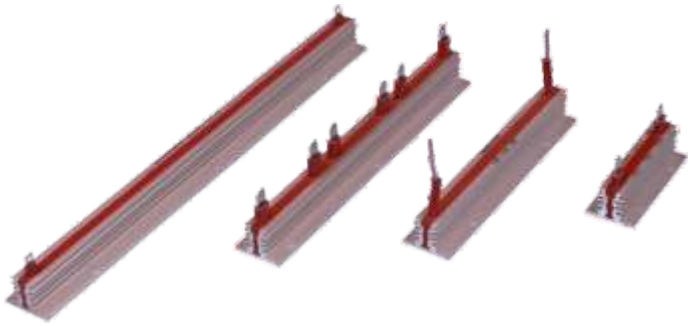


For compact construction

Close mounting of heat sensitive components is possible due to only a slight rise of the temperature on the aluminium profile.

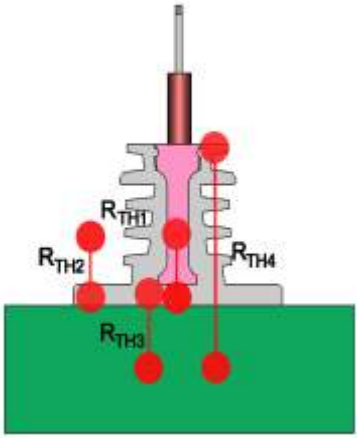
Solder, Cable and "Fast-On" Termination

More resistors in one profile possible

Insulation

Silicone Rubber + MICA. The Silicone is UL-recognized (UL 94 HB) to a working temperature of 220° C. Temperatures of up to 300° C can be endured for shorter periods. This may however cause an expansion of the silicone rubber with a possibility of reducing the dielectric strength.

Thermal Resistances



R_{TH1}: Wire to Alu-house

R_{TH2}: Alu-house to air per resistor

R_{TH3}: Alu-house to heat sink per resistor

R_{TH4}: Resistor surface to heat sink per resistor

Showing the Thermal Resistance (° C / W) between different measuring points.

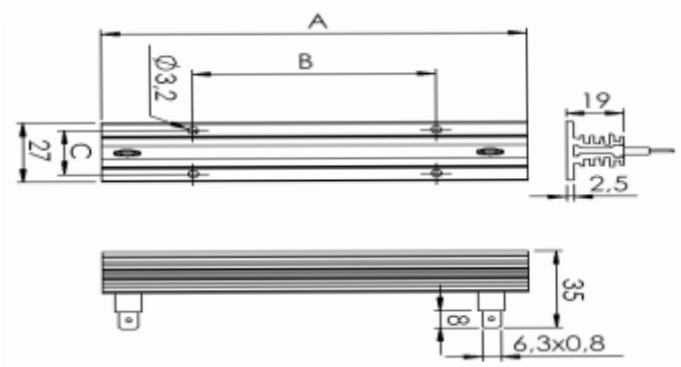
	HSD 40	HSD 70	HSD 140	HSD 210	HSD 280
R_{TH1}	4	2	1	0.75	0.5
R_{TH2}	13	8	4.6	3.3	2.9
R_{TH3}	0.2	0.1	0.05	0.03	0.02
R_{TH4}	0.4	0.28	0.14	0.09	0.075

Please Order as follows

HSD 140 A 47R

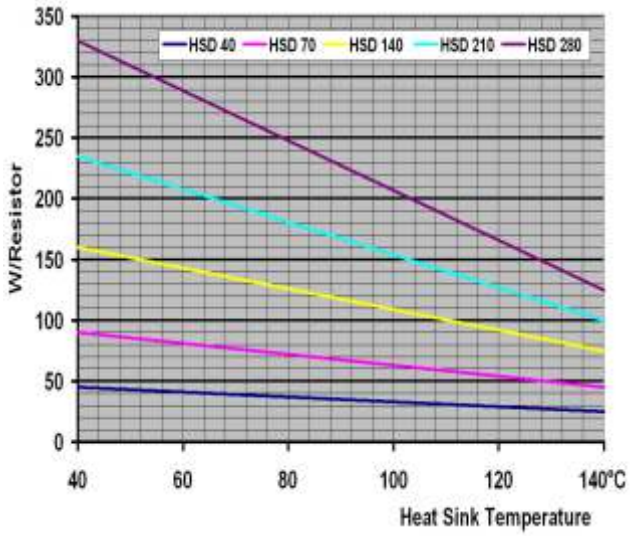
- 47R: Ohmic values
- A: A: AMP terminals
L: Tinned lugs
S: Screw-on terminals
C: Cable (specified)
- 140: Size in mm.
- HSD: Type

Mechanical specifications



HSD	A	B	C
30	30	20	20
40	40	18.3	20
70	70	39.7	21.4
140	140	80	20
210	210	2x80	20
280	280	2x100	20

Power Dissipation



This graph shows the maximum wattage rating for each of the five possible ressistors of standard size corresponding to the heat sin temperature.It is assumed that all resistors are equally loaded.

Designing

The following equations are applied by the dimensioning of the resistors at stationary load.
If more information is required please consult Danotherm.
It's assumed that the air around the resistors is stationary. (Worst case).
Symbols employed:

W_{MAX} : Maximum reguired load in resistor
T_{MAX} : Maximum hot spot temperature reguested in resistor
(T_{MAX} < 220° C) The lower T_{MAX} the higher reliability and lifetime.
T_{AMB} : Ambient temperature
R_{TH} : Thermal resistance. Refer to table Thermal resistances
T_H : Heat sink temperature (chassis).
T : Temperature on top of the Aluminium profile.

Following conditions are possible:

1. HSD is mounted on a heat sink:
   A. The thermal resistance R_{TH} of the heat sink is known, $T = W_{MAX} \times (R_{TH4} + R_{TH})$
      Check that: $T_{MAX} = W_{MAX} \times (R_{TH} + R_{TH3} + R_{TH1}) + T_{AMB} < 220°$ C
   B. The Temperature of the Heat Sink is known, $T = W_{MAX} \times R_{TH4} + T_H$
      Check that: $T_{MAX} = W_{MAX} \times (R_{TH1} + R_{TH3}) + T_H < 220°$ C
2. HSD is mounted without a heat sink:
      Check that: $T_{MAX} = W_{MAX} \times (R_{TH1} + R_{TH2}) + T_{AMB} < 220°$ C

Specifications

Power rating		12 W – 300 W
Resistance range (standard)* E12 values preferred for smaller quantities	HSD 40:	R1 – 3K3
	HSD 70:	R22 – 6K8
	HSD140:	R47 – 18K
	HSD 210:	R82 – 27K
	HSD 280:	1R – 39K
Resistance tolerance		± 5%/ ±10%
Temperature Coefficients		
Normal		50 ppm – 150 ppm
Low ohmic values		400 ppm
Dielectric strength		2500 VAC peak
Working voltage		1200 VAC
Test voltage		6000 VDC

* Low-ohmic values on request # Type HSD