

**1632 1/2W Low Resistance Chip Resistor**

1. Scope

This specification applies to 1.6mm x 3.2mm size 1/2W, fixed metal film chip resistors rectangular type for use in electronic equipment.

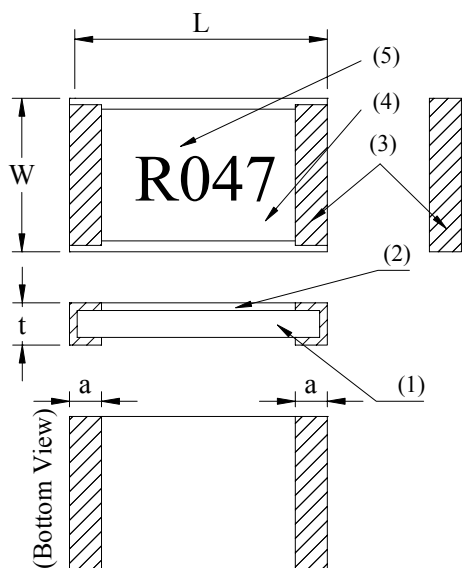
2. Type Designation

RL1632 H - □□□□ - □ N  
 (1) (2) (3) (4) (5)

- Where
- (1) Series No.
  - (2) H = H Type
  - (3) Resistance value :  
 For example - -  
 R047 = 47mΩ  
 R100 = 100mΩ  
 The “ R “ shall be used as a decimal point.
  - (4) Resistance tolerance  
 F = ± 1%  
 G = ± 2%  
 J = ± 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)
L	3.2 ± 0.20
W	1.6 ± 0.20
a	0.5 ± 0.15
t	0.8 ± 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*	1/2 W
Resistance Value**	5 ~ 150mΩ
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) <sup>1/2</sup>

Note \* :

Power ratings 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.

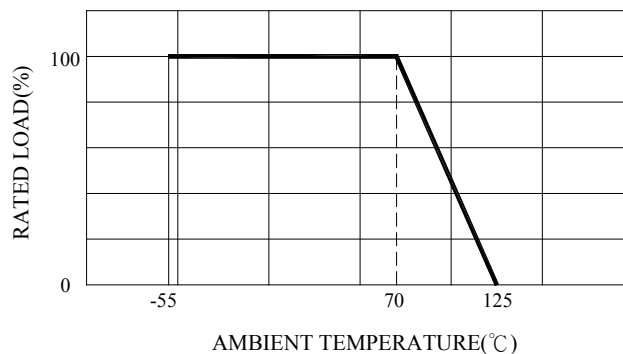


Figure 2. : Power Temperature Derating Cure

### 4-2 Maximum over current

$$I = \sqrt{\langle 32/R \rangle} [A]/10ms$$

Where

I : maximum current

R : Nominal resistance value (Ω)

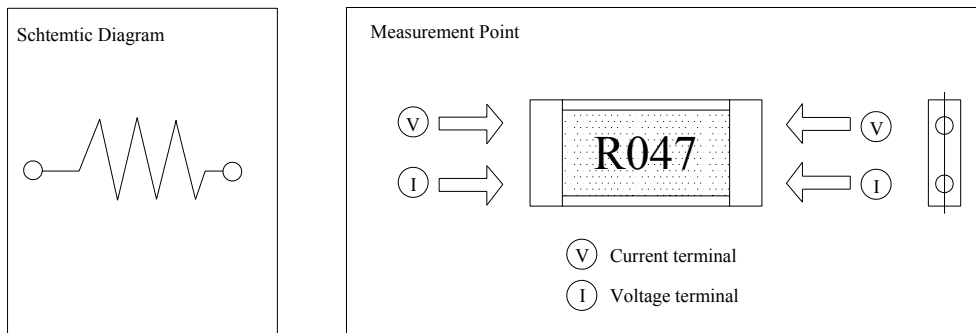
Interval 60 seconds minimum

If maximum current so obtained exceed than 32A , use 32A as maximum current.

