RS1XXXXX0 Resistor Network

1. Scope

This specification applies to 1.6mm x 3.2mm (1206) size resistor network (8P4R) with 4 isolated resistor for use in electronic equipment.

2. Type Designation

RS1 – XXXX – X – 0
(1) (2) (3) (4)

Where (1) Type :
8 Pin 4 Resistor

(2) Nominal resistance value :
For example –-
33R0 = 33Ω
1003 = 10kΩ

(3) Resistance tolerance :
B = ± 0.1%
D = ± 0.5%
F = ± 1.0%

(4) Outline type :
0 = Concave corner

3. Electrical Specifications

Power Rating*	64mW/each element		
Resistance Values	E-24 series		
Resistance Range	10Ω～91Ω	100Ω～33kΩ	36kΩ～330kΩ
Resistance Tolerance	± 0.5%,± 1.0%	± 0.1%,± 0.5%,± 1.0%	± 0.5%,± 1.0%
T.C.R. (Temperature Coefficient of Resistance)	± 50ppm／℃	± 25ppm／℃	± 100ppm／℃
Operating Temperature Range	-55℃ to 125℃		
Maximum Operating Voltage**	25V		

Note: *Package Power Temperature Derating Curve

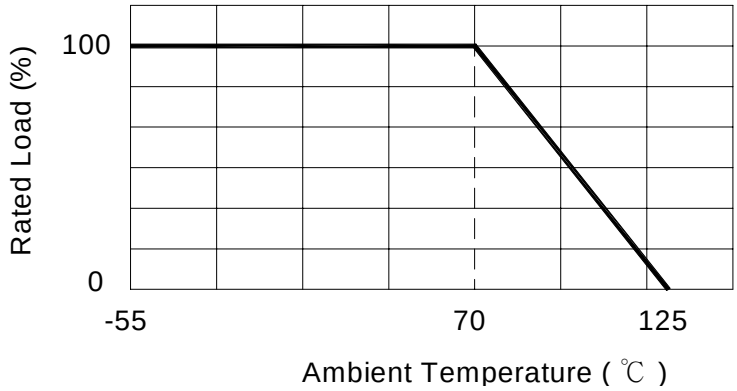


Figure 1. : Power Temperature Derating Curve

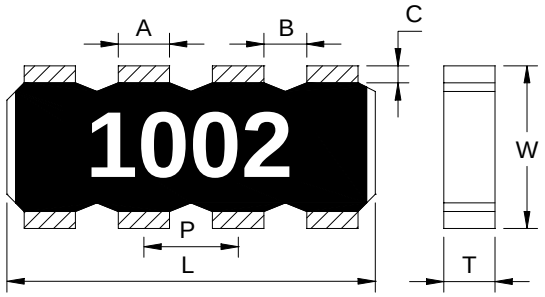
Note: **Resistors shall have a rated DC or AC(rms.) continuous operating voltage corresponding to the power rating, as calculated from the following formula

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

Where V : Rated voltage (V)
P : Rated power (W)
R : Nominal resistance (Ω)

If the voltage so obtained exceeds the maximum operating voltage, this maximum voltage shall be the rated voltage.

4. Outline dimensions and marking



Four Digits:

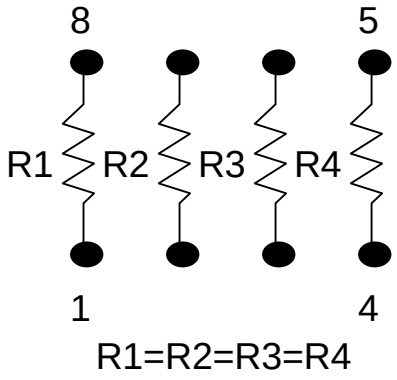
56R0 = 56Ω

1002 = 10kΩ

L	3.2 ± 0.3	A	0.5 ± 0.1
W	1.6 ± 0.15	B	0.3 ± 0.1
T	0.4 ± 0.1	C	0.3 ± 0.2
P	0.8 typical		

Unit : mm

5. Schematics



R1=R2=R3=R4

6. Life Tests

6-1 Electrical

ITEM	Specification and Requirement	Test Method
Short Time Overload	△R: ± (0.5%+ 0.05)Ω Without damage by flashover, spark, arcing, burning or breakdown	(1) Applied voltage: 2.5 x rated voltage or 2 x maximum operating voltage which ever is less (2)Test time : 5 seconds
Insulation Resistance	Over 100 MΩ on Overcoat layer face up Over 1,000 MΩ on Substrate side face up	(1)Setup as figure 2 (2)Test voltage: 100 V_{DC} (3)Test time: 60 + 10 / -0 seconds
Voltage Proof	△R: ± (0.5%+ 0.05)Ω Without damage by flashover, spark, arcing, burning or breakdown	(1)Setup as figure 2 (2)Test voltage: 100 V_{AC}(rms.) (3)Test time: 60 +10 / -0 seconds

