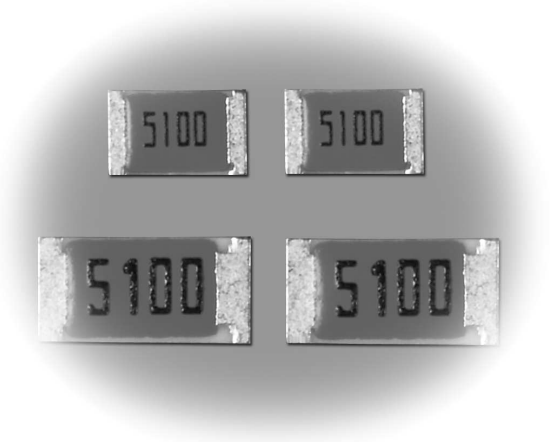
KOA SPEER ELECTRONICS, INC.

LT73V

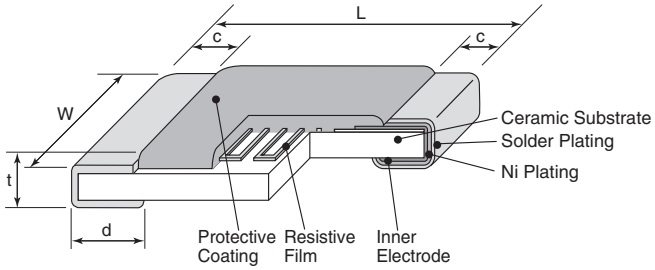
linear positive temperature coefficient flat chip resistors (for automotive)



features

- SMD thin film resistors with thermo-perceptivity
- Various TCRs +150 - +4500×10^{-6}/K are available
- Operating temperature range -155°C
  Rated ambient temperature: 85°C
- The evaluation based on AEC-Q200 has been examined
- Suitable for both flow and reflow soldering
- Coating color: orange
- Products meet EU RoHS requirements

dimensions and construction



Type	Dimensions inches (mm)				
	L	W	c	d	t
2A (0805)	.079±.008 (2.0±0.2)	.049±.008 (1.25±0.2)	.016±.008 (0.4±0.2)	.012 $^{+.008}_{-.004}$ ($0.3\ ^{+0.2}_{-0.1}$)	.020±.004 (0.5±0.1)
2B (1206)	.126±.008 (3.2±0.2)	.063±.008 (1.6±0.2)	.020±.012 (0.5±0.3)	.016 $^{+.008}_{-.004}$ ($0.4\ ^{+0.2}_{-0.1}$)	.024±.004 (0.6±0.1)

ordering information

LT73V	2B	T	TD	102	J	0900
Type	Power Rating	Termination Material	Taping	Nominal Resistance	Resistance Tolerance	T.C.R. (×10^{-6}/K)
	2A:0.1W 2B:0.125W	T:Sn	TD:4mm pitch paper TE:4mm pitch plastic embossed	3 digits	G:±2% J:±5%	4 digits

applications and ratings

Type	Power Rating	Max. Working Voltage	Max. Overload Voltage	Thermal Time Constant*	Thermal Dissipation Constant*	Rated Ambient Temperature	Operating Temperature Range	Taping & Q'ty/Reel (pcs)	
								TD	TE
2A	0.1W	50V	100V	1.0s	1.37mW/°C	+85°C	–55°C - +155°C	5,000	4,000
2B	0.125W	75V	150V	1.5s	1.47mW/°C			5,000	4,000

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

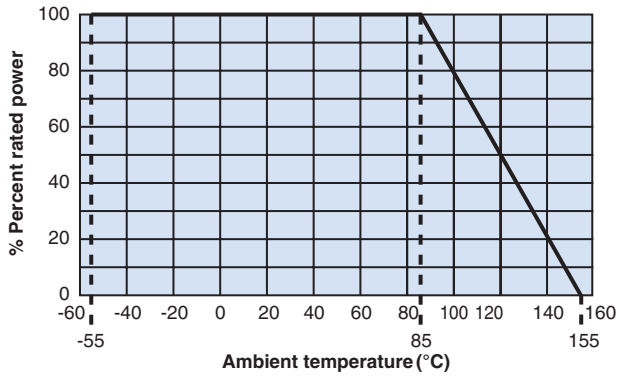
T.C.R. (×10^{-6}/K)	T.C.R. Tolerance	(Ω) Resistance Range (E24)		Resistance Tolerance
		2A	2B	
150, 250, 350, 450, 500	±100×10^{-6}/K	2k - 15k	2k - 22k	G: ±2%
600, 700, 800, 900	±150×10^{-6}/K	1k - 8.2k	1k - 15k	J: ±5%
1000, 1200, 1400	±15%	1k - 6.8k	1k - 8.2k	
1600, 1800		510 - 4.7k	1k - 6.8k	
2000, 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	

T.C.R. Measuring Temperature: +25°C - +75°C

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

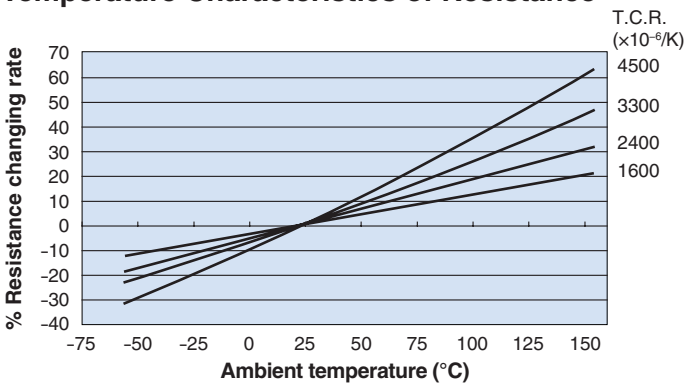
environmental applications

Derating Curve



For resistors operated at an ambient temperature of 85°C or above, a power rating shall be derated in accordance with the above derating curve.

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: T°C
R_{25}: 25°C
T: (°C)
C_0, C_1, C_2:

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

T.C.R. ($\times10^{-6}$/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 Characteristics

Parameters	Performance Requirements ΔR±(%+0.05Ω)		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%	0.02%	Rated voltage × 2.5 or Max. overload Vol., whichever is lower, for 5 seconds
Resistance to Soldering Heat	1%	0.10%	260°C, 10 seconds
Rapid Change of Temperature	2% : TCR≤+3300 5% : TCR≥+3600	0.53% 2.59%	–55°C (30min.)/+155°C (30min.), 1000 cycles
Moisture Resistance	3%	0.15%	85°C, 85%RH, 1/10 rated power, 1.5h ON/0.5h OFF cycle. 1000 hours
Endurance at 85°C	2% : TCR≤+3300 5% : TCR≥+3600	0.30% 0.76%	85°C±2°C, 1000 hours 1.5h ON/0.5h OFF cycle.
High Temperature Load Life	2% : TCR≤+3300 5% : TCR≥+3600	0.40% 2.17%	125°C, Rated voltage, 1000 hours
High temperature Exposure	2% : TCR≤+3300 5% : TCR≥+3600	0.81% 3.20%	155°C, 1000h
Low Temperature Exposure	2%	–0.10%	–55°C, 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 model, 100pF, 1.5kΩ