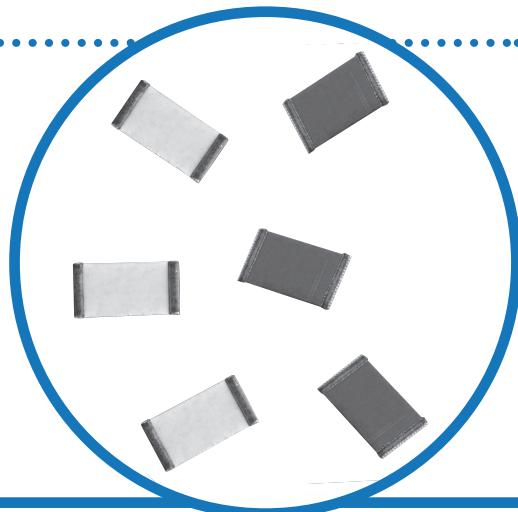


# High Voltage Chip Resistors



## HVC Series

- Continuous voltages up to 3kV
- Overload voltages up to 4kV
- Values up to 100M
- Tolerances to  $\pm 0.5\%$
- TCR to  $\pm 50\text{ppm}/^\circ\text{C}$
- Robust thick film construction
- Anti-sulphur version available



## Electrical Data

		1206	2010	2512	Notes
Power rating @70°C	Watts	0.3	0.5	1	
Limiting element voltage	Volts	1000	2000	3000	DC or AC peak
Overload voltage (2s)	Volts	1500	3000	4000	
Resistance range	Ohms		10K to 1G0		Consult factory for out of range values
Resistance tolerance	%		0.5, 1, 2, 5, 10		See table of value ranges
TCR	ppm/°C		50, 100		
Ambient temperature range	°C		-55 to +155		
Values			E24 & E96 preferred		Any value to order
Thermal Impedance	°C/W	200	80	70	

## Value Ranges (Ohms)

Size	TCR (ppm/°C)	Tolerance (%)		
		0.5	1 & 2	5 & 10
1206	50	-	10K to 10M	10K to 100M
	100	10K to 2M		10K to 1G0
2010 & 2512	50	-	10K to 100M	10K to 100M
	100	10K to 10M		10K to 1G0

## Physical Data

Dimensions (mm) & Weight (g)							
	L	W	T	A	B	C	Wt.
1206	3.2±0.2	1.6±0.2	0.6±0.1	0.35±0.2	1.95 min	0.35±0.2	0.010
2010	5.1±0.2	2.5±0.2	0.7±0.1	0.45±0.2	3.70 min	0.4±0.25	0.035
2512	6.5±0.2	3.2±0.2	0.7±0.1	0.45±0.2	5.00 min	0.4±0.2	0.055

Wrap-around terminations (3 faces)

### General Note

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### Construction

Resistive thick film material, overglaze and organic protection are screen printed on a 96% alumina substrate. The design and laser adjustment of the resistive element optimises the limiting element voltage of the resistor.

### Terminations

The chips are supplied with wrap-around terminations suitable for soldering. Consult factory for alternative termination options.

### Solderability

The terminations have an electroplated nickel barrier and tin finish. This ensures excellent 'leach' resistance properties and solderability.

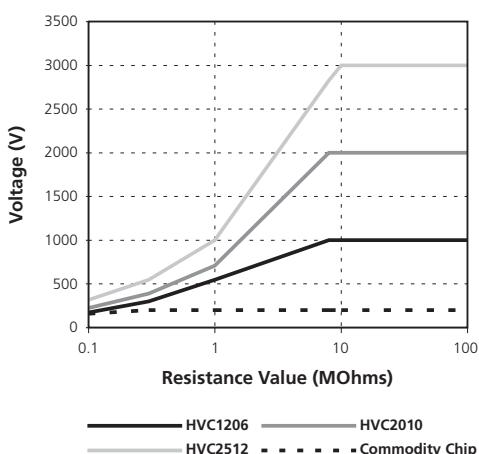
### Marking

The body protection is resistant to all normal cleaning solvents suitable for printed circuits. The chips are not marked and the relevant information on type, value, tolerance date code and quantity are recorded on the reel.

