

SPECIFICATION FOR APPROVAL

3W 3637 Low Resistance Chip Resistor (Lead free / Halogen Free)

1. Scope

This specification applies to 9.14mm x 9.4mm size 3W, fixed metal foil with ceramic carrier current sensing resistors used in electronic equipment.

2. Type Designation

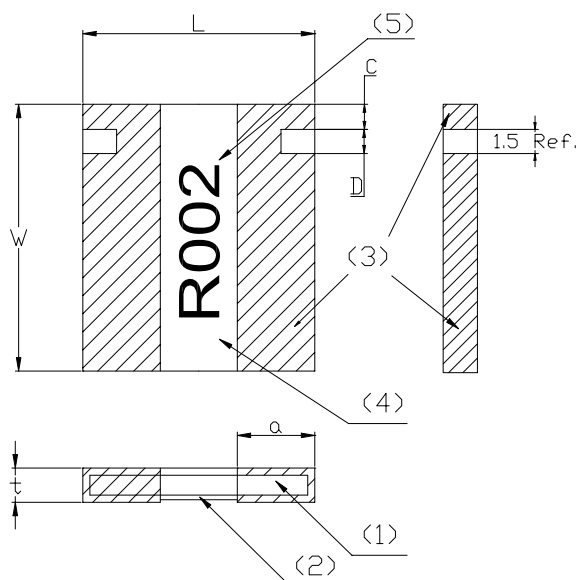
RL36370 - -

(1) (2) (3)

Where (1) Series No.
 (2) Resistance value :
 For example :
 R002 = 2mΩ
 R010 = 10mΩ
 (3) Tolerance :
 F = ± 1%
 G = ± 2%
 J = ± 5%

3. Outline Designation and Marking

3-1 Outline Designation



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

| Code Letter | Dimensions (mm) |
|-------------|--|
| | 3637 |
| L | 9.14 ± 0.25 |
| W | 9.40 ± 0.25 |
| C | 1.55 ± 0.25 |
| D | 0.85 ± 0.25 |
| a | (1mΩ) 3.5 ± 0.25 (≥ 2mΩ) 2.2 ± 0.25 |
| t | 0.88 ± 0.20 |

Figure 1. Construction and Dimensions



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3-2 Marking

Resistance value is marked on the top surface.

Ex.) $2\text{m}\Omega \rightarrow \text{R002}$

$10\text{m}\Omega \rightarrow \text{R010}$

4. Ratings

4-1 Specification

| | | |
|---------------------------------------|---------------------|------------|
| Power Rating* | 3 W | |
| Resistance Value | 1 mΩ ~ <2 mΩ | 2 ~ 10mΩ |
| Temperature Coefficient of Resistance | 0~+150 ppm/°C | ±100ppm/°C |
| Resistance Tolerance | ± 1%, ± 2%, ± 5% | |
| Insulation Resistance | Over 100MΩ | |
| Rated Voltage (V) | $(P \cdot R)^{1/2}$ | |

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.

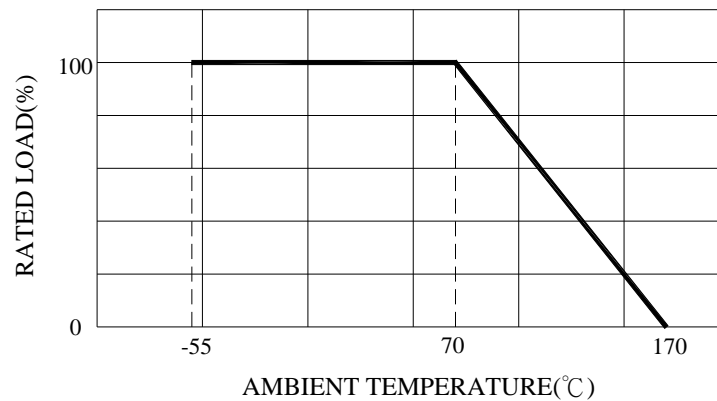


Figure 2. : Power Temperature Derating Curve

4-2 Operation and Storage Temperature Range

-55°C to +170°C



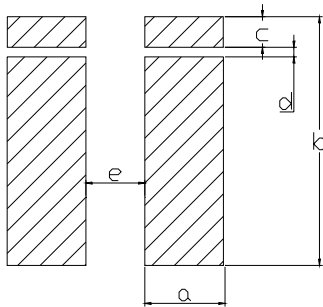
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5. Life test

