

2550 1W Low Resistance Chip Resistor

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 - - N
(1) (2) (3) (4) (5)

Where (1) Series No.

(2) $W = W$ Type

(3) Resistance value :

For example - -

$$R003 = 3m\Omega$$
$$R_{100} = 100\text{m}\Omega$$

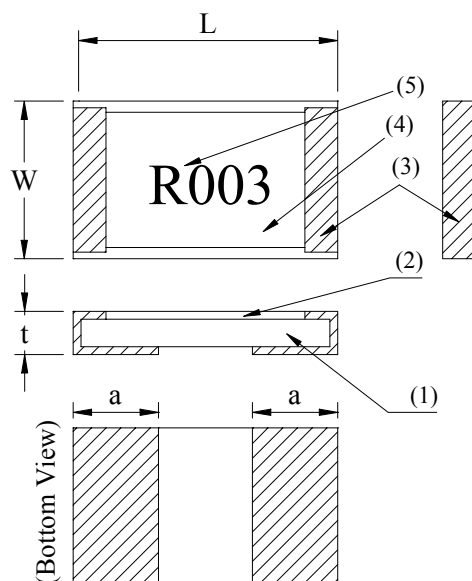
(4) Resistance tolerance

$$F = \pm 1\%$$
$$G = \pm 2\%$$
$$J = \pm 5\%$$

(5) N = Sn plating (Lead free , RoHS compliant)

3. Outline Designation and Marking

3-1 Outline Designation



- | | |
|---------------------|----------------------------|
| (1) Substrate | Alumina 96% |
| (2) Resistor | Ni-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	$(> 3m\Omega) \quad 0.80 \pm 0.15$ $(3m\Omega) \quad 0.95 \pm 0.15$

Figure 1. Construction and Dimensions

3-2 Marking

Resistance value is marked on the top surface.

Ex.) 47mΩ → R047
100mΩ → R100

4. Ratings

4-1 Specification

Power Ratings*	1 W
Resistance Value**	1 ~ 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 ratings is based on continuous full load operation at rated ambient temperature of 70℃ .

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

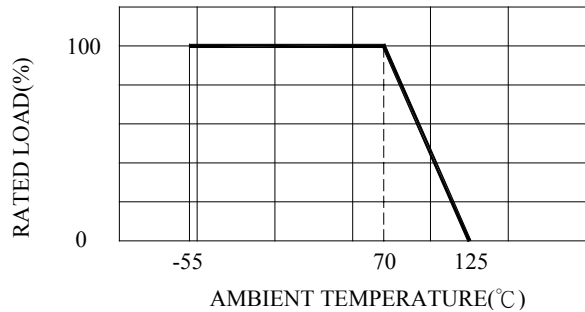


Figure 2. : Power Temperature Derating Cure

4-2 Maximum over current

$$I = \sqrt{50 / R[A]} / 10ms$$

Where

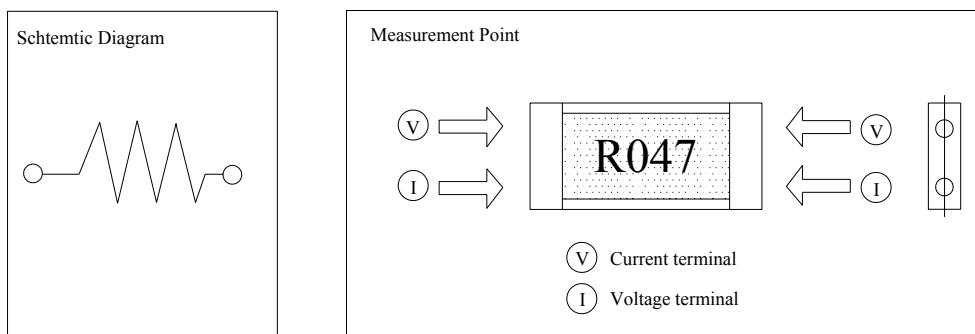
I : maximum current 40A
R : Nominal resistance value (Ω)
Interval 60 seconds minimum

If maximum current so obtained exceed than 40A , use 40A as maximum current.