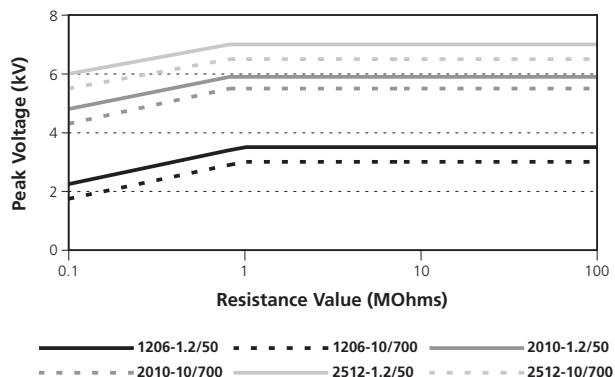
## Performance Data

		Maximum	Typical
Load at rated power: 1000 hours rated load @ 70°C	ΔR%	<b>1206:</b> 2 <b>2010/2512:</b> 1	<b>1206:</b> 1 <b>2010/2512:</b> 0.25
Shelf life test: 12 months at room temperature	ΔR%	0.1	0.02
Derating from rated power at 70°C		Zero at 155°C	
Short term overload: Lesser of 6.25 x rated power or Maximum overload voltage	ΔR%	2	0.2
Lightning strike: 1.2/50μs & 10/700μs - see graph for peak voltage	ΔR%	0.5	0.2
Dry heat: 1000 hours at 155°C	ΔR%	0.5	0.1
Long term damp heat	ΔR%	1	0.25
Temperature rapid change	ΔR%	0.25	0.05
Resistance to solder heat	ΔR%	0.25	0.05
Resistance to sulphur-bearing gas (AS version only): ASTM-B-809		0.25	0.05
Voltage proof	Volts	500	<b>1206:</b> -25 <b>2010:</b> -15
Voltage coefficient of resistance	ppm/V	<b>1206:</b> -25 <b>2010:</b> -15 <b>2512</b> ≤100M: -5 <b>2512</b> >100M: -15	<b>2512</b> ≤100M: -1.5 <b>2512</b> >100M: -8

### Maximum Continuous Voltage



### Lightning Strike Performance



Note: maximum peak voltage tested was 6kV; performance beyond this is estimated.

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## Application Notes

HVC resistors are ideally suited for handling by automatic methods due to their rectangular shape and the small dimensional tolerances. Electrical connection to a ceramic substrate or to a printed circuit board can be made by reflow or wave soldering of wrap-around terminations.

Wrap-around terminations provide good leach properties and ensure reliable contact. Due to the robust construction, the HVC can be immersed in the solder bath for 30 seconds at 260°C. This enables the resistor to be mounted on one side of a printed circuit board and wire-leaded components applied on the other side.

HVC resistors themselves can operate at a maximum

temperature of 155°C (see performance above). For soldered resistors, the joint temperature should not exceed 110°C. This condition is met when the stated power levels at 70°C are used.

The PCB layout should avoid tracks running between the HVC mounting pads, as this would compromise the LEV.

The LEV stated applies to operation at sea-level pressure, in a non-condensing atmosphere and non-contaminating environment. Voltage derating should be applied if low pressure, high humidity or contamination may be encountered. The termination clearance dimension (B) should be used in conjunction with the creepage limit applicable to the circuit application in order to determine the derated LEV.

## Packaging

HVC Resistors are supplied taped and reeled as per IEC 286-3.

Tape and reel dimensions (mm)															Qty. per reel	
	Wr	W	P1	P0	P2	D0	D1	E	F	A0	B0	K0	T	T1	T2	
	±0.5	±0.3	±0.1	±0.1	±0.05	±0.1	±0.2	±0.1	±0.05	±0.1	±0.1	±0.1	±0.05	Nom.	±0.15	
1206	9	8	4	4	2	1.5	1	1.75	3.5	1.95	3.55	1.0	0.2	0.05	1.3	3000
2010	13	12	8	4	2	1.5	1.5	1.75	5.5	2.79	5.89	0.91	0.28	0.06	1.21	3000
2512	13	12	8	4	2	1.5	1.5	1.75	5.5	3.61	6.96	1.17	0.28	0.06	1.45	1800

## Ordering Procedure

Example: HVC2512 at 4.7 megohms and 1% tolerance on a reel of 1800 pieces -

Type	HVC	2512	-	4M7	F	T 1 8	Packing			
Size										
TCR										
									T3	Tape
									1206 or 2010	3000/reel
									2512	1800/reel
Termination									Standard	
									Tolerance (use IEC62 code)	
									D	0.5%
									F	1%
									G	2%
									J	5%
									K	10%
Value (use IEC62 code)										

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