KOA SPEER ELECTRONICS, INC.

LP73

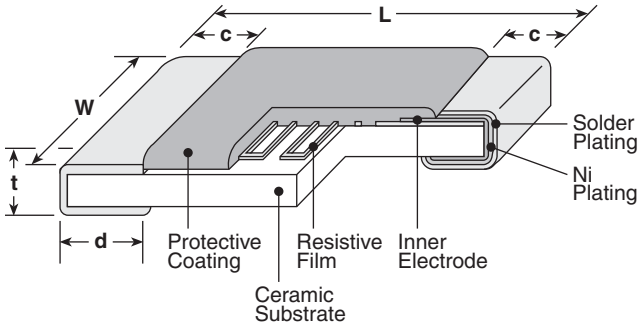
thin film resistance thermal chip sensors

EU RoHS COMPLIANT

features

- Thin film thermal sensors of SMD type
- Resistance tolerance ±1%, a wide range of TCRs +3000x10^{-6}/K~+5000x10^{-6}/K with the standard products
- Suitable for control of temperatures in various industrial equipment
- Suitable for both flow and reflow soldering
- Marking: Black body color
- Products with lead-free terminations meet EU RoHS and China RoHS requirements

dimensions and construction



Type (Inch Size Code)	Dimensions inches (mm)				
	L	W	c	d	t
1J (0603)	.063±.008 (1.6±0.2)	.031±.008 (0.8±0.2)	.012±.008 (0.3±0.2)	.012±.008 (0.3±0.2)	.02±.004 (0.5±0.1)
2A (0805)	.079±.008 (2.0±0.2)	.049±.008 (1.25±0.2)	.016±.008 (0.4±0.2)	.016±.008 (0.4±0.2)	.02±.006 (0.5±0.15)
2B (1206)	.126±.008 (3.2±0.2)	.063±.008 (1.6±0.2)	.02±.012 (0.5±0.3)	.02±.012 (0.5±0.3)	.02±.006 (0.5±0.15)

ordering information

New Part #

LP73	2B	T	TE	103	J	3600
Product Code	Size Code	Termination Material	Packaging	Resistance Value	Tolerance	T.C.R.
	1J: 0603 2A: 0805 2B: 1206	T: Sn	TE: 4mm embossed pitch plastic (5,000 pieces/reel)	2 significant figures + 1 multiplier 3 digits	F: ±1% G: ±2% J: ±5%	

For further information on packaging, please refer to Appendix A.

applications and ratings

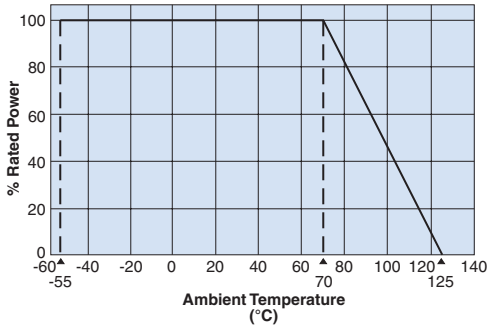
Part Designation	Power Rating	Thermal Time Constant (sec.)*	Thermal Dissipation Constant (mW/°C)*	Rated Ambient Temp.	Operating Temp. Range
LP731J	0.016W	2	1.2	+70°C	-55°C to +125°C
LP732A	0.031W	4	1.8		
LP732B	0.063W	6.5	2.4		

Resistance Range E-24			Resistance Tolerance	T.C.R. (ppm/°C) Max.	T.C.R. Tolerance
LP731J	LP732A	LP732B			
100Ω - 1kΩ	100Ω - 2kΩ	100Ω - 10kΩ	F: ±1% G: ±2% J: ±5%	3000	±5%
				3300	
				3600	
				4000	
				4500	
				5000	

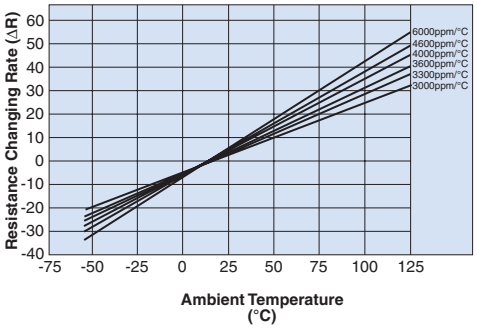
* Thermal Time Constant and Dissipation Constant are reference values, which are values of elements and vary with connecting or fixing methods.

environmental applications

Derating Curve



Temperature Characteristics



Approximate Expression for Resistance-Temperature Characteristics

T.C.R. ($x10^{-6}$/K)	C_0	C_1	C_2
3000	0.930587	0.00265022	3.89831×10^{-6}
3300	0.924633	0.00292657	4.00637×10^{-6}
3600	0.915818	0.00323524	4.34173×10^{-6}
4000	0.907050	0.00361010	4.33462×10^{-6}
4500	0.897412	0.00395222	6.05201×10^{-6}
5000	0.885114	0.00436780	7.48048×10^{-6}

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

Performance Characteristics

Parameter	Requirement Δ R ±(%+0.05Ω) Limit	Typical	Test Method
Resistance	Within regulated tolerance	—	25°C
T.C.R.	Within specified T.C.R.	—	+25°C/+65°C
Overload	±0.5%	±0.3%	Rated voltage x 2.5 for 5 seconds
Resistance to Solder Heat	±0.5%	±0.3%	260°C ± 5°C, 10 seconds ± 1 second
Rapid Change of Temperature	±0.5%	±0.3%	-55°C (30 minutes),+25°C (2-3 minutes), +125°C (30 minutes), +25°C (2-3 minutes), 5 cycles
Moisture Resistance	±2.0%	±1.5%	40°C ± 2°C, 90 - 95% RH, 1000 hours, 1.5 hours ON, 0.5 hours OFF cycle
Endurance at 70°C	±2.0%	±1.5%	70°C ± 2°C, 1000 hours, 1.5 hours ON, 0.5 hours 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 Method
High Temperature Exposure	±8.0%	125°C, 1000 hours
ESD	500V	Human model, 100 pF 1.5 kΩ

Specifications given herein may be changed at any time without prior notice. Please confirm technical specifications before you order and/or use. 1/30/11