

# Endured surge thick film chip resistor

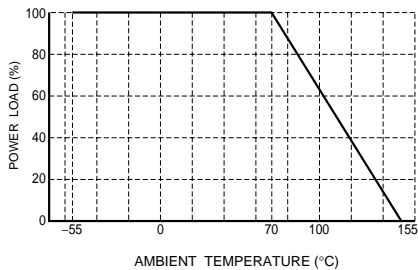
## ESR18 (1206 size: 1/3W)

### ●Features

- 1) Power rating of 1/3W (MCR18 1/4W)
- 2) Superior anti surge to MCR series.
- 3) Highly reliable chip resistor Ruthenium oxide dielectric offers superior resistance to the elements.
- 4) ROHM resistors have approved ISO-9001 certification.

Design and specifications are subject to change without notice. Carefully check the specification sheet before using or ordering it.

### ●Ratings

Item	Conditions	Specifications	
Rated power	Power must be derated according to the power derating curve in Figure 1 when ambient temperature exceeds 70°C.  Fig.1	0.33W (1/3W) at 70°C	
Rated voltage	The voltage rating is calculated by the following equation. If the value obtained exceeds the limiting element voltage, the voltage rating is equal to the maximum operating voltage. $E = \sqrt{P \times R}$ E: Rated voltage (V) P: Rated power (W) R: Nominal resistance (Ω)	Limiting element voltage	200V
Nominal resistance	See Table 1.		
Operating temperature		-55°C to +155°C	

## Resistors

Table 1

Resistance tolerance	Resistance range ( $\Omega$ )	Resistance temperature coefficient (ppm / $^{\circ}\text{C}$ )
D ( $\pm 0.5\%$ )	$10 \leq R \leq 1\text{M}$ (E24,96)	$\pm 100$
J ( $\pm 5\%$ )	$1 \leq R \leq 10\text{M}$ (E24)	$\pm 200$

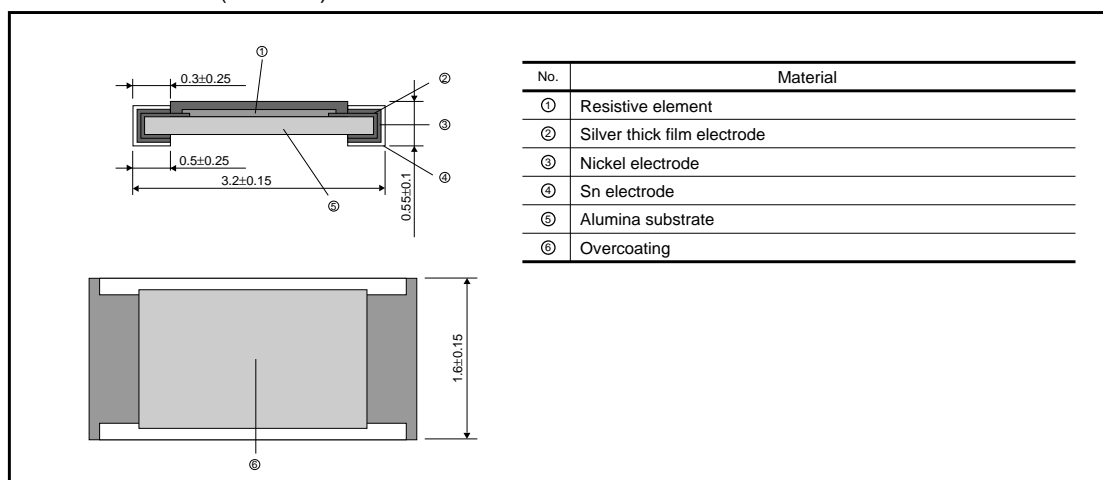
- Before using components in circuits where they will be exposed to transients such as pulse loads (short-duration, high-level loads), be certain to evaluate the component in the mounted state. In addition, the reliability and performance of this component cannot be guaranteed if it is used with a steady state voltage that is greater than its rated voltage.

