

[PRODUCT SPECIFICATIONS]

### 1. SCOPE

This specification defines the High Power Chip Resistors <Wide Terminal type><Anti-surge> "LTR18 EZP (including jumper type)", which is a product of ROHM Co., Ltd.

### 2. CLASSIFICATION

LTR18  
TYPE
EZP  
PACKAGING CODE
□  
TOLERANCE
□□□□ \*  
RESISTANCE VALUE (IEC CODE)

\* Jumper is 「LTR18 EZP J 000」

#### PACKAGING CODE

CODE	PACKAGE	QUANTITY
EZP	180mm (7inch) reel, paper tape (4mm pitch)	5,000pcs/reel

#### TOLERANCE

CPDE	D (±0.5%)	F (±1%)	J (±5%)

#### RESISTANCE VALUE

4 digits	D	F
3 digits	J	

### 3. RATING

ITEMS	CONDITIONS	SPECIFICATIONS
<b>RATED POWER</b> $1\Omega \leq R < 1k\Omega$	<p>For resistors operated at the ambient temperature in excess of 70°C, the load shall be derated in accordance with <a href="#">Fig.1</a></p> <p>For resistors operated at the terminal part temperature in excess of 95°C, the load shall be derated in accordance with <a href="#">Fig.2</a></p> <p>The measurement part of terminal temperature is center of fillet's surface with load.</p> <p><a href="#">Fig.1</a> <span style="margin-left: 100px;"><a href="#">Fig.2</a></span></p>	<p>1.5W at Ta=70°C at Tk=95°C</p> <p>Ta : Ambient temperature Tk : Terminal temperature</p>
<b>RATED POWER</b> $1k\Omega \leq R \leq 1M\Omega$	<p>For resistors operated at the ambient temperature in excess of 70°C, the load shall be derated in accordance with <a href="#">Fig.3</a></p> <p>For resistors operated at the terminal part temperature in excess of 125°C, the load shall be derated in accordance with <a href="#">Fig.4</a></p> <p>The measurement part of terminal temperature is center of fillet's surface with load.</p> <p><a href="#">Fig.3</a> <span style="margin-left: 100px;"><a href="#">Fig.4</a></span></p>	<p>0.75W at Ta=70°C at Tk=125°C</p> <p>Ta : Ambient temperature Tk : Terminal temperature</p>

Jumper follows the derating curve in Fig 1.

ITEMS	CONDITIONS	SPECIFICATIONS
RATED VOLTAGE	Rated voltage is determined from the following. When rated voltage exceeds the limiting element voltage, the limiting element voltage shall be the rated voltage.  $E = \sqrt{P \times R}$ E : RATED VOLTAGE (V) P : RATED POWER (W) R : RESISTANCE (Ω)	
		LIMITING ELEMENT VOLTAGE
RESISTANCE	See <a href="#">Table 1</a>	
OPERATING TEMPERATURE		-55°C~+155°C

