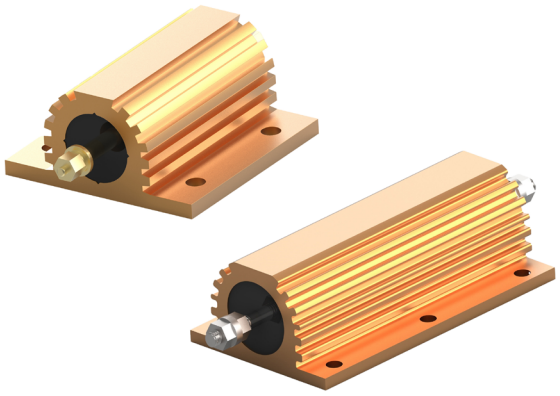
ALUMINIUM HOUSED POWER RESISTORS

TYPE HS SERIES

INTRODUCTION

TE Connectivity (TE) is one of the leading European suppliers of standard and custom designed aluminium housed resistors for general-purpose use, power supplies, power generation and the traction and drives industries. The HS Series product offering, a range of extremely stable, high-quality wire wound resistors are made from quality materials for optimum reliability and stability, capable of dissipating high power in a limited space with relatively low surface temperature. The aluminium housing in these resistors help rapidly dissipate power to a specified heat sink.



This latest revision of the datasheet introduces two new additions to the series: the HSCS stud terminal type HSC75, 100, and 150, and the HSHC type with power ratings from 350W to 500W, giving this series the widest range of power ratings currently on offer. TE is happy to advise on the use of these resistors for pulse applications and high voltage use. On request, TE can modify and test these resistors specifically to conform to relevant international, military or customer specifications. Low ohmic values, alternative mountings, and alternative termination types are also available on request.

FEATURES

- Established product with proven reliability leading the way with over 50 years of design and manufacturing experience.
- 5 Watts to 500 Watts: Largest range on the market.
- Versatile product bench mark in wide range of industries.
- Custom designs, windings, terminations, mountings available on request.
- Low resistance, low inductance and higher voltage versions available specialising the standard.

APPLICATIONS

- Braking resistor
- Balancing resistor
- Capacitor charging & discharging
- Crowbar
- Filter
- Electrical machinery general use

CHARACTERISTICS – ELECTRICAL

HSA & HSC – 5 Watts to 75 Watts

	HSA5	HSA10	HSA25	HSA50	HSC75
Dissipation @ 25°C with heatsink (Watts):	10	16	25	50	75
Without heatsink (Watts):	5.5	8	12.5	20	45
Ohmic value minimum (Ohms):	R01	R01	R01	R01	R05
Ohmic value maximum (Ohms):	10K	15K	36K	100K	50K
Operating temperature	-55-200°C				
Maximum working voltage (DC or AC rms) Volts:	150	250	500	1250	1400
Isolation voltage (DC or AC pk) Volts:	1400	1400	2500	2500	3500
Dielectric strength (AC Peak) Volts:	1400	1400	2500	2500	5000
Stability (resistance change, 1000 hours) (%):	1	1	1	1	2
Standard heatsink – area (mm^2):	41500	41500	53500	53500	99500
Thickness (mm):	1	1	1	1	3
Number of mounting holes:	2 hole	2 hole	2 hole	2 hole	4 hole

Aluminium Housed Power Resistors

Type HS Series

HSC – 100 Watts to 300 Watts

	HSC100	HSC150	HSC200	HSC250	HSC300
Dissipation @ 25°C with heatsink (Watts):	100	150	200	250	300
Without heatsink:	50	55	50	60	75
Ohmic value minimum (Ohms):	R05	R10	R10	R10	R10
Maximum (Ohms):	100K	100K	50K	68K	82K
Operating temperature	-55-200°C				
Maximum working voltage (DC or AC rms) Volts:	1900	2500	1900	2200	2500
Isolation voltage (DC or AC pk) Volts:	3500	3500	3600	3600	3600
Dielectric strength (AC Peak) Volts:	5000	5000	5600	5600	5600
Stability (resistance change, 1000 hours) (%):	2	2	3	3	3
Standard heatsink – area (mm^2):	99500	99500	375000	476500	578000
Thickness (mm):	3	3	3	3	3
Number of mounting holes:	4 hole	4 hole	6 hole	6 hole	6 hole

HSHC – 350 Watts to 500 Watts

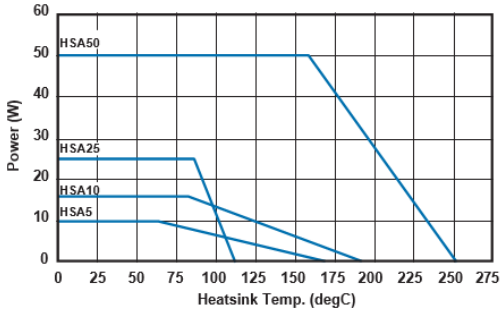
	HSHC350	HSHC400	HSHC450	HSHC500
Dissipation @ 25°C with heatsink (Watts):	350	400	450	500
Without heatsink (Watts):	85	100	110	125
Ohmic value minimum (Ohms):	1R0	1R0	1R0	1R0
Maximum (Ohms):	100K	100K	100K	100K
Operating temperature	-55-200°C			
Maximum working voltage (DC or AC rms) Volts:	2500	2500	2500	2500
Isolation voltage (DC or AC pk) Volts:	3600	3600	3600	3600
Dielectric strength (AC Peak) Volts:	5000	5000	5000	5000
Stability (resistance change, 1000 hours) (%):	3	3	3	3
Standard heatsink – area (mm^2):	578000	578000	578000	578000
Thickness (mm):	3	3	3	3
Number of mounting holes:	6 hole	6 hole	6 hole	6 hole

