KOA SPEER ELECTRONICS, INC.

HPC

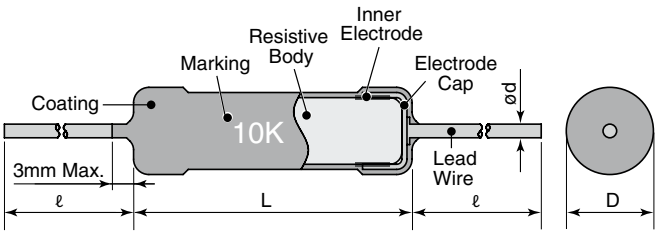
ceramic resistors for anti pulse surge

EU RoHS COMPLIANT

features

- KOA original bulk ceramic resistors
- Excellent in anti-pulse characteristics
- Higher reliability against disconnection compared to wirewound resistors and film resistors
- Marking: Reddish brown body color with alpha-numeric marking
- Products with lead-free terminations meet EU RoHS requirements
- Non-inductive resistors
- AEC-Q200 Qualified

dimensions and construction



Type	Dimensions inches (mm) L	D	d (nom.)	l*
HPC1/2	.433±.039 (11.0±2.0)	.138±.039 (3.5±1.0)	.031 (0.8)	1.50±.118 (38.0±3.0)
HPC1	0.630±.039 (16.0±2.0)	.177±.039 (4.5±1.0)		
HPC2	.827±.039 (21.0±2.0)	.197±.039 (5.0±1.0)		
HPC3	1.02±.039 (26.0±2.0)	.236±.039 (6.0±1.0)		
HPC4	1.50±.039 (38.0±2.0)	.276±.039 (7.0±1.0)	.039 (1.0)	
HPC5	1.73±.039 (44.0±2.0)	.295±.039 (7.5±1.0)		

* Lead length changes depending on taping type

ordering information

Part #

HPC	1/2	C	T631	R	103	K
Type	**Power Rating**	**Termination Material**	**Taping**	**Packaging**	**Nominal Resistance**	**Tolerance**
HPC	1/2: 0.5W 1: 1W 2: 2W 3: 3W 4: 4W 5: 5W	C: SnCu	1/2: T52 1: T631	A: Ammo R: Reel	2 significant figures + 1 multiplier	K: ±10% M: ±20%

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

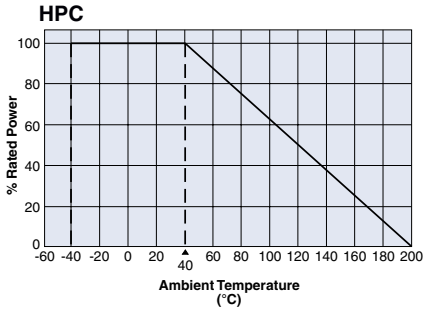
applications and ratings

Part Designation	Power Rating @ 40°C	Resistance Range (Ω) K: ±10% E-12	Resistance Range (Ω) M: ±20% E-6	T.C.R. (ppm/°C)	Absolute Maximum Working Voltage	Absolute Maximum Overload Voltage	Absolute Maximum Pulse Voltage*	Rated Ambient Temp.	Operating Temp. Range
HPC1/2	0.5W	10 - 390K	3.3 - 330K	-900±300: R<100Ω -1200±300: R≥100Ω	200V	400V	8kV	+40°C	-40°C to +200°C
HPC1	1.0W				300V	600V	15kV		
HPC2	2.0W				400V	800V	25kV		
HPC3	3.0W				450V	900V	25kV		
HPC4	4.0W				500V	1000V	25kV		
HPC5	5.0W				550V	1100V	25kV		

* Resistance to pulse: change shall be ±5% of the pre-test values. 1 sec. ON, 1 second OFF, 10,000 cycles. The voltage is applied with maximum pulse voltage.

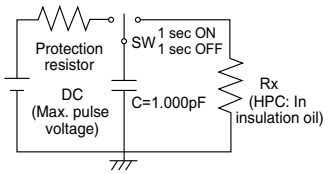
environmental applications

Derating Curve



For resistors operated at an ambient temperature of 40°C or above, a power rating shall be derated in accordance with the derating curve.

Performance Characteristics

Parameter	Requirement Δ R ±(% + 0.05Ω) Limit	Typical	Test Method
Resistance	Within regulated to tolerance	—	Resistance / Measurement voltage: 3.3Ω=<R<10Ω: 0.3V; 10Ω=<R<100Ω: 1.0V; 100Ω=<R=<390kΩ: 3.0V — 25°C
T.C.R	-900±300x10⁻⁶/K: R<100Ω -1200±300x10⁻⁶/K: R≥100Ω	—	+25°C/-40°C and +25°C/+125°C
Voltage Coefficient (Apply for over 1kΩ)	0~-0.2%/V (HPC1/2) 0~-0.1%/V (HPC1) 0~-0.05%/V (HPC2,3,4,5)	—	Rated voltage and rated voltage x 10%
Overload	2%	0.4%	Rated voltage x 2.5 or maximum overload voltage for 5s, whichever less
Resistance to pulse	5%	—	The resistor mounted to the test circuit as below. 1 sec. ON and 1 sec. OFF. 10,000 cycles. The voltage is applied with maximum pulse voltage. 
Resistance to soldering heat	2%	0.8%	350°C±10°C, 3.5s±0.5s
Rapid change of temperature	2%	0.4%	-40°C(30min.)/+85°C(30min.), 5 cycles
Moisture resistance	5%	0.6%	40°C±2°C, 90%~95%RH, 1000 hours, 1.5h ON/0, 5h OFF cycles
Load life	5%	0.4%	40°C±2°C, 1000h, 1.5h ON/0, 5h OFF cycles
Resistance to Solvent	No abnormality in appearance. Marking shall be easily legible.	—	Dipping in IPA or Xylene for 3 minutes and leaving for 10 minutes after removing drops, then brushing 10 times.
High Temperature Exposure	5%	1.7%	+200°C, 1000 hours