#### Jumper type

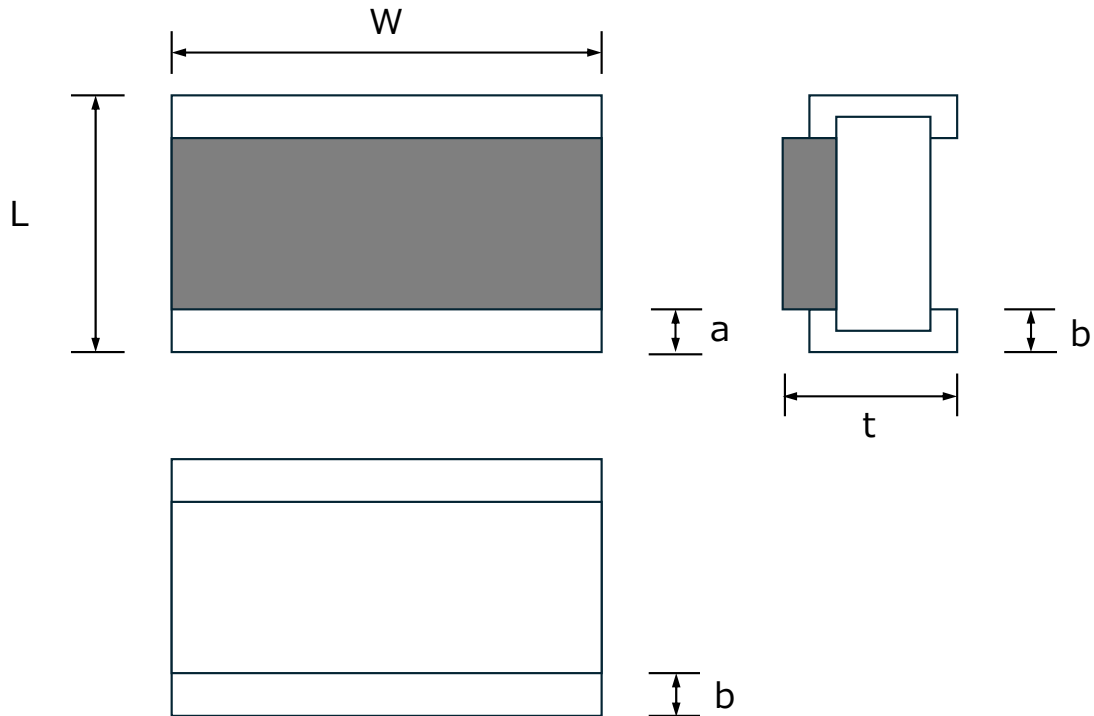
RESISTANCE	MAX. 10mΩ
RATED CURRENT	12.2A
TEMPERATURE RANGE	-55°C~+155°C

#### Table 1

RESISTANCE RANGE (Ω)	TOLERANCE	TEMPERATURE COEFFICIENT (ppm/°C) +25°C/-55°C, +25°C/+125°C
10 ≤ R ≤ 1M (E24, E96)	D (±0.5%)	±100
1 ≤ R ≤ 1M (E24, E96)	F (±1%)	±100
1 ≤ R ≤ 1M (E24)	J (±5%)	±200

#### 4. DIMENSIONS (UNIT : mm)

Simplified outline of external dimensions.



L	W	t	a	b
$1.60 \pm 0.15$	$3.20 \pm 0.15$	$0.55 \pm 0.10$	$0.30 \pm 0.20$	$0.50 \pm 0.20$

#### 5. MARKINGS

The description of markings on the chip resistor are as shown below.

- 1) Marking method : There are three or four digits used for the calculation number according to IEC code and "R" is used for the decimal point.  
 Example : 4digits..... $100\text{k}\Omega=1003$ ,  $10\Omega=10R0$   
 3digits..... $100\text{k}\Omega=104$ ,  $10\Omega=100$
- 2) Marking direction : Standard, Resistor surface marking.
- 3) Marking colors : D , F Class...4digits yellowish white marking or other appropriate marking  
 J Class ...3digits yellowish white marking or other appropriate marking

The marking on the jumper shall indicate "000".

## 6. CHARACTERISTICS

ITEMS	GUARANTEED VALUE		TEST CONDITIONS (JIS C 5201-1)
	RESISTOR TYPE	JUMPER TYPE	
6.1 RESISTANCE	D : $\pm 0.5\%$ F : $\pm 1\%$ J : $\pm 5\%$	MAX. 10m $\Omega$	JIS C 5201-1 6.1
6.2 VARIATION OF RESISTANCE WITH TEMPERATURE	See <a href="#">Table 1</a>	MAX. 10m $\Omega$	JIS C 5201-1 6.2 Measurement : +25°C/-55°C, +25°C/+125°C
6.3 OVERLOAD	$\pm(2.0\% + 0.1\Omega)$	MAX. 10m $\Omega$	JIS C 5201-1 8.1 Rated voltage(current) ×2.0, 5s (1 $\Omega$ ≤R<1k $\Omega$ ) ×2.5, 5s (1k $\Omega$ ≤R≤1M $\Omega$ , Jumper) Max. overload voltage : 400V
6.4 SOLDERABILITY	A new uniform coating of minimum of 95% of the surface being immersed and no soldering damage.		JIS C 5201-1 11.1 Rosin-Ethanol solution 25%(mass) Soldering condition : 245±5°C Duration of immersion : 2.0±0.5s.
6.5 RESISTANCE TO SOLDERING HEAT	$\pm(1.0\% + 0.05\Omega)$ No remarkable abnormality on the appearance.	MAX. 10m $\Omega$	JIS C 5201-1 11.2 Soldering condition : 260±5°C Duration of immersion : 10±1s.
6.6 RAPID CHANGE OF TEMPERATURE	$\pm(1.0\% + 0.05\Omega)$	MAX. 10m $\Omega$	JIS C 5201-1 10.1 Test temp. : -55°C~+125°C Test time : 1,000cycles
6.7 DAMP HEAT, STEADY STATE	$\pm(3.0\% + 0.1\Omega)$	MAX. 10m $\Omega$	JIS C 5201-1 10.4 Test temp. : 85°C Relative Humidity : 85% Test time : 1,000h
6.8 ENDURANCE AT 70°C	$\pm(3.0\% + 0.1\Omega)$	MAX. 10m $\Omega$	JIS C 5201-1 7.1 Test temp. : Ta=70°C(All resistance) Tk=95°C(1 $\Omega$ ≤R<1k $\Omega$ ) Tk=125°C(1k $\Omega$ ≤R≤1M $\Omega$ ) Rated voltage(current) : 1.5h ON / 0.5h OFF Test time : 1,000h
6.9 ENDURANCE AT MAXIMUM TEMPERATURE	$\pm(3.0\% + 0.1\Omega)$	MAX. 10m $\Omega$	JIS C 5201-1 7.3 Test temp. : 155°C Test time : 1,000h
6.10 RESISTANCE TO SOLVENT	$\pm(1.0\% + 0.05\Omega)$	MAX. 10m $\Omega$	JIS C 5201-1 11.3 23±5°C, Immersion cleaning, 5±0.5min Solvent : Isopropyl alcohol
6.11 BEND STRENGTH OF THE END FACE PLATING	$\pm(1.0\% + 0.05\Omega)$ Without mechanical damage such as breaks.	MAX. 10m $\Omega$	JIS C 5201-1 9.8 Endurance with 90mm width Deflection : 3mm
6.12 STATIC ELECTRIC CHARACTERISTICS	$\pm(5.0\% + 0.05\Omega)$	MAX. 10m $\Omega$	EIAJ ED-4701/300 TEST METHOD304 Voltage : 3kV C : 100pF R : 1.5k $\Omega$ Apply cycle : 1 time