Long term stability	For improvements in long-term stability, resistors must be derated as follows: for 50% of stated ΔR maximum dissipation must not exceed 70% of rating: for 25% of stated ΔR maximum, dissipation must not exceed 50% of rating.
Insulation resistance	Dry: 10,000MΩ minimum. After moisture test: 1000MΩ minimum
Heat dissipation	Although the use of proprietary heat sinks with lower thermal resistance is acceptable, up rating is not recommended. The use of proprietary heat sink compound to improve thermal conductivity is recommended for optimum performance of all sizes but essential for higher power ratings (200W and higher)
Resistance tolerance	±5% Standard. Other options on request.
Specification	Temperature coefficient of resistance: ≤100R, ±50ppm/°C; >100R, ±25ppm/°C Tolerance, 5% standard: 10%, 3%, 2%, 0.5% & 0.25% available Tolerance for values below R10, 10% standard
Shelf life	24 Months when stored in original packaging away from chemical pollution

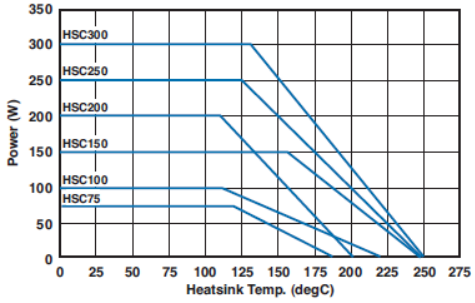
DERATING CURVE

N.B. The graphs plot power against allowable heatsink temperature range and not the temperature the heatsink will rise to under this power condition, nor the ambient temperature.

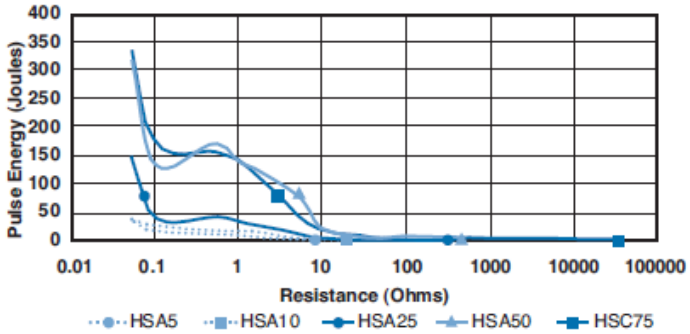
HSA5 - 50



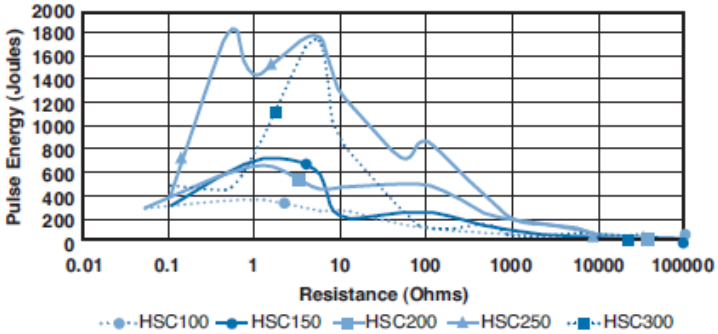
HSC75 - 300



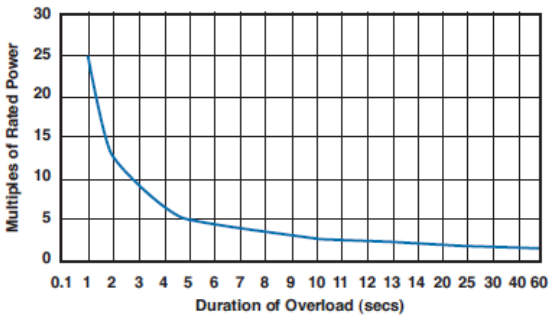
Pulse Energy HSA5 to HSC75 (pulse length 200ms)



Pulse Energy HSC100 to HSC300 (pulse length 200ms)

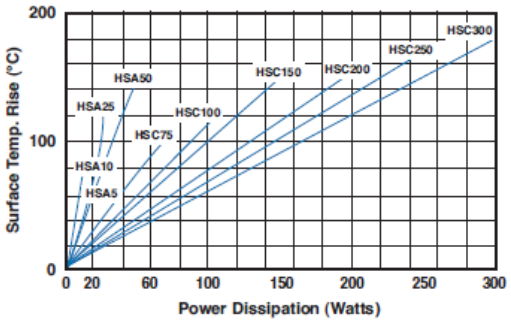


Power Overload



This graph indicates the amount that the rated power (at 20°C) of the standard HS series resistor may be increased for overloads of 100mS to 60S