## ● Characteristics

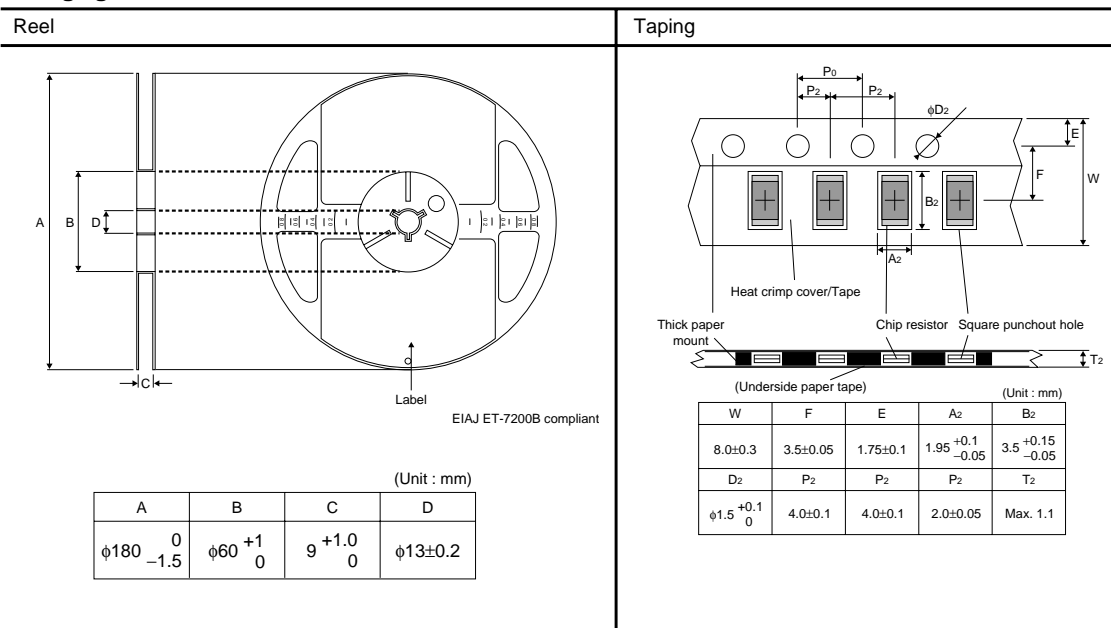
Item	Guaranteed value	Test conditions (JIS C 5201-1)
	Resistor type	
Resistance	J : $\pm 5\%$ D : $\pm 0.5\%$	JIS C 5201-1 4.5
Variation of resistance with temperature	See Table.1	JIS C 5201-1 4.8 Measurement : $-55 / +25 / +125^{\circ}\text{C}$
Overload	$\pm (2.0\%+0.1\Omega)$	JIS C 5201-1 4.13 Rated voltage (current) $\times 2.5$ , 2s. Limiting Element Voltage $\times 2$ : 400V
Solderability	A new uniform coating of minimum of 95% of the surface being immersed and no soldering damage.	JIS C 5201-1 4.17 Rosin-Ethanol (25%WT) Soldering condition : $235 \pm 5^{\circ}\text{C}$ Duration of immersion : $2.0 \pm 0.5\text{s}$ .
Resistance to soldering heat	$\pm (1.0\%+0.05\Omega)$ No remarkable abnormality on the appearance.	JIS C 5201-1 4.18 Soldering condition : $260 \pm 5^{\circ}\text{C}$ Duration of immersion : $10 \pm 1\text{s}$ .
Rapid change of temperature	$\pm (1.0\%+0.05\Omega)$	JIS C 5201-1 4.19 Test temp. : $-55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$ 5cyc
Damp heat, steady state	$\pm (3.0\%+0.1\Omega)$	JIS C 5201-1 4.24 $40^{\circ}\text{C}$ , 93%RH Test time : 1,000h to 1,048h
Endurance at $70^{\circ}\text{C}$	$\pm (3.0\%+0.1\Omega)$	JIS C 5201-1 4.25.1 Rated voltage (current), $70^{\circ}\text{C}$ 1.5h : ON – 0.5h : OFF Test time : 1,000h to 1,048h
Endurance	$\pm (3.0\%+0.1\Omega)$	JIS C 5201-1 4.25.3 $155^{\circ}\text{C}$ Test time : 1,000h to 1,048h
Resistance to solvent	$\pm (1.0\%+0.05\Omega)$	JIS C 5201-1 4.29 $23 \pm 5^{\circ}\text{C}$ , Immersion cleaning, $5 \pm 0.5\text{min}$ . Solvent : 2-propanol
Bend strength of the end face plating	$\pm (1.0\%+0.05\Omega)$ Without mechanical damage such as breaks.	JIS C 5201-1 4.33
Static electric characteristics	$\pm (5.0\%+0.05\Omega)$	EIAJ ED-4701/300 Test method 304 Voltage : 3kv R : $1.5\text{k}\Omega$ C : $100\text{pF}$ Apply cycle : 1 time