[PACKAGE SPECIFICATIONS]

1. SCOPE

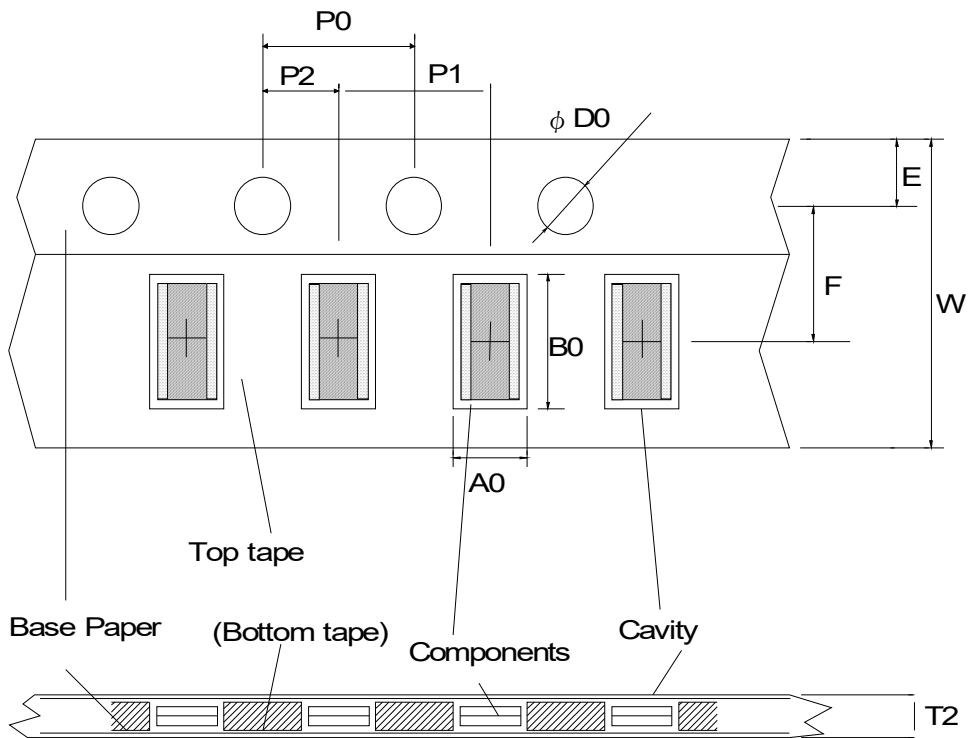
This specification defines the taping specifications for High Power Chip Resistors <Wide Terminal type><Anti-surge> "LTR18 EZP (including jumper type)".

2. PACKAGING CODE

LTR18      EZP      □      □□□□  
 TYPE    PACKAGING CODE    TOLERANCE    RESISTANCE VALUE (IEC CODE)

PACKAGING CODE : See page 1/8.

