Resistor Technology

HVT-Series
Precision High Voltage Dividers

Sizes: HVT 20, HVT 25, HVT 30, HVT 40, HVT 50, HVT 75, HVT 100

RoHS / ELV conform 2011/65/EC 2000/53/EC

e3

Non-Magnetic

Features:

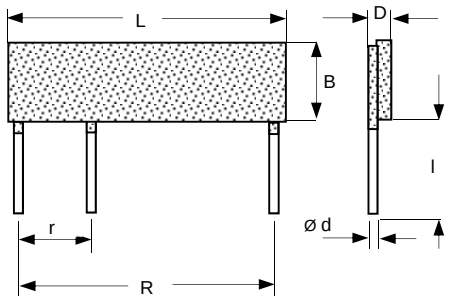
- High Voltage Dividers in thick film technology
- Customer specific design, special versions possible
- 2 to 10 resistors are feasible
- Resistance values up to 1 Tera-Ohm
- High precision of ratio (0.25 %)
- Low relative TCR (25 ppm/K)
- Low values of VCR
- High working voltages
- Non-magnetic
- Climatic protection by Silicone coating (conformal coating, standard version)
- Different lead versions available
- Standard version with radial wire leads / variable lead spacing by bending
- Various wire diameters available
- Pin type with single-in-line (SIL) pins available
- Alternatively, glass passivation of resistive element (no conformal coating)

Dimensions: (in mm)

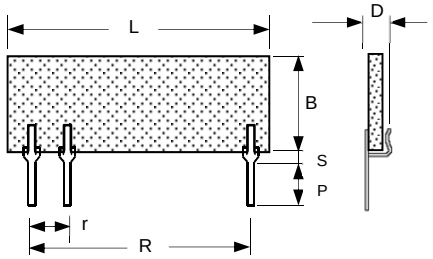
Size	Length L		Width B	Pitch R		r
HVT 20	20.0		5.0	17.0		Custom specific
HVT 25	25.0	(1”)	9.0	22.9	(0.9”)	
HVT 30	30.0		6.0	27.5		
HVT 40	40.0		6.0	37.8		
HVT 50	50.0	(2”)	12.5	47.8	(1.9”)	
HVT 75	75.0	(3”)	9.0	72.8	(2.9”)	
HVT 100	100.0	(4”)	12.5	97.8	(3.9”)	

custom-specific sizes on request

Standard Type (radial)



SIL-Type



Wire Leads	Material: Cu / Surface finish: 100% Sn		
	Wire diameter (standard)	d	0.60 $^{\pm 0.05}$ mm
	Applicable wire diameter	d	0.3; 0.4; 0.5; 0.6; 0.7; 0.8; 1.0 mm
	Thickness	D_{max}	1.3 mm + d
	Wire length (standard)	l	2% $^{+0/-2}$ mm
SIL-Pin	Material: CuSn6 (2.1020) / Surface finish: 100% Sn		
	Stand off	S	1$^{\pm 0.4}$ mm
	Pin length	P	9 $^{\pm 1}$ mm
	Pin cross section	A	0.5 * 0.25 mm^2
	Thickness	D_{max}	2 mm

Tolerance of dimensions (if not specified): ± 0.5 mm

SRT Resistor Technology GmbH
Ostlandstr. 31
D-90556 Cadolzburg
Germany

Fon: +49 (0)9103 / 7952-0
Fax: +49 (0)9103 / 5128
E-mail: info@srt-restech.de
Internet: www.srt-restech.de

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Packaging:

Cardboard boxes with foam spacer (small amounts: bulk in plastic bags or cardboard boxes)
The labeling is made at the packing unit only.
The components are not marked (only on request at individual cases).
Minimum quantity: - 30 pieces for existing types/values
- 100 pieces for new developments

Inquiry / Ordering Data:

Type / Dimensions – Working voltage – Resistance values - Tolerance absolute – TCR absolute – Ratio – Tolerance ratio – TCR ratio – Outer Lead spacing – Inner Lead spacing – Coating - Termination

