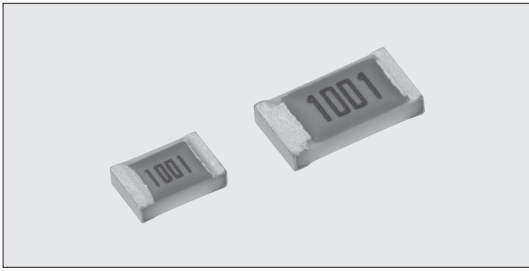


## LT73 Linear Positive Temp. Coefficient Flat Chip Resistors



Coating color : Orange

### Features

- SMD thin film resistors with thermo-perceptivity.
- Various TCRs  $+150 \sim +4500 \times 10^{-6}/K$  are available.
- Suitable for both flow and reflow soldering.
- Products with lead free termination meet EU-RoHS requirements.

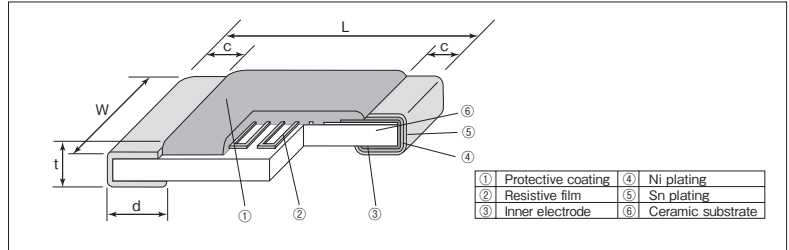
### Application

- Suitable for temperature control in various industrial equipment.

### Reference Standards

IEC 60115-8  
JIS C 5201-8

### Construction



### Dimensions

Type (Inch Size Code)	Dimensions (mm)					Weight (g) (1000pcs)
	L $\pm 0.2$	W $\pm 0.2$	c	d $\pm 0.1$	t $\pm 0.1$	
2A (0805)	2.0	1.25	0.4 $\pm 0.2$	0.3	0.5	4.54
2B (1206)	3.2	1.6	0.5 $\pm 0.3$	0.4	0.6	9.14

### Type Designation

Examples

LT73	2B	T	TD	202	J	0150
Product Code	Size	Terminal Surface Material	Taping	Nominal Resistance	Resistance Tolerance	T.C.R. ( $\times 10^{-6}/K$ )
	2A:2.0 $\times$ 1.25mm 2B:3.2 $\times$ 1.6mm	T:Sn	TD:4mm pitch paper TE:4mm pitch plastic embossed BK:Bulk	3 digits	G: $\pm 2\%$ J: $\pm 5\%$	4 digits

The terminal surface material lead free is standard.

Contact us when you have control request for environmental hazardous material other than the substance specified by EU-RoHS. For further information on taping, please refer to APPENDIX C on the back pages.

### Ratings

Type	Power Rating (W)	Max. Working Voltage <sup>*1</sup> (V)	Max. Overload Voltage (V)	Thermal Time Constant <sup>*2</sup> (s)	Thermal Dissipation Constant <sup>*2</sup> (mW/°C)	Rated Ambient Temperature (°C)	Operating Temperature Range (°C)	Taping & Q'ty/Reel (pcs)	
								TD	TE
2A	0.1	50	100	1.0	1.37	+70	-40~+125	5,000	4,000
2B	0.125	75	150	1.5	1.47			5,000	4,000

\*1 Rated voltage =  $\sqrt{\text{Power Rating} \times \text{Resistance value}}$  or Max. working voltage, whichever is lower.

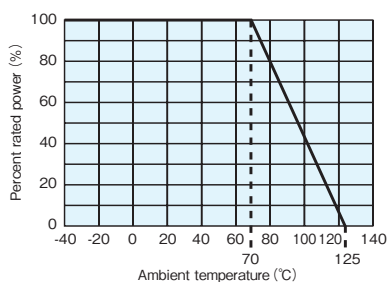
\*2 Thermal time constant and dissipation constant are reference values, which are values of elements and vary with connecting or fixing methods.

### T.C.R. and Resistance Range

T.C.R. ( $\times 10^{-6}/K$ ) <sup>*3</sup>	T.C.R.Tolerance	Resistance Range (E24) ( $\Omega$ )		Resistance Tolerance (%)
		2A	2B	
150 · 250 · 350 · 450 · 500	$\pm 100 \times 10^{-6}/K$	2k~24k	2k~51k	G: $\pm 2$
600 · 700 · 800 · 900	$\pm 150 \times 10^{-6}/K$	1k~20k	1k~43k	
1000 · 1200 · 1400	$\pm 15\%$	1k~13k	1k~27k	J: $\pm 5$
1600 · 1800		510~4.7k	1k~10k	
2000 · 2200 · 2400	$\pm 10\%$	510~4.7k	510~9.1k	
2600 · 2800 · 3000		510~3k	510~6.2k	
3300 · 3600 · 3900		100~1k	100~2k	
4200		51~510	51~510	
4500				