### 4-3 Operation Temperature

-55°C to +125°C

5. Schematic Diagram. Measurement Point



6. Characteristics

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 $\Omega$  or over

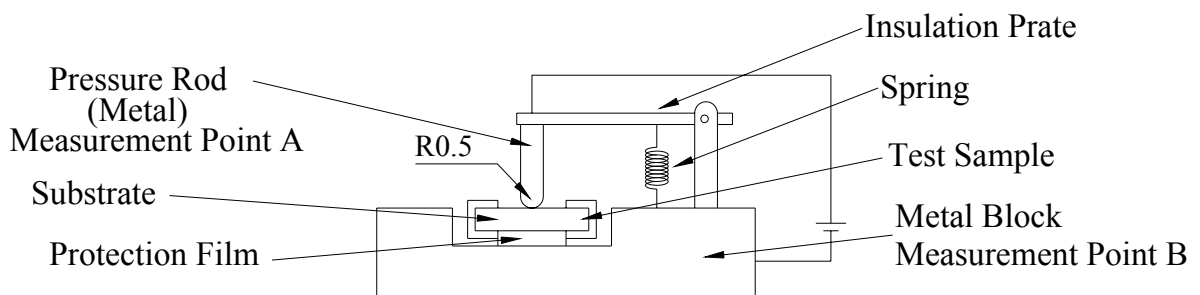
(2) Between Electrode and Substrate

1,000M $\Omega$  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 :  $3 \pm 0.5$  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  $10 \pm 1$  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 :  $\pm ( 0.5\% + 0.0005\Omega )$

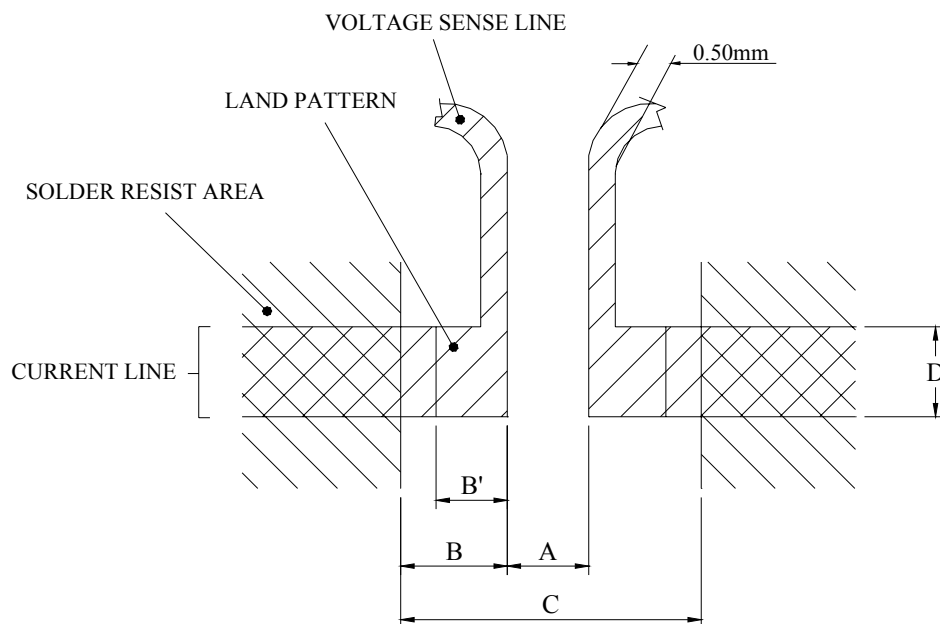
The marking shall be legible.

