SPECIFICATION FOR APPROVAL

1/2W, 0603, Low Resistance Chip Resistor (Lead / Halogen free)

1. Scope

This specification applies to 0.8mm x 1.6mm size 1/2W, fixed metal film chip resistors rectangular type for use in electronic equipment.

2. Type Designation

RL 0816 — 4 — □□□□ □

(1) (2) (3) (4)

Where (1) Series No.

(2) Power rating

4 = 1/2W

(3) Resistance value:

For example—

R010 = 0.01 Ω

(4) Resistance tolerance:

F= ± 1%

G= ± 2%

J = ± 5%

3. Construction and Physical Dimensions

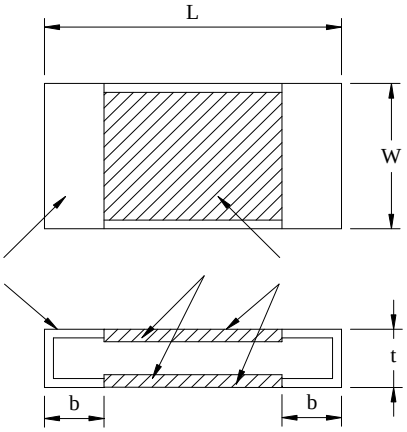


Figure 1. Structure (No mark)

Code Letter	Dimensions (mm)
L	1.6 ± 0.2
W	0.8 ± 0.2
t	0.4 ± 0.15
a	0.35 ± 0.15
b	0.35 ± 0.15

NOTE:

① Resistive element
(under protection film)

② Electrode

③ Protection film

④ Substrate

SPECIFICATION FOR APPROVAL

4. Ratings

4-1 Specification

Power Rating*	1/2 W	
Resistance Range	0.010Ω~0.020Ω	0.021Ω ~ 1.0Ω
Resistance Tolerance	±1% , ±2% , ±5%	
Temperature Coefficient of Resistance	0~350ppm/℃	0~250ppm/℃

Note*:

Power Rating 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.

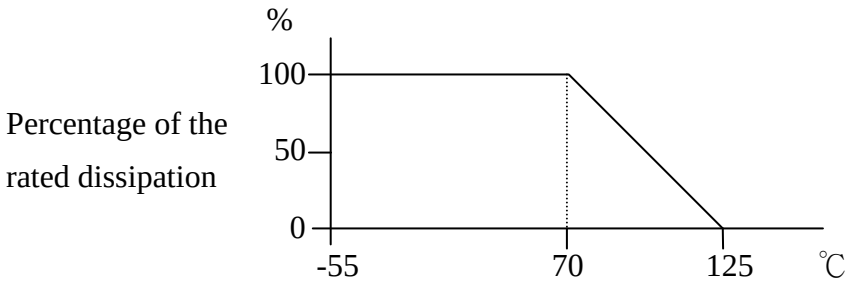


Figure 2 Derating Curve

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 Operating and Storage Temperature Range

-55 to +125

SPECIFICATION FOR APPROVAL

5. Characteristics

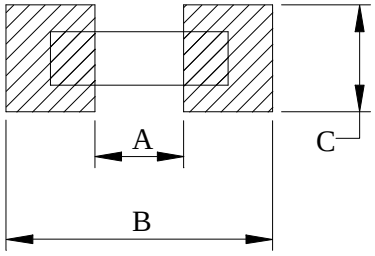
Test Item	Condition of Test	Requirements
Short Time Overload	2.5 * Rated power for 5 seconds	ΔR : ± 0.5% Without significant damage by flashover (spark, arching), burning or breakdown etc.
Insulation Resistance	The resistor shall be cramped in the metal block and tested , as shown below. Test voltage : 100 ± 15V_{DC} for 1 minute Refer to JIS C 5201-1 4.6 Mounting condition G.	Between Electrode and Protection Film 100MΩ or over Between Electrode and Substrate 1,000MΩ or over
Voltage Proof	The voltage : 100V_{AC} (rms.) for 1 minute Refer to JIS C 5201-1 4.7	ΔR : ± 0.5% Without damage by flashover, fire or breakdown, as shown below.
Thermal Shock	-55 ~125℃ 5 cycles, 15 min at each extreme condition Refer to JIS C 5201-1 4.19	ΔR : ± 0.5% Without distinct damage in appearance
Low Temperature Storage	Kept at -55℃, 1,000 hours Refer to JIS C 5201-1 4.23.4	ΔR : ± 1.0% Without distinct damage in appearance
High Temperature Exposure	Kept at 125℃ for 1,000 hours Refer to JIS C 5201-1 4.23.2	ΔR : ± 1.0% Without distinct damage in appearance
Solderability	Temperature of Solder : 245 ± 5℃ 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 ± 5℃ for 10 ± 1 seconds Refer to JIS C 5201-1 4.18	ΔR : ± 0.5% Without distinct deformation in appearance