| Test Item | Condition of Test | Requirements |
|------------------------------|---|---|
| Short Time Overload | 5 * Rated power for 5 seconds Refer to JIS C 5201-1 4.13 | $\Delta R : \pm (0.5\%+0.0005\Omega)$ |
| Thermal Shock | -55 ~150°C 1,000 cycles, 15 min at each extreme condition Refer to JIS C 5201-1 4.19 | $\Delta R : \pm (1.0\%+0.0005\Omega)$ |
| Low Temperature Storage | Kept at -55°C, 1,000 hours Refer to JIS C 5201-1 4.23.4 | $\Delta R : \pm (1.0\%+0.0005\Omega)$ |
| Resistance to Soldering Heat | Dipped into solder at $270 \pm 5^\circ\text{C}$ for 20 ± 1 seconds Refer to JIS C 5201-1 4.29 | $\Delta R : \pm (0.5\%+0.0005\Omega)$ |
| Load Life | Rated voltage for 1.5hours followed by a pause 0.5hour at $70 \pm 3^\circ\text{C}$. Cycle repeated 1000 hours Refer to JIS C 5201-1 4.25 | $\Delta R : \pm (1.0\%+0.0005\Omega)$ |
| Damp Heat with Load | $40 \pm 2^\circ\text{C}$ with relative humidity 90% to 95%. Cycle repeated 1,000 hours Refer to JIS C 5201-1 4.24 | $\Delta R : \pm (1.0\%+0.0005\Omega)$ |
| High Temperature Exposure | Kept at 170°C for 1,000 hours Refer to JIS C 5201-1 4.23.2 | $\Delta R : \pm (1.0\%+0.0005\Omega)$ |
| Solderability | Temperature of Solder : $245 \pm 5^\circ\text{C}$ Immersion Duration : 3 ± 0.5 seconds Refer to JIS C 5201-1 4.17 | Uniform coating of solder cover minimum of 95% surface being immersed |
| Mechanical Shock | 100 G's for 6milliseconds. 5 pulses Refer to JIS C 5201-1 4.21 | $\Delta R : \pm (0.5\%+0.0005\Omega)$ |
| Bending Test | Glass-Epoxy board thickness : 1.6mm Bending width : 2mm Between the fulcrums : 90mm Refer to JIS C 5201-1 4.33 | $\Delta R : \pm(0.5\%+0.0005\Omega)$ |

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6. Recommended Solder Pad Dimensions



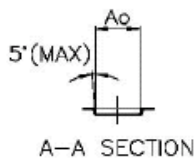
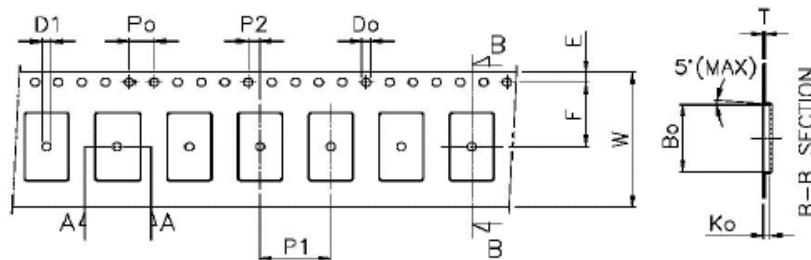
| 3637 | a | b | c | d | e |
|--------|------|-----|------|-----|-----|
| 1mΩ | 4.3 | 9.9 | 1.68 | 0.6 | 1.9 |
| 2~10mΩ | 2.95 | 9.9 | 1.68 | 0.6 | 4.6 |