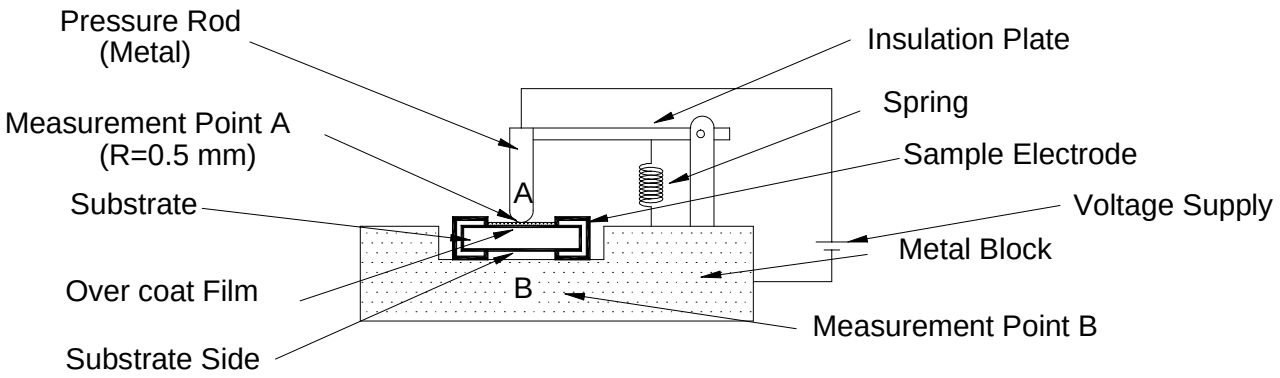


Figure 2 : Measurment Setup

6-2 Mechanical

Item	Specification and Requirement	Test Method
Solderability	The surface of terminal immersed shall be minimum of 95% covered with a new coating of solder	Solder bath: After immersing in flux, dip in 235 ± 5℃ molten solder bath for 2 ± 0.5 seconds
Resistance to Solder Heat	△R: ± (0.5%+ 0.05)Ω Without distinct deformation in appearance	(1) Pre-heat: 100~110℃ for 30 seconds (2) Immersed at solder bath of 260 ± 5℃ for 10 ± 1 seconds (3) Measuring resistance 1 hour after test
Vibration	△R: ± (0.5%+ 0.05)Ω Without mechanical damage such as break	(1) Vibration frequency: 10Hz to 55Hz to10Hz in 60 seconds as a period (2) Vibration time: period cycled for 2 hours in each of 3 mutual perpendicular directions (3) Amplitude: 1.5mm
Shock	△R: ± (0.25%+ 0.05)Ω Without mechanical damage such as break	(1) Peak value: 490N (2) Duration of pulse: 11ms (3) 3 times in each positive and negative direction of 3 mutual perpendicular directions

6-2 Mechanical

Item	Specification and Requirement	Test Method
Bending Test	△R: ± (1.0%+ 0.05)Ω Without mechanical damage such as break	Bending value: 3 mm for 30 ± 1 seconds
Solvent Resistance	Marking should be legible Without mechanical and distinct damage in appearance	(1)Solvent: Trichloroethane or Isopropyl alcohol (2)Immersed in solvent at room temperature for 90 seconds

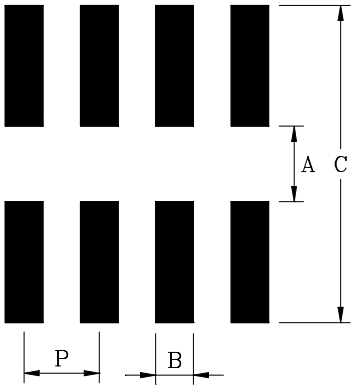
6-3 Endurance

Item	Specification and Requirement	Test Method
Rapid change of Temperature	△R: ± (0.5%+ 0.05)Ω Without distinct damage in appearance	(1)Repeat 5 cycle as follow: (-55 ± 3℃,30minutes) →(Room temperature, 2~3 minutes) (+125 ± 2℃,30minutes) →(Room temperature, 2~3 minutes) (2)Measuring resistance 1 hour after test
Moisture with Load	△R: ± (0.5%+ 0.05)Ω Without distinct damage in appearance Marking should be legible	(1)Environment condition: 40 ± 2℃,90~95% RH (2)Applied Voltage: rated voltage (3)Test period: (1.5 hour ON)→(0.5 hour OFF) cycled for total 1,000 + 48 / - 0 hours (4)Measuring resistance 1 hour after test