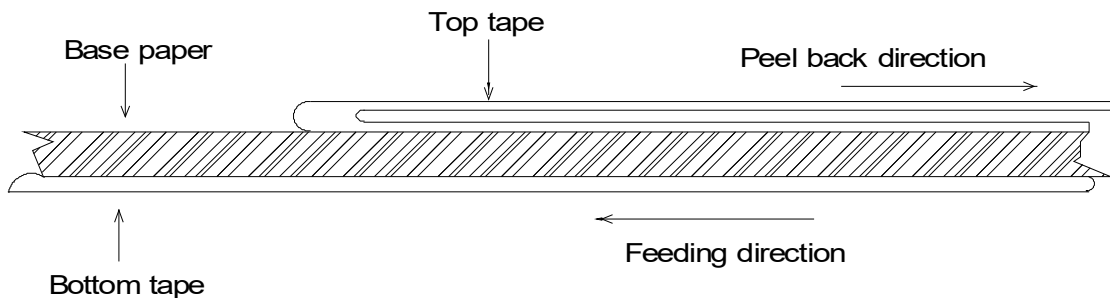
3. TAPE DIMENSION (UNIT : mm)



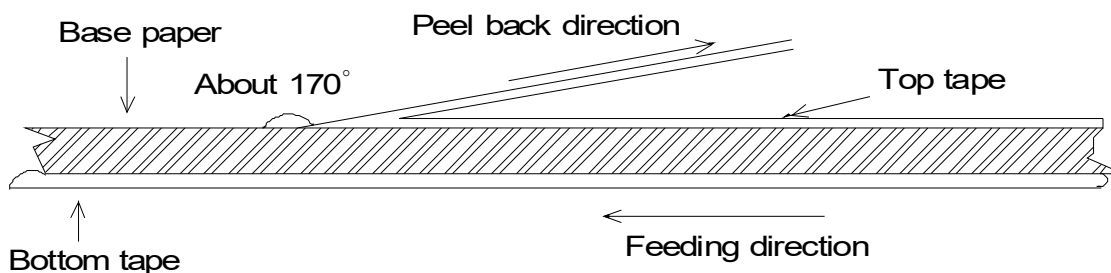
W	F	E	A0	B0
8.0±0.3	3.50±0.05	1.75±0.1	1.95 +0.1 -0.05	3.5 +0.15 -0.05
D0	P0	P1	P2	T2
$\phi 1.5 +0.1$ 0	4.0±0.1	4.0±0.1	2.0±0.05	MAX.1.1

#### 4. MECHANICAL CHARACTERISTICS

##### 4.1 COVER TAPE PEELING STRENGTH : $0.1\text{N} \leq \text{PEELING STRENGTH} \leq 0.6\text{N}$



4.2 Base tape should not adhere to top tape when top tape is peeled back, and peel back direction is as follows.



##### 4.3 DURABILITY OF COVER TAPE (TOP TAPE)

Top tape shall not be off the base paper after 120h at the atmosphere of  $60 \pm 3^\circ\text{C}$ , 90~95%(Relative Humidity).

#### 5. TAPE PACKAGING

5.1 Components are set in tape cavities with the same side (Resistive element up side).

5.2 The accumulated pitch tolerance shall be within  $\pm 0.2\text{mm}$  at 10 pitches.

5.3 Tape bent resistance

No damage on the tape and the cavity when tape is bent with the radius of 15mm.

5.4 Components in tape cavity shall not adhere to bottom / cover tape.

5.5 Components shall not be blocked by tape fragments or foreign materials when they are taken out from cavities.

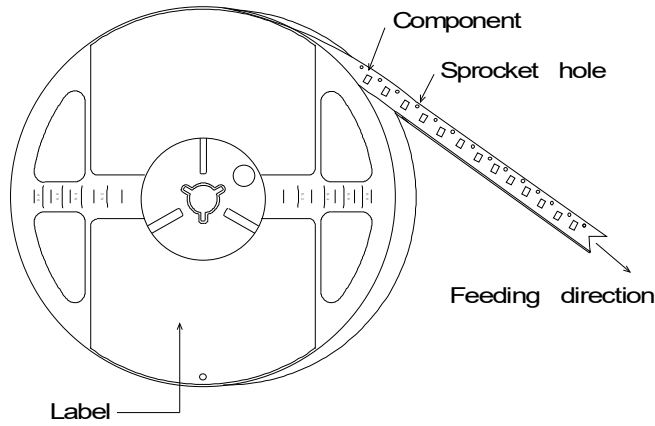
5.6 The top tape shall not cover up the sprocket holes of tape.

5.7 The number of missing components shall not exceed 0.1% of the total number of components (marked number) or one whichever is the larger, and no consecutive missing exceeding two is allowed.