4-3 Operation and Storage Temperature Range

-55℃ to +125℃

5. Schematic Diagram. Measurement Point



6. Life test

6-1 Electrical

6-1-1 Short Time Overload

Resistance Change : $\pm (0.5\% + 0.0005\Omega)$

Without significant damage by flashover (spark, arching), burning or breakdown etc.

Test voltage : 2.5 times the rated voltage.

Duration : 5 seconds

6-1-2 Insulation Resistance

(1) Between Electrode and Protection Film

100M Ω or over

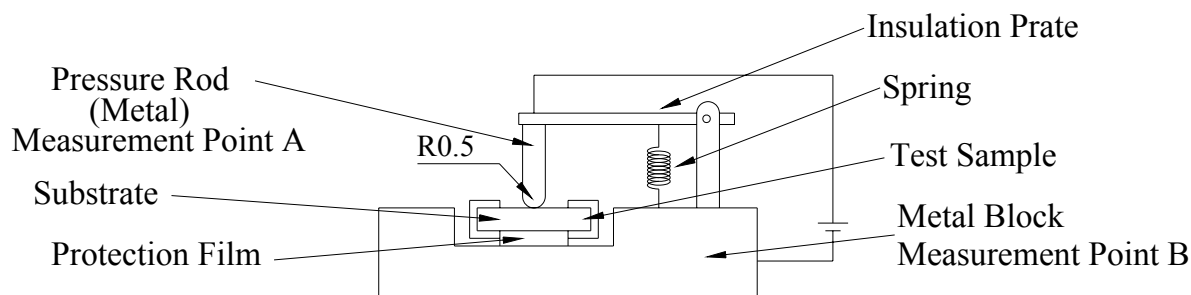
(2) Between Electrode and Substrate

1,000M Ω or over

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 5202 5.6 Mounting condition G.



6-2 Mechanical

6-2-1 Solderability

A new uniform coating of solder shall cover minimum of 95% of the surface being immersed.

Temperature of solder : $245 \pm 5^{\circ}\text{C}$

Immersion duration : 3 ± 0.5 seconds

6-2-2 Resistance to Soldering Heat

Resistance change : $\pm (0.5\% + 0.0005\Omega)$

Electrical characteristics shall be satisfied.

Without distinct deformation in appearance

Dipped into solder for 10 ± 1 seconds at $270 \pm 5^{\circ}\text{C}$

6-2-3 Substrate bending

Resistance change : $\pm (0.5\% + 0.0005\Omega)$

Without mechanical damage such as breaks.

Electrical characteristics shall be satisfied.

Glass-Epoxy board $t = 1.6\text{mm}$

Bending value : 2mm

Between the fulcrums : 90mm

6-3 Endurance

6-3-1 Rapid change of temperature

Resistance change : $\pm (0.5\% + 0.0005\Omega)$

Without distinct damage.

Perform 5 cycles as follows :

-55°C for 30minutes → room temperature for 3 minutes

→ +125°C for 30minutes → room temperature for 3 minutes

6-3-2 Endurance at 70°C

Resistance change : $\pm (0.5\% + 0.0005\Omega)$

Without distinct damage.

Rated voltage for 1.5 hours followed by a pause 0.5 hour at a temperature of $70 \pm 3^\circ\text{C}$.

Cycle shall be repeated for 1,000 hours.