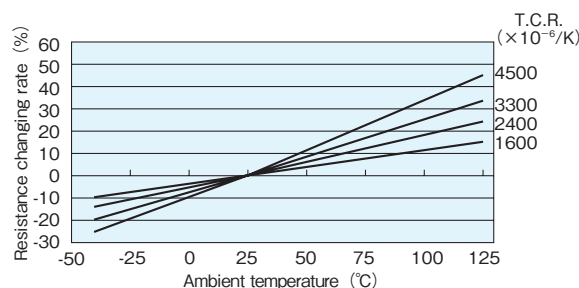
\*3 T.C.R. Measuring Temperature:  $+25^\circ C / +75^\circ C$

## Derating Curve



For resistors operated at an ambient temperature of 70°C or higher, the power shall be derated in accordance with the above derating curve.

## Examples of Temperature Characteristics of Resistance



## Approximate Expression for Resistance-Temperature Characteristics

(Values are not guaranteed but typical.)

$$R_T = R_{25} (C_0 + C_1 T + C_2 T^2)$$

$R_T$  : Resistance value at  $T^\circ\text{C}$

$R_{25}$  : Resistance value at  $25^\circ\text{C}$

$T$  : Ambient temperature ( $^\circ\text{C}$ )

$C_0, C_1, C_2$  : Constants

T.C.R. ( $\times 10^{-6}/\text{K}$ )	$C_0$	$C_1$	$C_2$
3000	0.9288	0.0028	$1.9983 \times 10^{-6}$
3300	0.9232	0.0030	$2.9980 \times 10^{-6}$
3600	0.9175	0.0032	$4.0000 \times 10^{-6}$
3900	0.9099	0.0035	$4.0064 \times 10^{-6}$
4200	0.9026	0.0038	$3.9964 \times 10^{-6}$
4500	0.8948	0.0041	$4.0064 \times 10^{-6}$

## Performance

Test Items	Performance Requirements $\Delta R \pm (\% + 0.05\Omega)$		Test Methods
	Limit	Typical	
Resistance	Within specified tolerance	—	25°C
T.C.R.	Within specified T.C.R.	—	+25°C/+75°C
Overload (Short time)	1	0.23	Rated voltage $\times 2.5$ or Max. overload vol. for 5s, whichever is lower.
Resistance to soldering heat	1	0.10	260°C $\pm 5^\circ\text{C}$ , 10s $\pm 1$ s
Rapid change of temperature	1	0.10	-40°C (30min.) / +125°C (30min.) 5 cycles
Moisture resistance	3	0.54	40°C $\pm 2^\circ\text{C}$ , 90%~95%RH, 1000h 1.5h ON/0.5h OFF cycle
Endurance at 70°C	3	0.62	70°C $\pm 2^\circ\text{C}$ , 1000h 1.5h ON/0.5h OFF cycle

Confirming resistance drift is recommended since this product has a tendency to have bigger resistance change than general flat chip over 70°C.

Please pay attention not to be applied ESD, it may cause of resistance change.

## Actual Value (Out of guarantee)

Test Items	Reference	Test Methods
Low temperature exposure	0.05%	-40°C, 45min
High temperature exposure	0.6%	+125°C, 1000h
ESD	500V	Human body model, 100pF, 1.5k $\Omega$

## Precautions for Use

- The resistance value of this resistor changes by its self-heating by power applied. Therefore, it is recommended to use it by taking its self heat-generation into consideration.
  - Ionic impurities such as flux etc. that are attached to these products or those mounted onto a PCB, negatively affect their moisture resistance, corrosion resistance, etc. The flux may contain ionic substances like chlorine, acid, etc. while perspiration and saliva include ionic impurities like sodium ( $\text{Na}^+$ ), chlorine ( $\text{Cl}^-$ ) etc. Therefore these kinds of ionic substances may induce electrolytic corrosion when they invade into the products. Either thorough washing or using RMA solder and flux are necessary since lead free solder contains ionic substances. Washing process is needed, before putting on moisture proof material in order to prevent electrolytic corrosion.
  - An overcurrent such as surge, etc. may break the metal film of LT73.
  - When heat-resistant masking tapes are attached to the chip resistors at the time of mounting and then detached, there is a possibility of exfoliation of the top electrodes. It is known that the heat applied in the mounting process will enhance the adhesion strength of the tape adhesive so please avoid the use. If the use of masking tapes are unavoidable, then please be sure not to attach the tape adhesives directly on the products.
- When high-pressure shower cleaning is implemented, there is a possibility of exfoliation of the top electrodes caused by the water pressure stress so please avoid the implementation.
- If the implementation is unavoidable, then please evaluate the products beforehand.