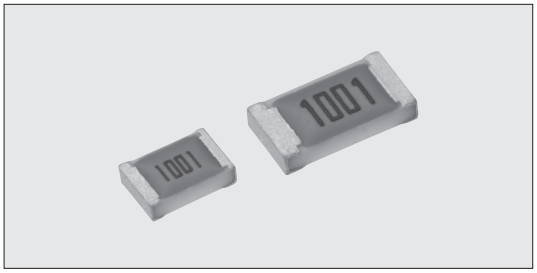
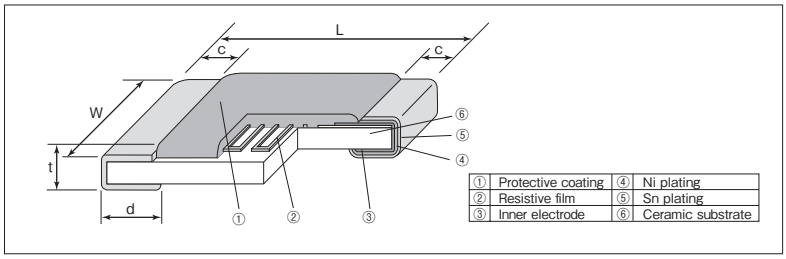
EU RoHS

LT73V Linear Positive Temp. Coefficient Flat Chip Resistors (For Automotive)



Coating color：Orange

■Construction



■Features

- SMD thin film resistors with thermo-perceptivity.
- Various TCRs +150～+4500×10^{-6}/K are available.
- Operating temperature range ～155℃. Rated ambient temperature: 85℃
- Suitable for both flow and reflow soldering.
- AEC-Q200 Tested.
- Products meet EU-RoHS reguirements.

■Application

- Temperature compensation of current sensor, FET and semiconductor.
- Temperature compensation for various kinds of electorical circuits and sensor.

■Reference Standards

IEC 60115-8
JIS C 5201-8

■Dimensions

Type (Inch Size Code)	Dimensions (mm)					Weight (g) (1000pcs)
	L±0.2	W±0.2	c	$d^{+0.2}_{-0.1}$	t±0.1	
2A (0805)	2.0	1.25	0.4±0.2	0.3	0.5	4.54
2B (1206)	3.2	1.6	0.5±0.3	0.4	0.6	9.14

■Type Designation

Examples

LT73V	2B	T	TD	102	J	0900
Product Code	Size	Termination Surface Material	Taping	Nominal Resistance	Resistance Tolerance	T.C.R. (×10^{-6}/K)
	2A:2.0×1.25mm 2B:3.2×1.6mm	T:Sn	TD:4mm pitch paper TE:4mm pitch plastic embossed BK:Bulk	3 digits	G:±2% J:±5%	4 digits

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※1 (V)	Max. Overload Voltage (V)	Thermal Time Constant※2 (s)	Thermal Dissipation Constant※2 (mW/℃)	Rated Ambient Temperature (℃)	Operating Temperature Range (℃)	Taping & Q'ty/Reel (pcs)	
								TD	TE
2A	0.1	50	100	1.0	1.37	+85	−55～+155	5,000	4,000
2B	0.125	75	150	1.5	1.47			5,000	4,000

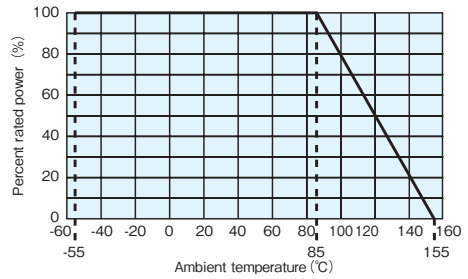
※1 Rated voltage=$\sqrt{\text{Power Rating}\times\text{Resistance value}}$ or Max. working voltage, whichever is lower.
※2 Thermal time constant and dissipation constant are reference values, which are values of elements and vary with connecting or fixing methods.

■T.C.R. and Resistance Range

T.C.R. (×10^{-6}/K)※3	T.C.R. Tolerance	Resistance Range (E24) (Ω)		Resistance Tolerance (%)
		2A	2B	
150・250・350・450・500	±100×10^{-6}/K	2k～15k	2k～22k	G:±2
600・700・800・900	±150×10^{-6}/K	1k～8.2k	1k～15k	J:±5
1000・1200・1400	±15%	1k～6.8k	1k～8.2k	
1600・1800		510～4.7k	1k～6.8k	
2000・2200・2400	±10%	510～4.7k	510～6.8k	
2600・2800・3000		510～3k	510～6.2k	
3300・3600・3900				
4200		100～1k	100～2k	
4500		51～510	51～510	

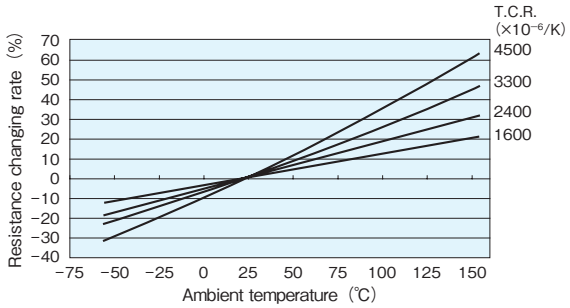
※3 T.C.R. Measuring Temperature:+25℃/+75℃

■Derating Curve



For resistors operated at an ambient temperature of 85℃ 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.)

$R_T=R_{25}\ (C_0+C_1T+C_2T^2)$

R_T : Resistance value at T℃
R_{25} : Resistance value at 25℃
T : Ambient temperature (℃)
C_0, C_1, C_2 : Constants

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

■Performance

Test Items	Performance Requirements ΔR± (%+0.05Ω)		Test Items
	Limit	Typical	
Resistance	Within specified tolerance	—	25℃
T.C.R.	Within specified T.C.R.	—	+25℃/+75℃
Overload(Short Time)	1	0.02	Rated voltage×2.5 or Max. overloadVol., whichever is lower, for 5s
Resistance to soldering heat	1	0.10	260±5℃, 10±1s
Rapid chang of temperature	2 : TCR≦±3300 5 : TCR≧±3600	0.53 2.59	−55℃ (30min.) /+155℃ (30min.) , 1000cycles
Moisture resistamce	3	0.15	1/10 rated power, 1.5h ON/0.5h OFF cycle. 1000h
Endurance at 85℃	2 : TCR≦±3300 5 : TCR≧±3600	0.30 0.76	85℃±2℃, 1000 h 1.5 h ON/0.5h OFF cycle.
High temperature load life	2 : TCR≦±3300 5 : TCR≧±3600	0.40 2.17	125℃, Rated voltage, 1000h
High temperature exposure	2 : TCR≦±3300 5 : TCR≧±3600	0.81 3.20	155℃, 1000h
Low temperature exposure	2	−0.10	−55℃, 1000h

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

Actual Value (Out of guarantee)

Test Items	Reference	Test Methods
ESD	500V	Human body model, 100pF, 1.5kΩ

■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 (Na^+), chlorine (Cl^-) etc. Therefore these kinds of ionic substances may induce electrical 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 electrical corrosion.
- An overcurrent such as surge, etc.may break the metal film of LT73V.
- 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.