

# High Power Chip Resistors

## <Wide Terminal type>

LTR10 (2012 size : 1 / 4W)

### ●Features

- 1) Improved welding strength  
The structure of longer electrodes provides the wider welding area than the chip resistors with normal electrodes, and this enhanced the solder welding strength.
- 2) Increased surge-resistance  
This is achieved by Rohm's original trimming technology plus resistive element patterning.
- 3) High-power tolerance  
Two times of the rated power is guaranteed than the normal-electrode resistors.
- 4) ROHM resistors are ISO-9001 & ISO/TS16949 certified.  
Design and specifications are subject to change without notice. Carefully check the specification sheet before using or ordering it.

### ●Applications

Automotive, industrial and power supply.

### ●Ratings

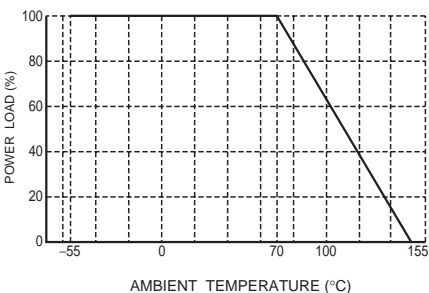
Item	Conditions	Specifications
Rated power	Power must be derated according to the power derating curve in Figure 1 when ambient temperature exceeds 70°C.  Fig.1	0.25W (1 / 4W) at 70°C
Rated voltage	The voltage rating is calculated by the following equation. If the value obtained exceeds the limiting 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   150V
Nominal resistance	See Table 1.	
Operating temperature		-55°C to + 155°C

Table 1

Resistance tolerance	Resistance range (Ω)	Resistance temperature coefficient (ppm/°C)
D (±0.5%)	10 to 1M	±100
F (±1%)	1 to 1M (E24)	±100
J (±5%)		±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 : $\pm 5\%$ F : $\pm 1\%$ D : $\pm 0.5\%$	JIS C 5201-1 4.5
Variation of resistance with temperature	See <a href="#">Table.1</a>	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. Maximum overload voltage : 200V
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 C : 100pF R : 1.5k $\Omega$ Apply cycle : 1 time

●Dimensions (Unit : mm)

No.	Material
①	Resistive element (Oxide metal thick film)
②	Silver thick film electrode
③	Nickel electrode
④	Sn electrode
⑤	Alumina substrate
⑥	Overcoating (Resin)

Size code	L	W	t	a	b
2012(0805)	1.2 ± 0.1	2.0 ± 0.1	0.55 ± 0.1	0.2 ± 0.1	0.35 ± 0.2

●Packaging

Reel

EIAJ ET-7200B compliant

(Unit: mm)

A	B	C	D
$\phi 180 \begin{smallmatrix} 0 \\ -1.5 \end{smallmatrix}$	$\phi 60 \begin{smallmatrix} +1 \\ 0 \end{smallmatrix}$	$9 \begin{smallmatrix} +1.0 \\ 0 \end{smallmatrix}$	$\phi 13 \pm 0.2$

Taping

(Unit: mm)

W	F	E	A0	B0
8.0±0.3	3.5±0.05	1.75±0.1	1.65 $\begin{smallmatrix} +0.2 \\ -0.1 \end{smallmatrix}$	2.4 $\begin{smallmatrix} +0.2 \\ -0.1 \end{smallmatrix}$
D0	P0	P1	P2	T2
$\phi 1.5 \begin{smallmatrix} +0.1 \\ 0 \end{smallmatrix}$	4.0±0.1	4.0±0.1	2.0±0.05	Max. 1.1

●Part designation

L	T	R	1	0	E	Z	P		J																			
Part No.								Resistance tolerance		Nominal resistance																		
								<table border="1" style="width: 100%; text-align: center;"> <tr> <td>J</td> <td>±5%</td> </tr> <tr> <td>F</td> <td>±1%</td> </tr> <tr> <td>D</td> <td>±0.5%</td> </tr> </table>		J	±5%	F	±1%	D	±0.5%	<table border="1" style="width: 100%; text-align: center;"> <tr> <th colspan="2">Resistance code, 3 or 4 digits.</th> </tr> <tr> <th>Resistance tolerance</th> <th>Resistance code</th> </tr> <tr> <td>J</td> <td>: 3 digits</td> </tr> <tr> <td>F</td> <td>: 4 digits</td> </tr> <tr> <td>D</td> <td>: 4 digits</td> </tr> </table>			Resistance code, 3 or 4 digits.		Resistance tolerance	Resistance code	J	: 3 digits	F	: 4 digits	D	: 4 digits
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Packaging Specifications Code

Part No.	Code	Resistance tolerance			Packaging specifications	Reel	Basic ordering unit (pcs)
		D(±0.5%)	F(±1%)	J(±5%)			
LTR10	EZP	⊙	⊙	⊙	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000

Reel (φ180mm) : Compatible with JEITA standard "EIAJ ET-7200B"  
 ⊙ : Standard product

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