SPECIFICATION FOR APPROVAL

Test Item	Condition of Test	Requirements
Load Life	Rated voltage for 1.5 hours followed by a pause 0.5 hour at 70 ± 2℃. Cycle repeated 1000 hours Refer to JIS C 5201-1 4.25	ΔR : ± 1.0% Without distinct damage in appearance
Damp Heat with Load	40 ± 2℃ 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	ΔR : ± 1.0% Without distinct damage in appearance
Mechanical Shock	100 G's for 6milliseconds. 5 pulses Refer to JIS C 5201-1 4.21	ΔR : ± 0.5% 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	ΔR : ± 0.5% Without mechanical damage such as break

SPECIFICATION FOR APPROVAL

6. Recommend Land Pattern Dimensions



A	0.8
B	2.2
C	0.6~1.0

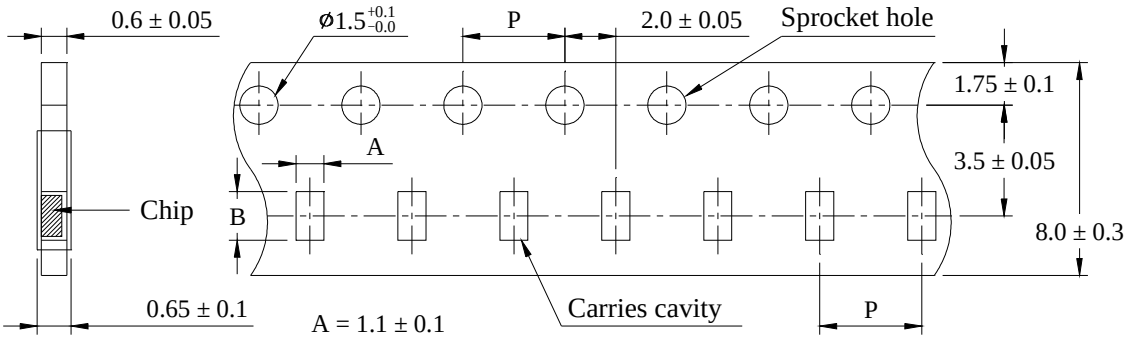
Unit : mm

SPECIFICATION FOR APPROVAL

7. Packaging

7-1 Dimensions

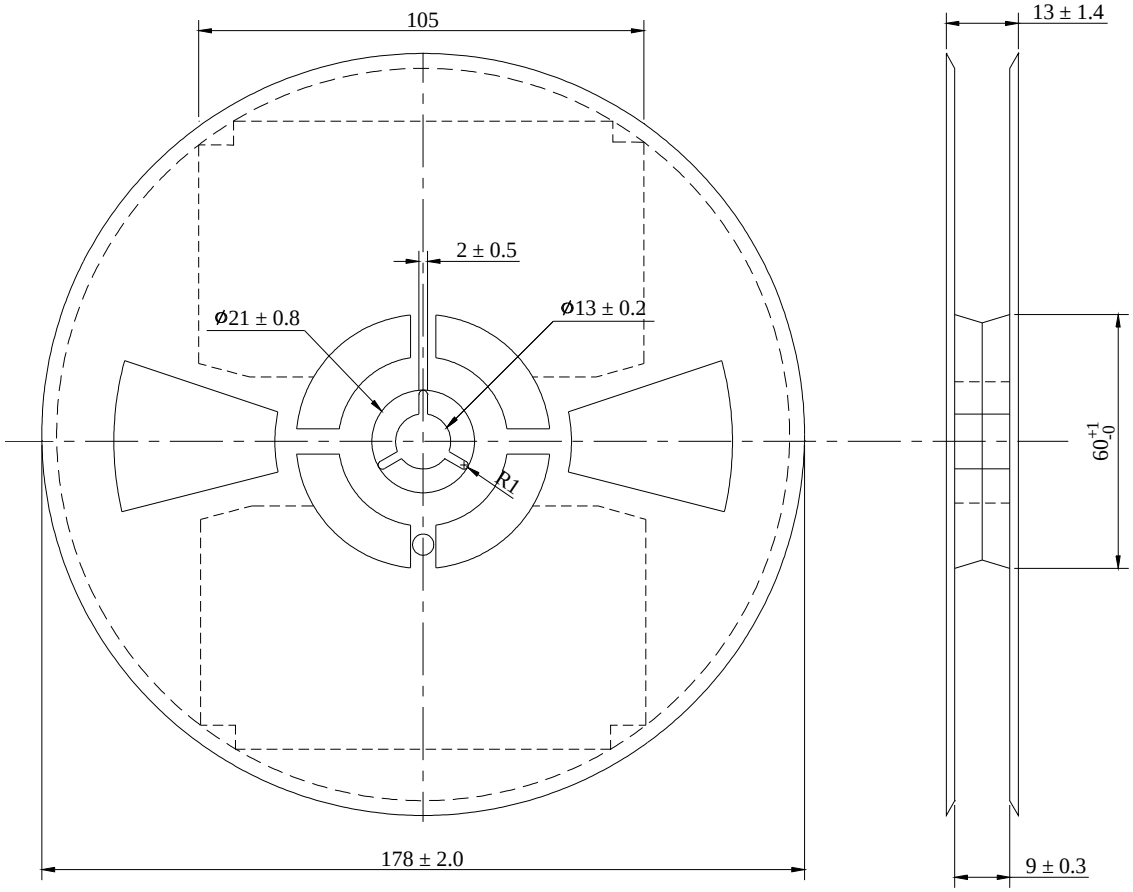
7-1-1 Tape packaging dimensions



A = 1.1 ± 0.1
B = 1.9 ± 0.1
P(PITCH) = 4.0 ± 0.1

Unit : mm

7-1-2 Reel Dimensions



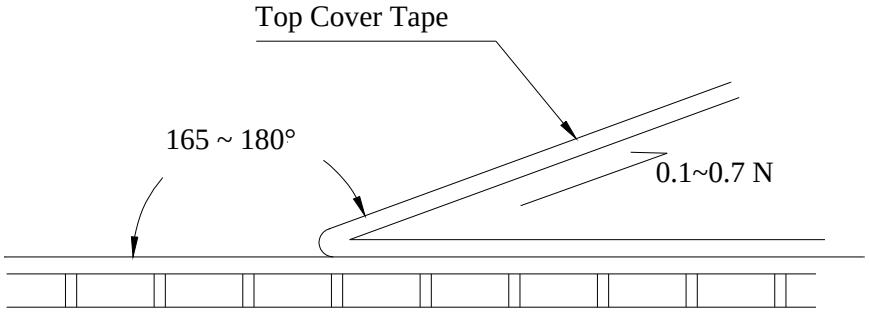
Unit : mm

SPECIFICATION FOR APPROVAL

7-2 Peel force of top cover tape

The peel speed shall be about 300 mm / min.

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



7-3 Numbers of taping

5,000 pieces / reel

7-4 Making

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