# Resistors

## ●External dimensions (Unit : mm)

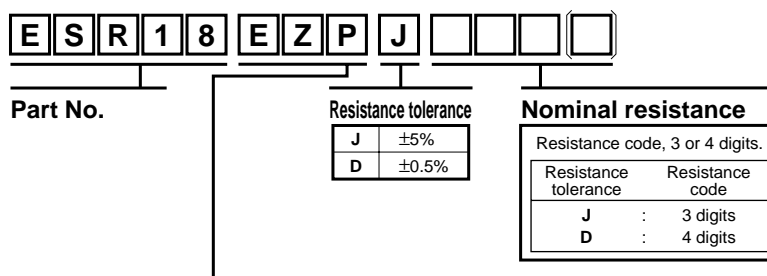


## ●Packaging



# Resistors

## ●Makeup of the part number



## Packaging Specifications Code

Part No.	Code	Resistance tolerance		Packaging specifications	Reel	Basic ordering unit(pcs)
		J(±5%)	F(±1%)			
ESR18	EZP	◎	◎	Paper tape (4mm Pitch)	φ180mm (7in.)	5,000

Reel (φ180) : JEITA ET-7200B  
 ◎ : Standard product

## ●Dimensions

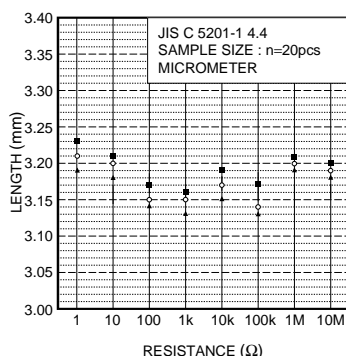


Fig.2 Dimensions (length)

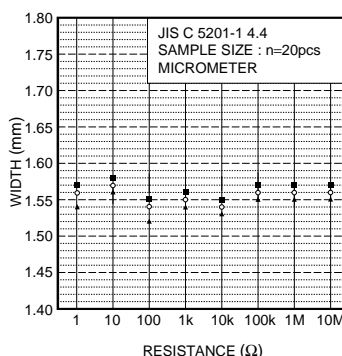


Fig.3 Dimensions (width)

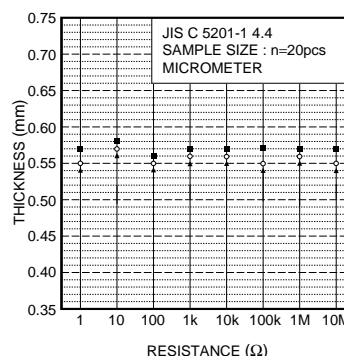


Fig.4 Dimensions (thickness)

## ●Electrical characteristics

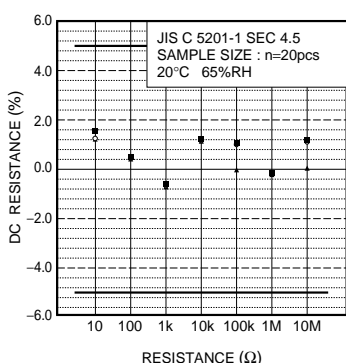


Fig.5 Resistance (J class)

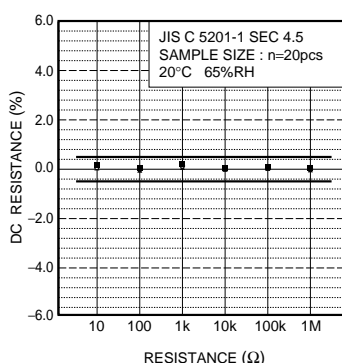


Fig.6 Resistance (D class)

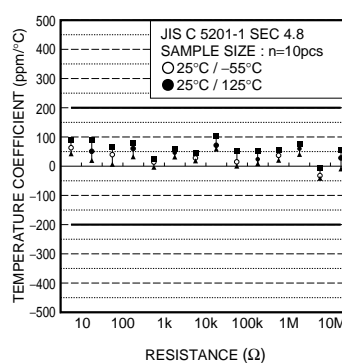


Fig.7 Variation of resistance with temperature (J class)

## Resistors

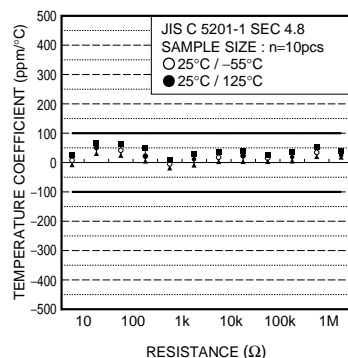


Fig.8 Variation of resistance with temperature (D class)