6-3 Endurance

Item	Specification and Requirement	Test Method
Load Life	△R: ± (0.5%+ 0.05)Ω Without distinct damage in appearance	(1)Test temperature: 70 ± 2℃ (2)Applied Voltage: rated voltage (3)Test period: (1.5 hour ON)→(0.5 hour OFF) cycled for total 1,000 + 48 / - 0 hours (4)Measuring resistance 1 hour after test
Low Temperature Store	△R: ± (0.5%+ 0.05)Ω Without distinct damage in appearance	(1)Store temperature: -55 ± 3℃ for total 1,000 + 48 / - 0 hours (2)Measuring resistance 1 hour after test
High Temperature Store	△R: ± (0.5%+ 0.05)Ω Without distinct damage in appearance	(1)Store temperature: +125 ± 2℃ for total 1,000 + 48 / - 0 hours (2)Measuring resistance 1 hour after test

7. Recommend Land Pattern Dimensions



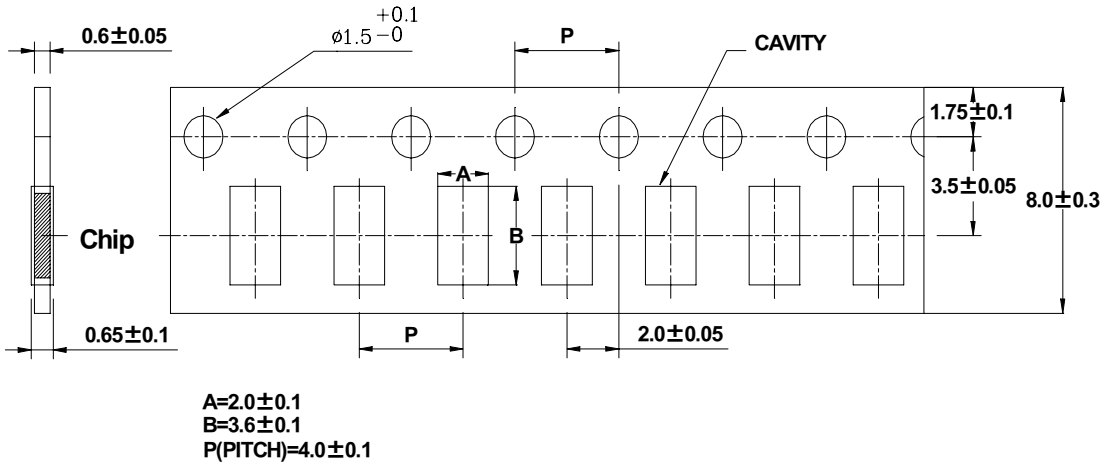
A	1.0
B	0.4
C	3.6
P	0.8

Unit : mm

8. Packaging

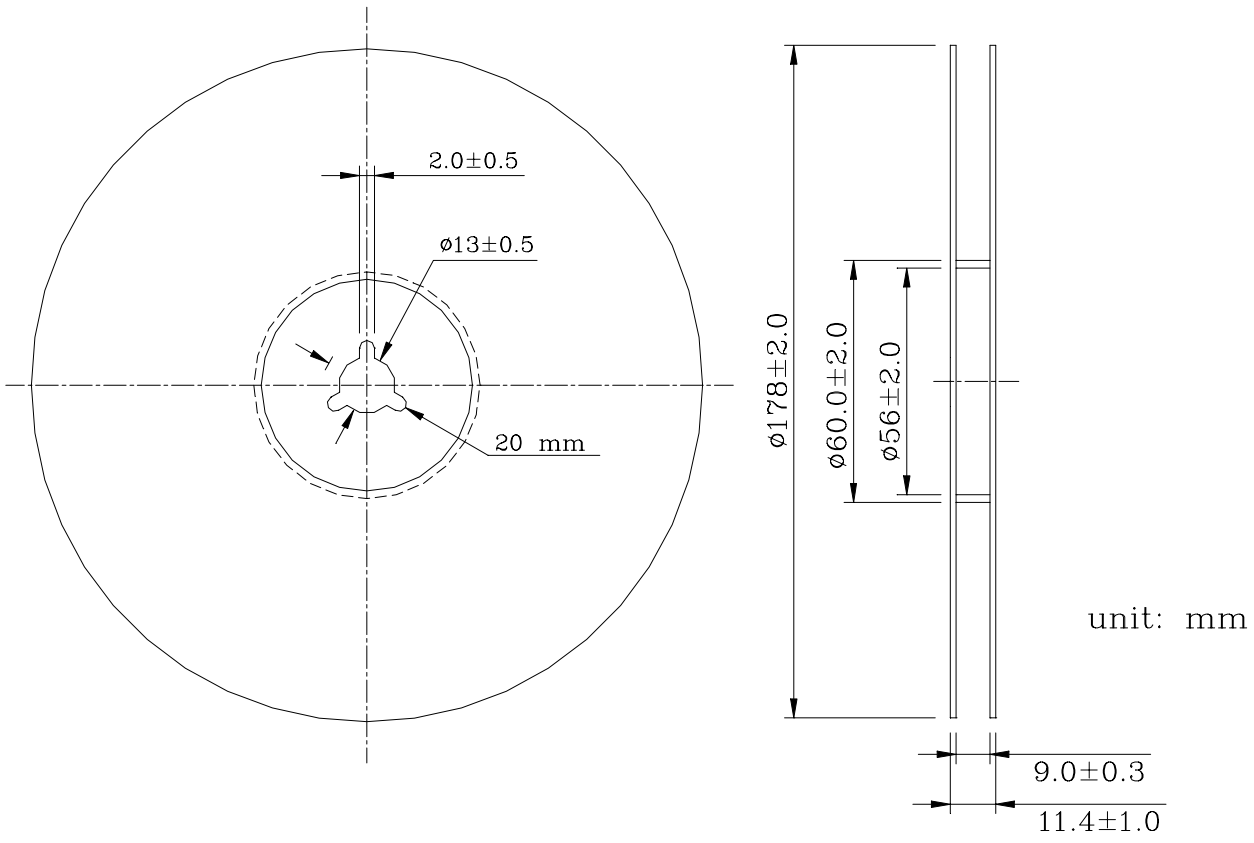
8-1 Dimensions

8-1-1 Tape packaging dimensions



A=2.0±0.1
B=3.6±0.1
P(PITCH)=4.0±0.1

8-1-2 Reel dimensions

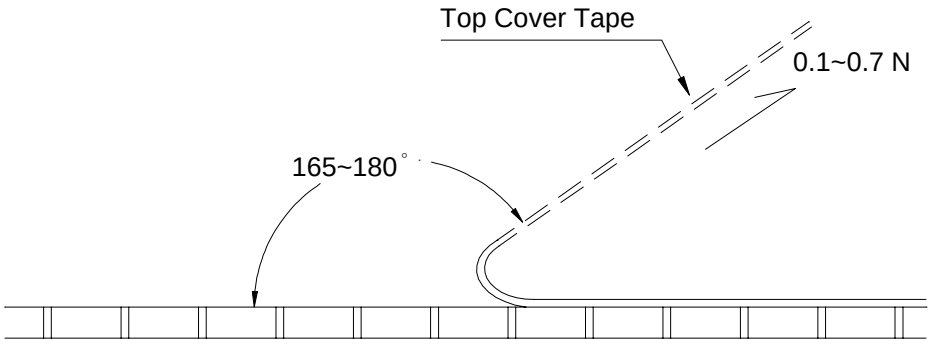


unit: mm

8-2 Peel force of top cover tape

The peel speed shall be about 300 mm/minute

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



8-3 Numbers of taping

5,000 pieces/reel

8-4 Label marking

The following items shall be marked on the production and shipping Label on the reel.

8-4-1 production Label

(1) Part No.
(2) Description
(3) Quantity
(4) Taping No.

8-4-2 Shipping Label

(1) *Customer's name
(2) *Customer's part No.
(3) Manufacturer's part No.
(4) Manufacturer's name
(5) Manufacturer's country

*Note : Item (1) and (2) are listed by request

9. Care note

9-1 Care note for storage

