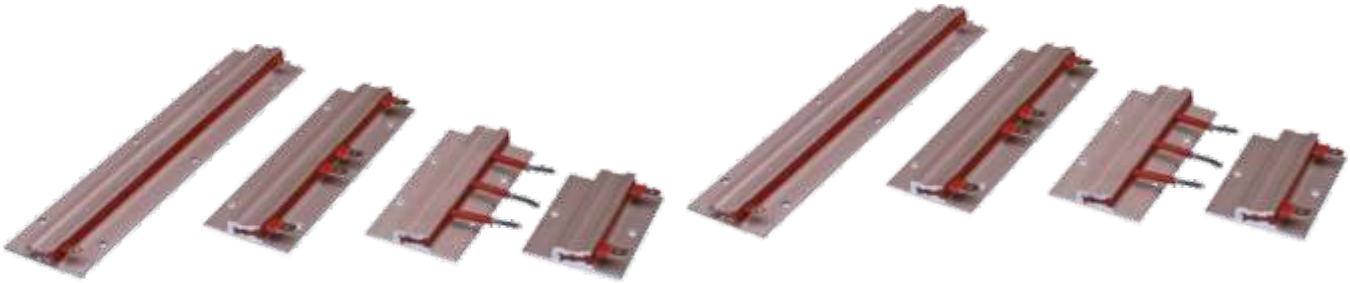
HSF Flat Profile Sink Resistors



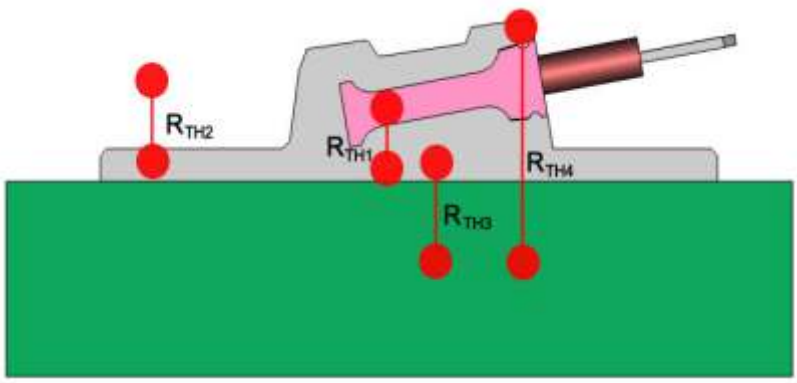
For compact construction

Close mounting of heat sensitive components is possible due to
only a slight rise of the temperature on the aluminium profile.
No heat sink compound is required because of large mounting surface.
Solder, Cable and "Fast-On" Termination
More resistors in one profile possible

Insulation

Silicone Rubber + MICA. The Silicone is UL-recognised (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
R TH3: Alu-house to heat sink
R TH4: Resistor surface to heat sink

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

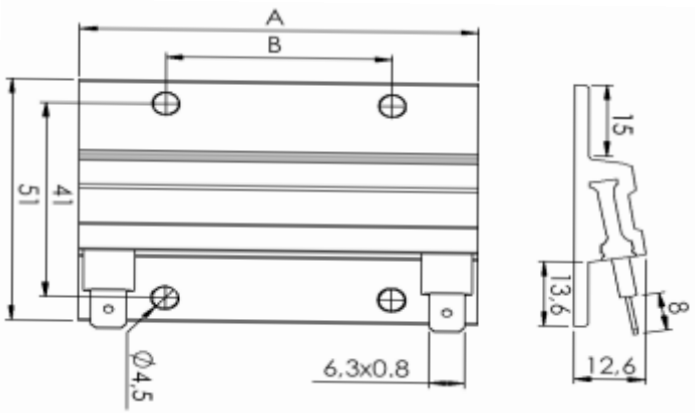
	HSF 40	HSF 70	HSF 140	HSF 210	HSF 280
R TH1	4	2	1	0.75	0.5
R TH2	11	6.8	3.9	2.75	2
R TH3	0.2	0.1	0.05	0.03	0.02
R TH4	0.5	0.3	0.17	0.1	0.085

Please Order as follows

HSF 140 A 47R

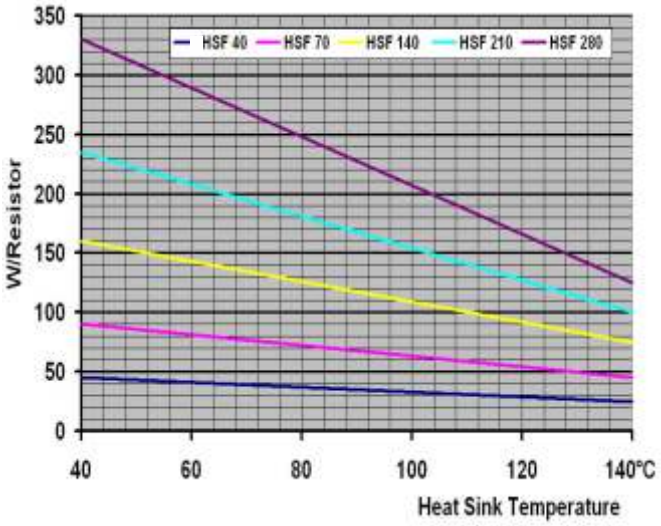
- 47R: Ohmic values
- A: A: AMP terminals; L: Tinned lugs; S: Screw-on terminals; C: Cable (specified)
- 140: Size in mm.
- HSF: Type

Mechanical specifications



HSF	A	B
40	40	-
70	70	39.7
140	140	80
210	210	2x80
280	280	2x100

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. HSF 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. HSF 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	HSF 40:	R1 – 3K3
	HSF 70:	R22 – 6K8
	HSF140:	R47 – 18K
	HSF 210:	R82 – 27K
	HSF 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 HSF