6. TAPE REEL

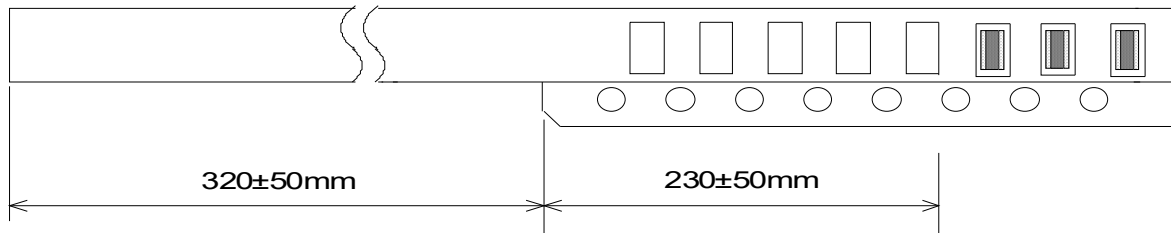
6.1 Tape feeding direction

Tape feeding direction shall be shown in the picture drawn below.



6.2 Leader tape

Leader tape is given a portion of only cover tape and of blank cavities. (no resistor.)

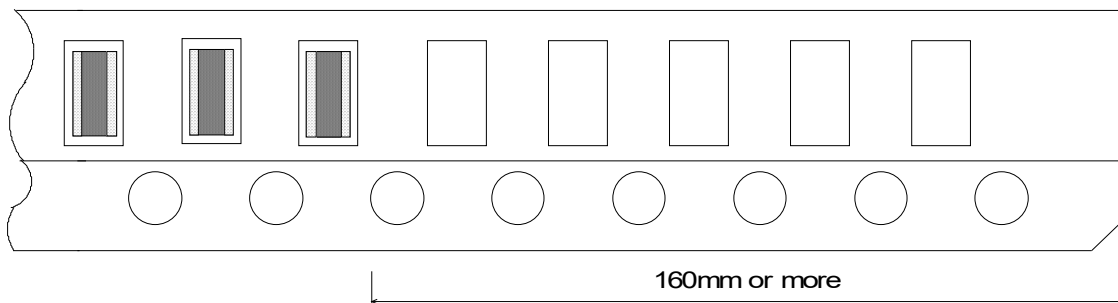


(Note) The leader portion of cover tape will not stick to base paper. (about 50~100mm)

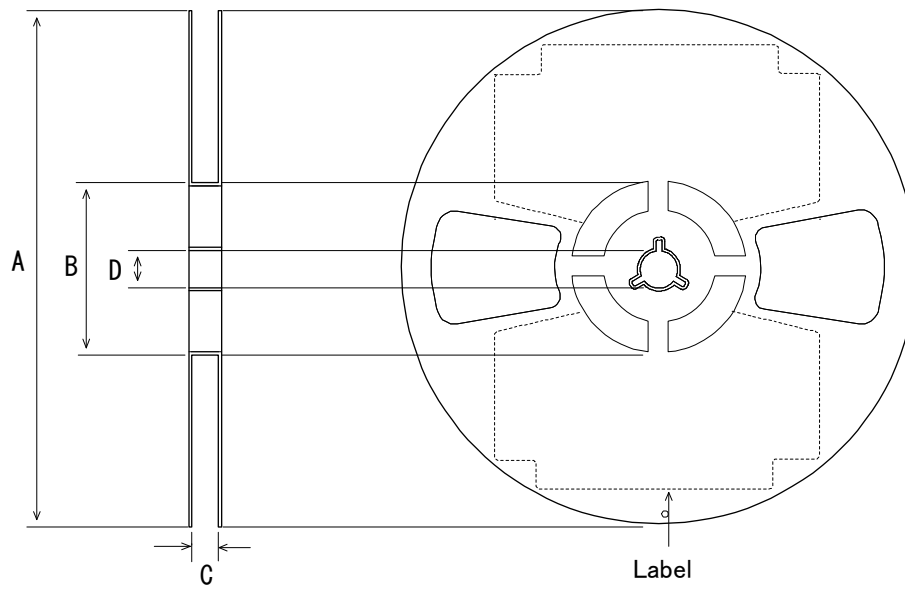
6.3 Trail tape

Trail tape is given a portion of blank cavities (no resistor).

And the trail tape should not be fixed by adhesive to reel and must be the one which can be pulled out easily from the reel.



## 7. REEL DIMENSIONS (UNIT : mm)



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

MATERIAL

REEL : POLYSTYRENE