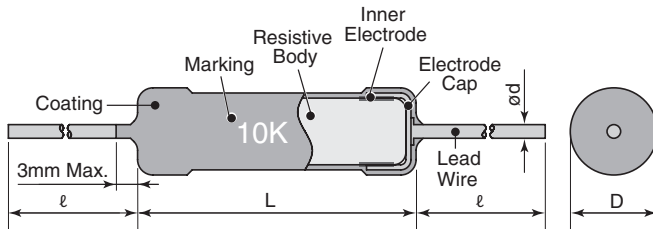


### features

- KOA original bulk ceramic resistors
- Excellent in anti-pulse characteristics
- Higher reliability against disconnection compared to wirewound resistors and film resistors
- Products with lead-free terminations meet EU RoHS requirements
- Non-inductive resistors
- AEC-Q200 Qualified

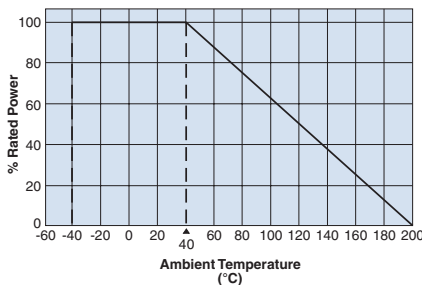
### dimensions and construction



Type	Dimensions inches (mm)			
	L	D	d (nom.)	I*
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)	.039 (1.0)	
HPC4	1.50±.039 (38.0±2.0)	.276±.039 (7.0±1.0)		
HPC5	1.73±.039 (44.0±2.0)	.295±.039 (7.5±1.0)		

\* Lead length changes depending on taping type

### Derating Curve



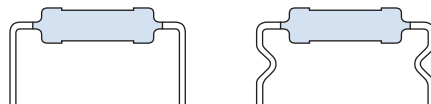
For resistors operated at an ambient temperature of 40°C or above, a power rating shall be derated in accordance with the derating curve.

### ordering information

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%

### taping

Type	Axial Taping	
	T52	T631
HPC1/2	○	—
HPC1	—	○



Contact us for lead forming details.

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

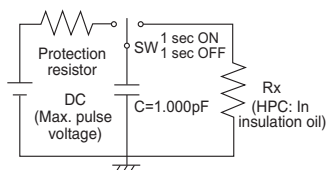
## applications and ratings

Part Designation	Power Rating @ 40°C	Resistance Range (Ω)		T.C.R. (x10 <sup>-6</sup> /K)	Maximum Working Voltage	Maximum Overload Voltage	Rated Ambient Temp.	Operating Temp. Range
		K: ±10% E-12	M: ±20% E-6					
HPC1/2	0.5W	10 - 390K	3.3 - 330K	-500 ~ -1300: 3.3Ω≤R<10Ω	200V	400V	+40°C	-40°C to +200°C
HPC1	1.0W			-600 ~ -1500: 10Ω≤R<100Ω	300V	600V		
HPC2	2.0W			-700 ~ -1800: 100Ω≤R<1kΩ	400V	800V		
HPC3	3.0W			-900 ~ -1900: 1kΩ≤R<100kΩ	450V	900V		
HPC4	4.0W			-900 ~ -2000: 100kΩ≤R<200kΩ	500V	1000V		
HPC5	5.0W			-900 ~ -2200: 200kΩ≤R<390kΩ	550V	1100V		

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

## environmental applications

### Performance Characteristics

Parameter	Requirement $\Delta R \pm(\% + 0.05\Omega)$		Test Method																												
	Limit	Typical																													
Resistance	Within regulated to tolerance	—	Resistance 3.3Ω≤R<10Ω 10Ω≤R<100Ω 100Ω≤R<390kΩ	Measurement voltage 0.3V 1.0V 3.0V																											
T.C.R	-500~-1300:3.3Ω≤R<10Ω -600~-1500:10Ω≤R<100Ω -700~-1800:100Ω≤R<1kΩ -900~-1900:1kΩ≤R<100kΩ -900~-2000:100kΩ≤R<200kΩ -900~-2200:200kΩ≤R<390kΩ	—	+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	Refer to the table on the right	—	<p>The resistor mounted to the test circuit as below is applied with high voltage impulse 10,000 cycles.</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Test Voltage</th> <th>Performance Requirements <math>\Delta R \pm(\% + 0.05\Omega)</math></th> </tr> </thead> <tbody> <tr> <td rowspan="3">HPC1/2</td> <td>8kV:3.3Ω≤R&lt;30kΩ</td> <td>5</td> </tr> <tr> <td>8kV:30kΩ≤R&lt;390kΩ</td> <td>10</td> </tr> <tr> <td>5kV:30kΩ≤R&lt;390kΩ</td> <td>5</td> </tr> <tr> <td rowspan="3">HPC1</td> <td>15kV:3.3Ω≤R&lt;30kΩ</td> <td>5</td> </tr> <tr> <td>15kV:30kΩ≤R&lt;390kΩ</td> <td>10</td> </tr> <tr> <td>7kV:30kΩ≤R&lt;390kΩ</td> <td>5</td> </tr> <tr> <td rowspan="2">HPC2</td> <td>25kV:3.3Ω≤R&lt;30kΩ</td> <td>5</td> </tr> <tr> <td>25kV:30kΩ≤R&lt;390kΩ</td> <td>10</td> </tr> <tr> <td rowspan="2">HPC3 HPC4 HPC5</td> <td>15kV:30kΩ≤R&lt;390kΩ</td> <td>5</td> </tr> <tr> <td>25kV</td> <td>5</td> </tr> </tbody> </table>	Type	Test Voltage	Performance Requirements $\Delta R \pm(\% + 0.05\Omega)$	HPC1/2	8kV:3.3Ω≤R<30kΩ	5	8kV:30kΩ≤R<390kΩ	10	5kV:30kΩ≤R<390kΩ	5	HPC1	15kV:3.3Ω≤R<30kΩ	5	15kV:30kΩ≤R<390kΩ	10	7kV:30kΩ≤R<390kΩ	5	HPC2	25kV:3.3Ω≤R<30kΩ	5	25kV:30kΩ≤R<390kΩ	10	HPC3 HPC4 HPC5	15kV:30kΩ≤R<390kΩ	5	25kV	5	
Type	Test Voltage	Performance Requirements $\Delta R \pm(\% + 0.05\Omega)$																													
HPC1/2	8kV:3.3Ω≤R<30kΩ	5																													
	8kV:30kΩ≤R<390kΩ	10																													
	5kV:30kΩ≤R<390kΩ	5																													
HPC1	15kV:3.3Ω≤R<30kΩ	5																													
	15kV:30kΩ≤R<390kΩ	10																													
	7kV:30kΩ≤R<390kΩ	5																													
HPC2	25kV:3.3Ω≤R<30kΩ	5																													
	25kV:30kΩ≤R<390kΩ	10																													
HPC3 HPC4 HPC5	15kV:30kΩ≤R<390kΩ	5																													
	25kV	5																													
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																												