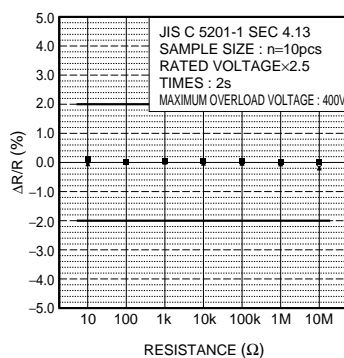


Fig.9 Overload

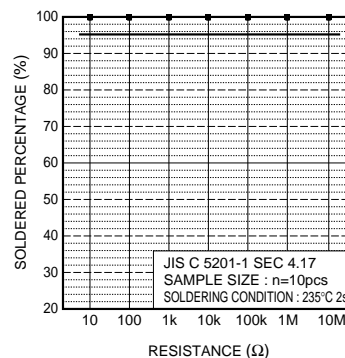


Fig.10 Solderability

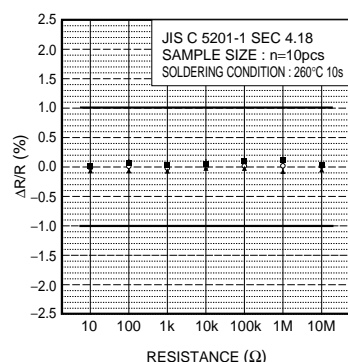


Fig.11 Resistance to soldering heat

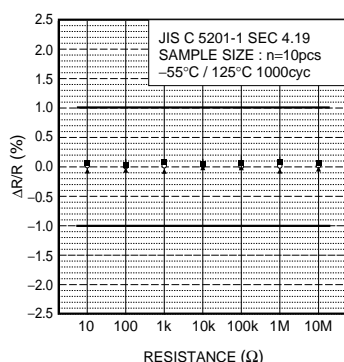


Fig.12 Rapid change of temperature

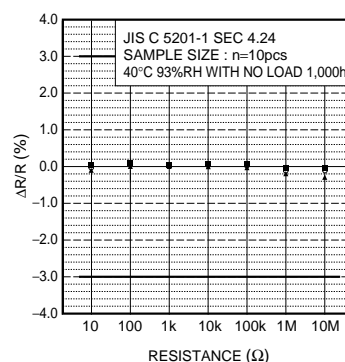


Fig.13 Damp heat, steady state

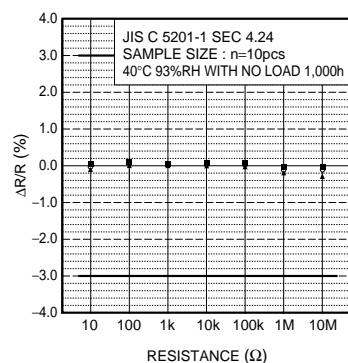


Fig.13 Damp heat, steady state

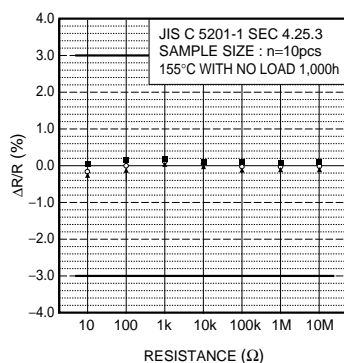


Fig.15 Endurance

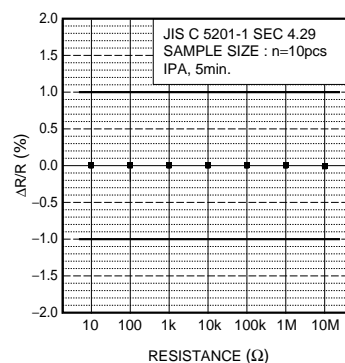


Fig.16 Component solvent resistance

## Resistors

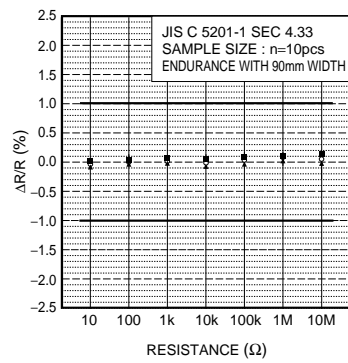


Fig.17 Bend strength of the end face plating

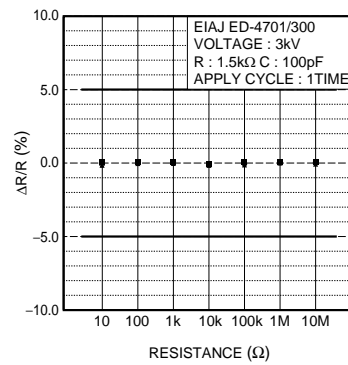


Fig.18 Static electric characteristics

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