(1) Resistor network shall be stored in a room where temperature and humidity must be controlled. (temperature 5 to 35℃, humidity 45 to 85% RH) However, a humidity keep it low, as it is possible.

(2) Resistor network shall be stored as direct sunshine doesn't hit on it.

(3) Resistor network shall be stored with no moisture, dust, a material that will make solderability inferior, and a harmful gas (Chloridation hydrogen, sulfurous acid gas, and sulfuration hydrogen)

9-2 Care note for operating and handling

(1) It is necessary to protect the edge and protection coat of resistors from mechanical stress.

(2) Handle with care when printing circuit board (PCB) is divided or fixed on support body, because bending of printing circuit board (PCB) mounting will make mechanical stress for resistors.

(3) Resistors shall be used with in rated range shown in specification. Especially, if voltage more than specified value will be loaded to resistor, there is a case it will make damage for machine because of temperature rise depending on generating of heat, and increase resistance value or breaks.

(4) In case that resistor is loaded a rated voltage, it is necessary to confirms temperature of a resistor and to reduce a load power according to load reduction curve, because a temperature rise of a resistor depends on influence of heat from mounting density and neighboring element.

(5) Observe Limiting element voltage and maximum overload voltage specified in each specification

(6) If there is possibility that a large voltage (pulse voltage, shock voltage) charge to resistor, it is necessary that operating condition shall be set up before use.