Unit : mm

7. Packaging

7-1 Dimensions

7-1-1 Tape packaging dimensions



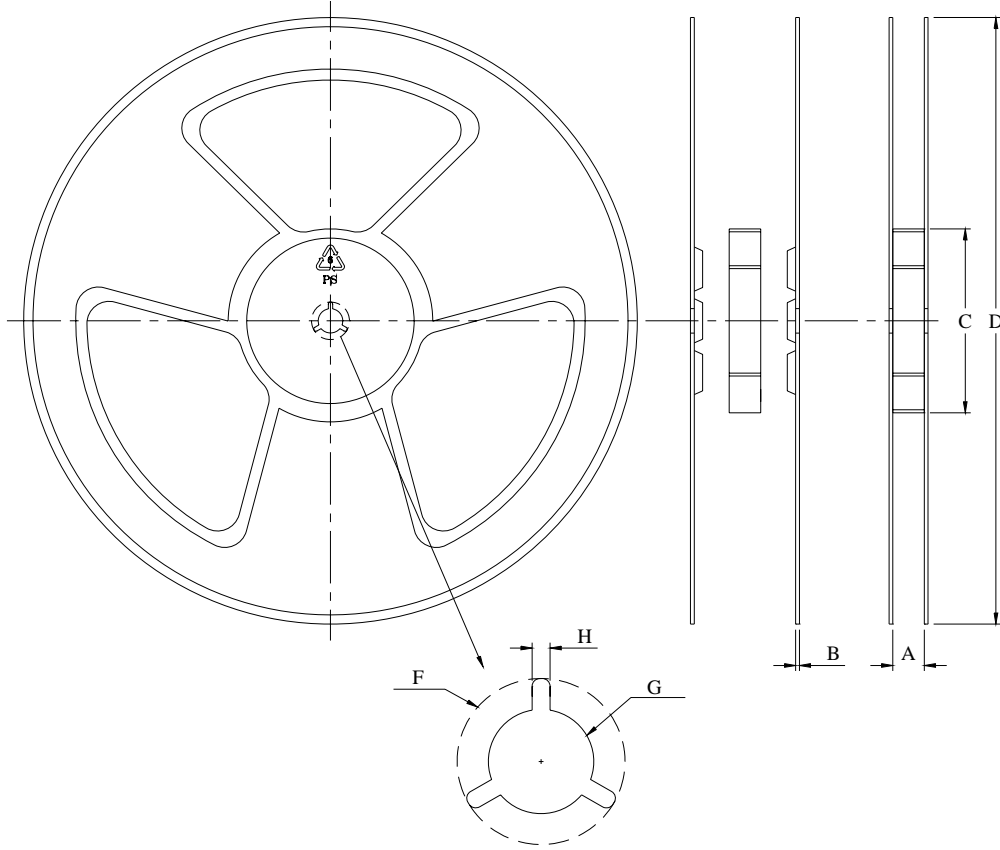
Unit: mm

| | | | | | | |
|--------|----------|-----------|-----------|----------|-----------|----------|
| Symbol | Ao | Bo | Ko | Po | P1 | P2 |
| Spec | 9.6±0.10 | 9.9±0.10 | 1.2 Max. | 4.0±0.10 | 12.0±0.10 | 2.0±0.10 |
| Symbol | T | E | F | Do | D1 | W |
| Spec | 0.4 Max. | 1.75±0.10 | 7.50±0.10 | 1.5±0.1 | 1.5 Max. | 16.0±0.2 |



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7-1-2 Reel dimensions



| | | | |
|---|----------------|---|----------------|
| A | 17.4 ± 1.0 | F | 20.2 ± 0.1 |
| B | 2.0 ± 0.2 | G | 13.5 ± 0.5 |
| C | 99 ± 1.0 | H | 2.5 ± 0.5 |
| D | 380 ± 0.5 | | |

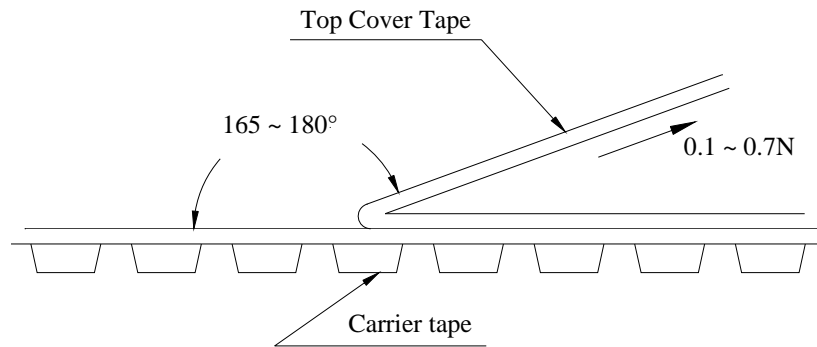
Unit : mm

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7-2 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



7-3 Number of Taping

1,000 pieces / reel

7-4 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