6-3-3 Dump heat with load

Resistance change : $\pm (0.5\% + 0.0005\Omega)$

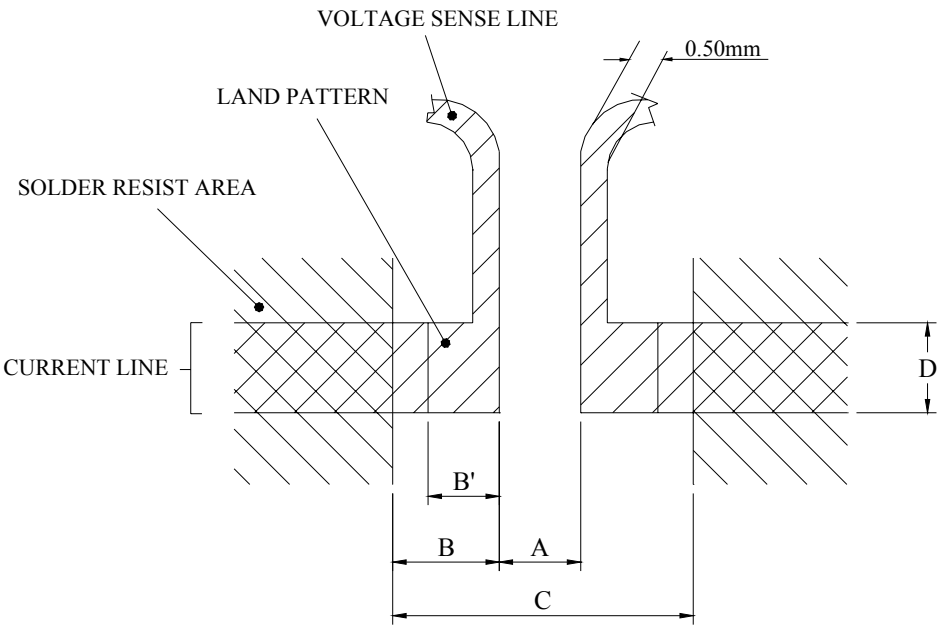
The marking shall be legible.

$60 \pm 2^\circ\text{C}$ with relative humidity of 90% to 95%.

D.C. rated voltage for 1.5 hours ON 30 minutes OFF.

Cycle shall be repeated for 1,000 hours.