Coating	Termination	Wire diameter	
L – Silicone conformal coating	D – Wire	3 – 0,3 mm	7 – 0,7 mm
G – Glass passivation of the resistive element	P – SIL Pin	4 – 0,4 mm	8 – 0,8 mm
B – Bare / no passivation	F – Solder pad	5 – 0,5 mm	1 – 1,0 mm
		6 – 0,6 mm	0 – pin / solder pad

Examples:

HVT 25 (el. Specification) L D6 R	HVT 25 with Silicone coating and radial 0.6 mm wires (Standard)
HVT 50 (el. Specification) B F0	HVT 50 bare, without leads
HVT 100 (el. Specification) G P0 R	HVT 100 with glazing (green) and SIL-pins (single-in-line)

Standard measuring voltage is 10V (50V for values >1G).
Different voltages on request and agreement (specify explicitly).
Standard version is LD6R (Silicone coating; 0.6 mm wire).

Technical data – depending on size [2]:

Size	HVT 20	HVT 25	HVT 30	HVT 40	HVT 50	HVT 75	HVT 100
Power rating P_{70} (W) (P_{125} = 0W)	1.0 W	1.0 W	1.0 W	1.2 W	3.0 W	4.5 W	6.0 W
Cont. operating voltage U_, U_{eff} [1]	10 kV	15 kV	10 kV	20 kV	30 kV	45 kV	65 kV
Highest value	100 G	100 G	100 G	100 G	1 T	1 T	1 T
Ratio max.	2.000 : 1	3.000 : 1	3.000 : 1	10.000 : 1	15.000 : 1	20.000 : 1	20.000 : 1

[1] Custom specific parts: the maximum working voltage depends on resistance value and ratio, the maximum working voltage is not for all resistor combinations available!
Max. Continuous operating voltage: $U = \sqrt{(P*R)}$

[2] Extreme values are not realizable together in all cases

Other dimensions as well as other resistance values on request and agreement.

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General technical data [2]:

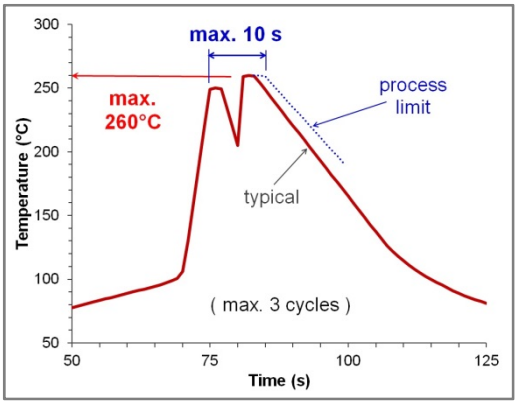
Temperature coefficient absolute: [3]	± 50 ... ± 500 ppm/K
Temperature coefficient relative (ratio):	± 15 ... ± 100 ppm/K
Tolerances, absolute:	± 1 ... ± 20 %
Tolerances relative (ratio):	± 0.25... ± 5 %

[3] TCR: in ppm/K; Temp.range + 25°C...+ 125°C; TCR50 and values above 1G: Temp.range +25°C...+85°C

Operating temperature range	-55°C ... +150°C
Climatic category to IEC 60068-1	55/150/56
Climatic protection of resistive element	Silicone conformal coating [4] or Glass passivation
Solderability acc. to IEC 60068-2-20	245°C, 3s
Max. soldering temperature	260°C, 10s, max. 3 cycles

[4] The Silicone coating is resistant to most solvents. For cleaning the use of isopropyl alcohol (IPA) is recommended. The use of acetone and methylene chloride is **not** allowed. Some cleaning agents can cause discolorations or bleaching at the surface without any influence on the resistor element. The thickness of the coating is not specified. In the area of the resistor element only, a closed surface is required and the coating has to be free of pin holes. Coating voids in the area of the internal interconnections are no quality issues. Mechanical stress to coating should be avoided, no use of high pressure cleaning.

Recommended wave soldering profile:



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