$60 \pm 2^\circ\text{C}$  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



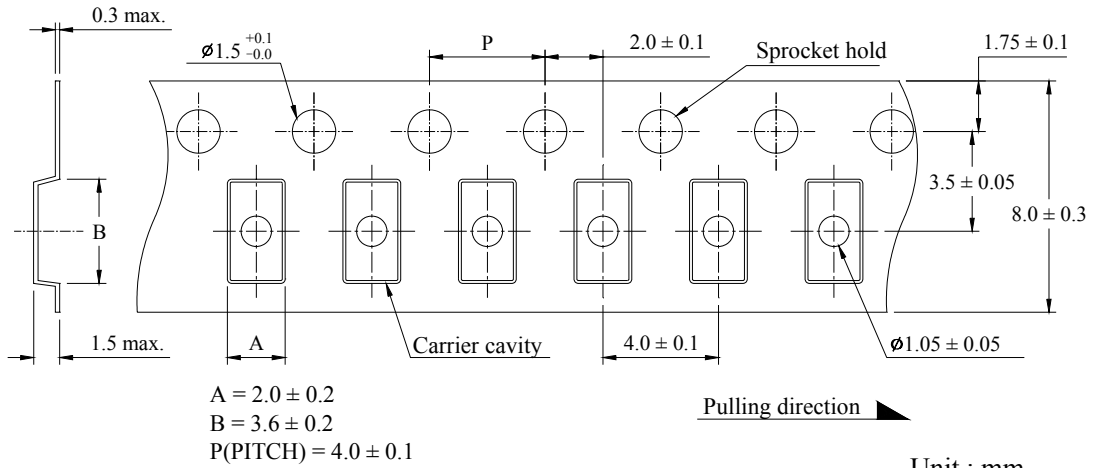
A	B	B'	C	D
1.4	1.9	1.37	5.2	1.78

Unit : mm

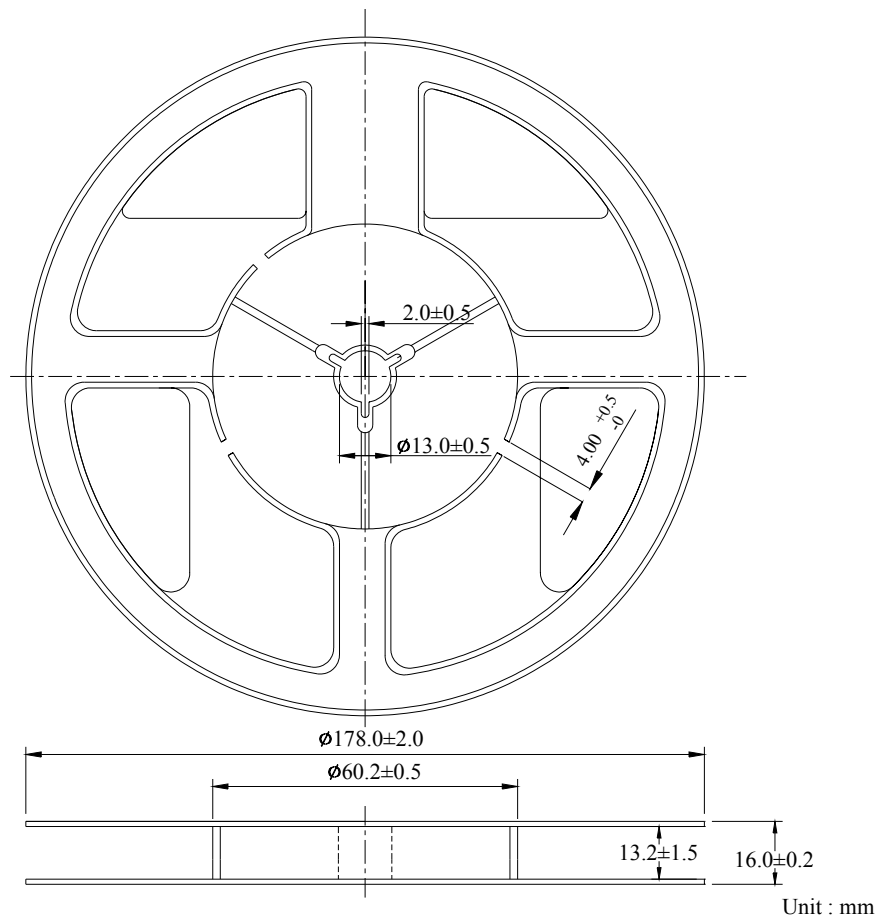
8. Packaging

8-1 Dimensions

8-1-1 Tape packaging dimensions



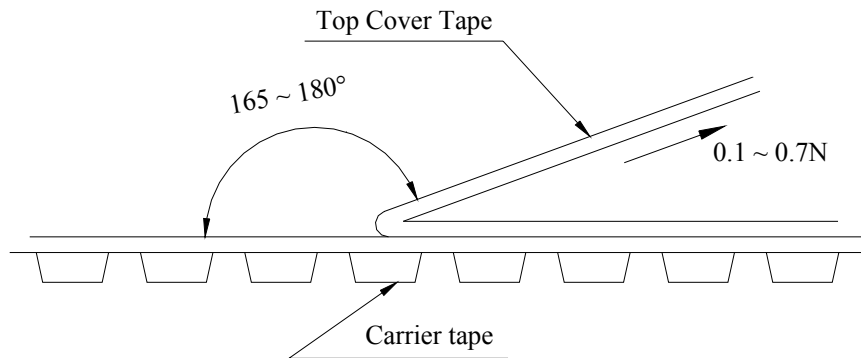
8-1-2 Reel dimensions



#### 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