7. Recommend Land Pattern

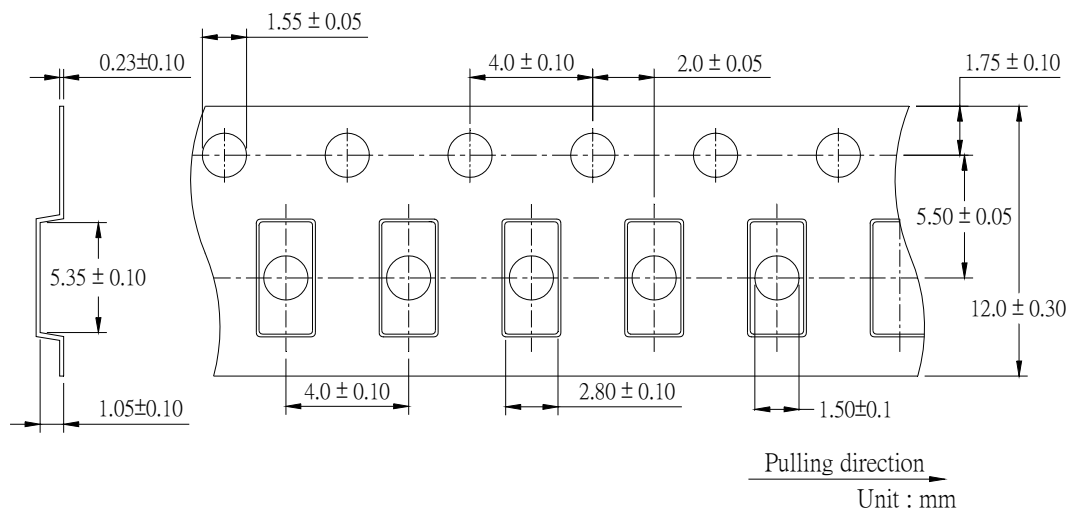


A	B	B'	C	D
3.1	2.75	1.4	7.0	3.05

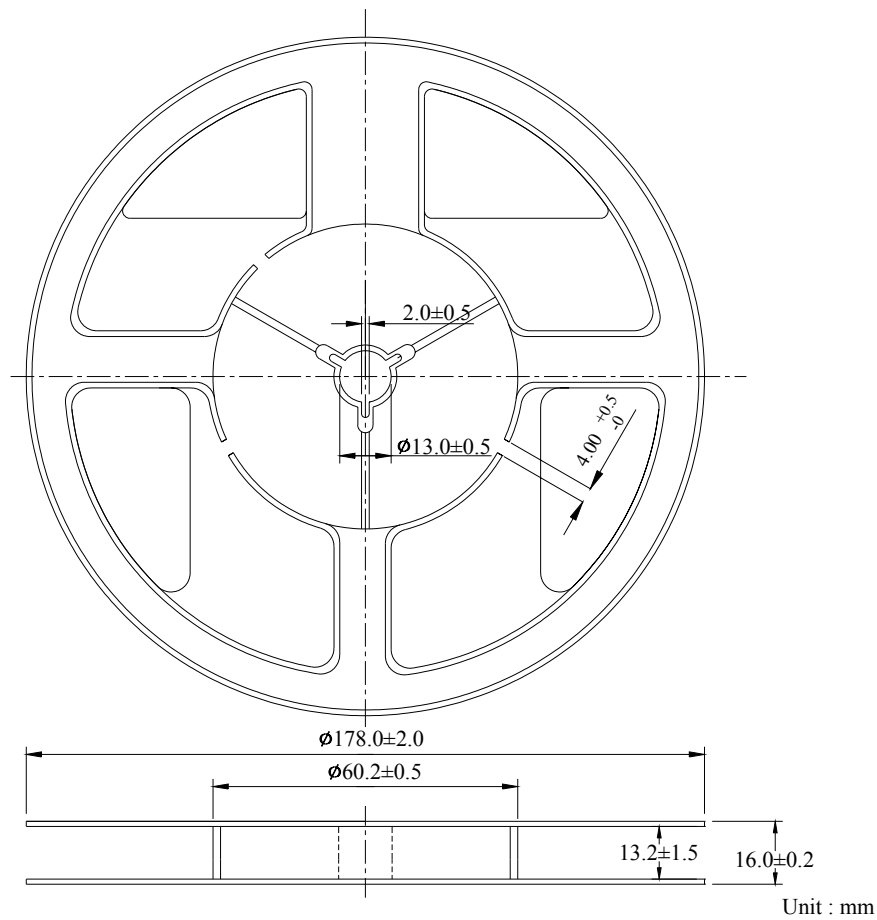
Unit : mm

8. Packaging
8-1 Dimensions

8-1-1 Tape packaging dimensions



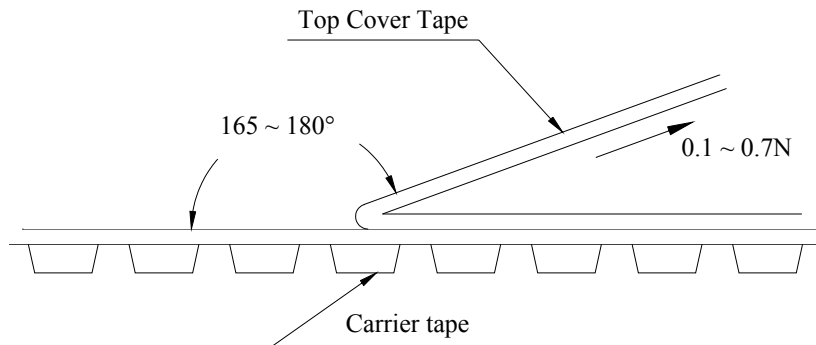
8-1-2 Reel dimensions



8-2 Peel Strength of Top Cover Tape

The peel speed shall be about 300mm/minute

The peel force of top cover tape shall 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