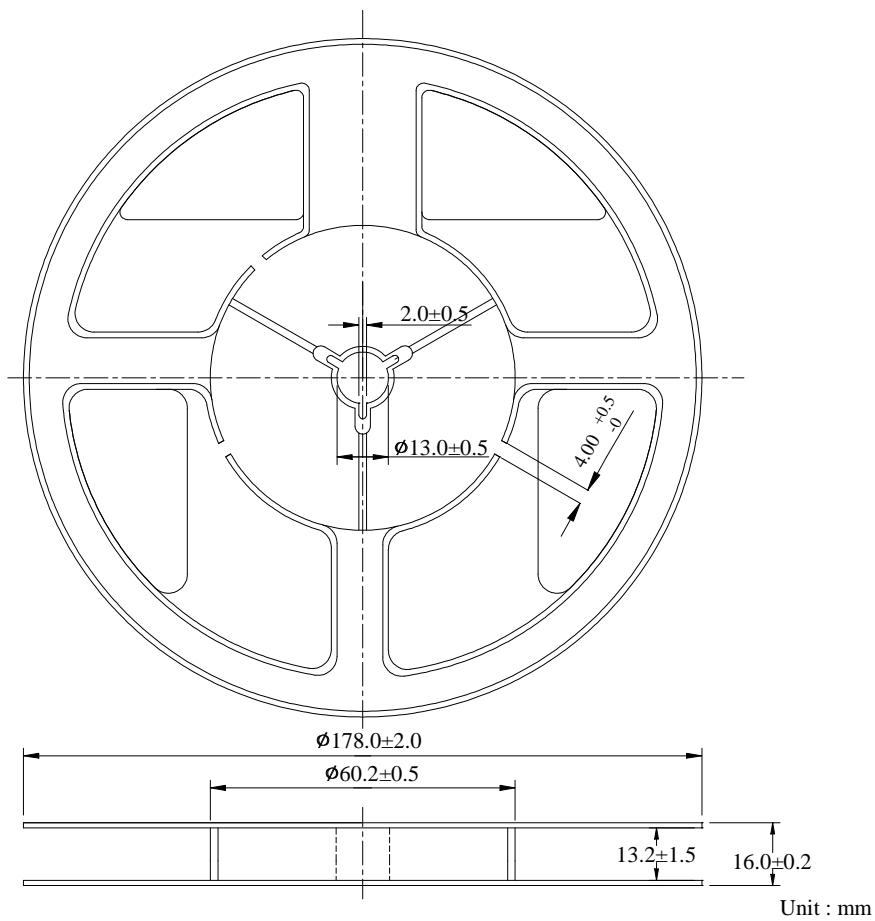
8. Packaging

8-1 Dimensions

8-1-1 Tape packaging dimensions



8-1-2 Reel dimensions

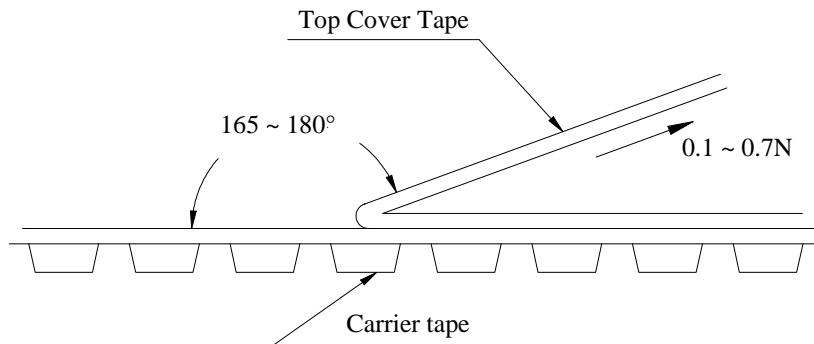


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8-2 Peel Strength of Top Cover Tape

The peel speed shall be about 300mm/minute

The peel force of top cover tape shall be between 0.1 to 0.7N



8-3 Number of Taping

2,000 pieces / reel

8-4 Label marking

The following items shall be marked on the reel.

- (1) Type designation
- (2) Quantity
- (3) Manufacturing date code
- (4) Manufacturer's name
- (5) The country of origin