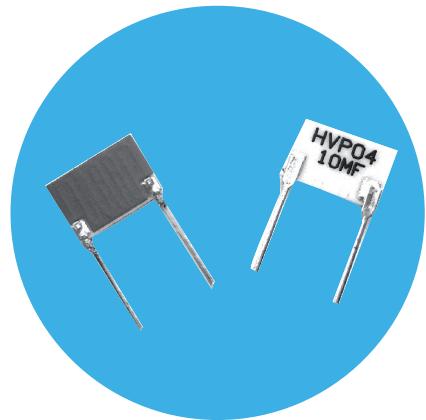


# High Voltage Planar Resistors

## HVP Series

- Excellent reliability
- Ideally suited for medical applications
- Voltages up to 20kV
- Resistance values up to 10G
- Small footprint
- Printed or powder coat protection
- Planar construction gives low inductance and capacitance



All parts are Pb-free and comply with EU Directive 2011/65/EU amended by (EU) 2015/863 (RoHS3)

## Electrical Data

		HVP04	HVP06	HVP08	HVP10	HVP15	HVP20
Power rating at 70°C	watts	0.4	0.6	0.8	1	1.5	2
Resistance range	ohms	1K0 to 250M	1K5 to 1G0	2K0 to 1G0	3K0 to 2G0	4K0 to 5G0	5K0 to 10G
Limiting element voltage (dc or ac peak)	kV	2	5	7.5	10	15	20
TCR (20°C to 70°C)	ppm/°C	100		100, 50, 25			
Resistance tolerance	%	0.5, 1, 5		0.25, 0.5, 1, 5			
Values				E24 preferred			
Ambient temperature range	°C			-55 to 155			
Insulation resistance at 500V	ohms			>10G			
Dielectric strength of insulation	volts			Screen printed protection: >1000	Powder coated: >2000		

Other resistance, tolerance and TCR values are available on request.

Size	TCR(ppm/°C)	Tolerance (%)	
		0.25	0.5, 1, 5
HVP04	100	-	1K0 to 250M
HVP06	25		1K5 to 500M
	50, 100	1K5 to 500M	1K5 to 1G0
HVP08	25		2K0 to 500M
	50, 100	2K0 to 500M	2K0 to 1G0
HVP10	25		3K0 to 1G0
	50, 100	3K0 to 1G0	3K0 to 2G0
HVP15	25		4K0 to 1G0
	50, 100	4K0 to 1G0	4K0 to 5G0
HVP20	25		5K0 to 1G0
	50, 100	5K0 to 1G0	5K0 to 10G

## Physical Data

Dimensions (mm)						
Type	L ± 0.75	H ± 0.5	T ± 0.5	P ± 0.5	Wt Nom	LL (± 0.25)
HVP04	10.16	7.35	2	7.62	0.208g	
HVP06	12.7	7.35	2	10.16	0.251g	
HVP08	19.05	7.35	2	15.24	0.352g	
HVP10	25.4	7.35	2	22.86	0.454g	
HVP15	38.1	7.35	2	35.56	0.654g	
HVP20	50.8	7.35	2	48.26	0.854g	

9.25

0.5

L

H

T

LL

P

0.25

For powder coat option add 0.25mm to L, H & T.

## General Note

TT Electronics reserves the right to make changes in product specification without notice or liability.  
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## HVP Series

### Construction

Conductor pads are printed to the rear and front faces of a 96% alumina substrate. A specially selected high voltage thick film resistor ink, based on a ruthenium oxide/glass system, is printed between the front face conductors and then covered in an overglaze before being protected either with powder coating or a special screen printed material which gives excellent high voltage and climatic performance.

### Marking

Type, resistance value and tolerance are legend marked in black ink on the rear of the component. The resistance value conforms to IEC 62.

### Solvent Resistance

The component protection and marking are resistant to all normal industrial cleaning solvents suitable for printed circuit boards

### Terminations

Solder coated phosphor bronze leadframe terminations are solder dipped in SnAgCu and meet the following IEC requirements:

IEC 68.2.21 – Strength

IEC 115-1, Clause 4.17.3.2 – Solderability

### Packaging

Packed in foam within a box. See Ordering Procedure for box quantities.

## Performance Data

		Maximum	Typical
Load at rated power: 1000 hours at 70°C	ΔR%	1	0.1
Dry heat: 1000 hours at 155°C	ΔR%	1	0.1
Shelf life: 12 months at room temperature	ΔR%	0.3	<0.1
Derating from power at 70°C		Zero at 155°C	
Climatic	ΔR%	1	0.1
Climatic category		-55/155/56	
Biased humidity: 1000 hours, 85%RH, 85°C, 10%Pr	ΔR%	0.25	0.1
Temperature rapid change: 5 cycles -55/155°C	ΔR%	0.25	0.1
Resistance to solder heat	ΔR%	0.25	0.02
Moisture resistance: MIL Std. 202, method 106 (powder coat option)	ΔR%	0.25	0.1
Solderability		>95% coverage	
Voltage coefficient of resistance	HVP04, 06, 08 ppm/V	-2.5	-1
	HVP10, 15, 20 ppm/V	-1.5	-0.5

## Application Notes

Due to the high voltage which can appear between the resistor body and any adjacent metal part, resistors should be mounted at an adequate distance from other conducting parts.

Due to the possibility of surface condensation it is recommended that high voltages are not applied to resistors in areas of high humidity without the application of suitable moisture resistant lacquer

### Design Flexibility

The experience of Welwyn engineers has been used to design this generation of high voltage planar resistors to be suitable for a majority of applications. However, should an application require particular consideration, Welwyn designers are able to provide advice and where applicable, to recommend a non-standard product. Special sizes, designs etc, can be prototyped at short notice.

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HVP Series

## Ordering Procedure

Example: HVP06C-100MFB016 (HVP06 with screen printed protection, at 50ppm/°C TCR, 100 megohms, and 1% tolerance, Pb-free and packed in a box of 160 pieces)



1 Type	2 Coating (optional)	3 TCR (optional)	4 Value	5 Tolerance	6 Packing				
HVP04			±100 ppm/°C	3/4 characters	J	±5%	B02	HVP04	200/box
HVP06		screen printed protection	±50 ppm/°C	C	F	±1%	B016	HVP06	160/box
HVP08			±25 ppm/°C	D	D	±0.5%	B012	HVP08	120/box
HVP10	P	powder coated protection		G	C	±0.25%	B008	HVP10	80/box
HVP15							B006	HVP15	60/box
HVP20							B004	HVP20	40/box

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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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