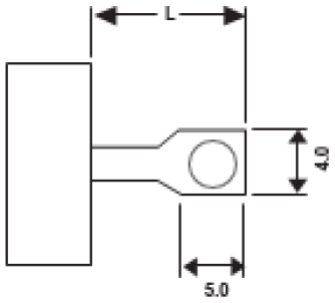
Surface Temperature Rise



For resistor mounted on standard heatsink, related to power dissipation

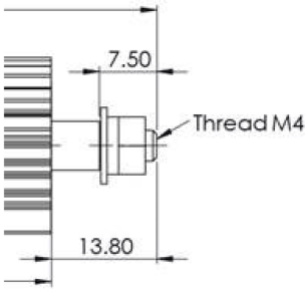
PRODUCT SPECIFICATIONS (Unit:mm)

HSA5 – HSC150 Standard

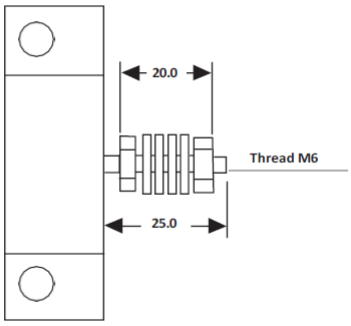


Standard Type	L
HSA5, 10	7
HSA25, 50	10
HSC75, 100, 150	8

HSC75S – HSC150S

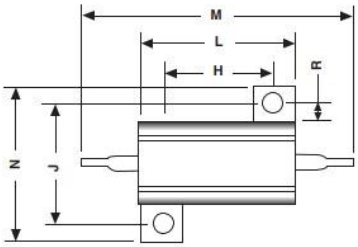


HSC200 – HSC300 & HSHC350 – HSHC500



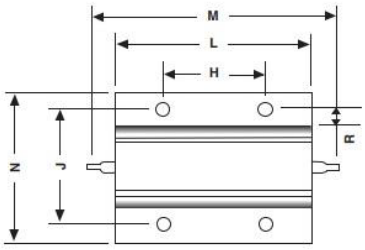
DIMENSIONS (Unit:mm)

HSA5 – HSA50



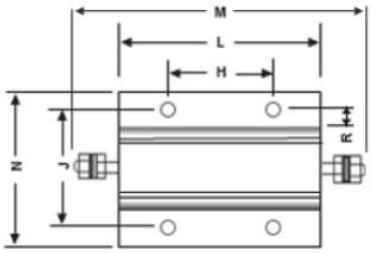
HSA5 – HSA10 : Mounting Hole 2 x 2.4mm
HSA25 – HSA50 : Mounting Hole 2 x 3.3mm

HSC75 – HSC150



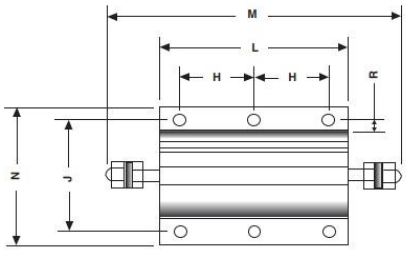
HSC75 – HSC150 : Mounting Hole 4 x 4.4mm

HSC75S – HSC150S



HSC75 – HSC150 : Mounting Hole 4 x 4.4mm

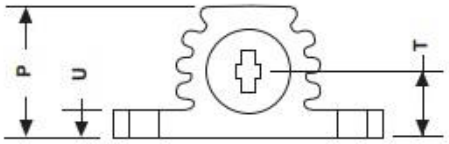
HSC300 – HSC300, HSHC350 – HSHC500



HSC200 – HSC250 : Mounting Hole 2 x 2.4mm
HSC300, HSHC350 - HSHC500 : Mounting Hole 2 x 3.3mm

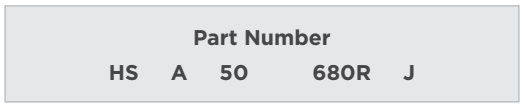
DIMENSIONS (continued)

End Elevation (all models)



Type	H ±0.3	J ±0.3	L maximum	M maximum	N maximum	P maximum	R minimum	T±0.5	U maximum
HSA5	11.3	12.4	17.0	30.0	17.0	9.0	1.9	4.3	2.5
HSA10	14.3	15.9	21.0	36.5	21.0	11.0	1.9	5.2	3.2
HSA25	18.3	19.8	29.0	51.0	28.0	15.0	2.8	7.2	3.2
HSA50	39.7	21.4	51.0	72.5	30.0	17.0	2.8	8.2	3.2
HSC75	29.0	37.0	49.0	71.0	48.0	24.0	5.0	11.5	3.5
HSC100	35.0	37.0	66.0	87.5	48.0	24.0	5.0	11.5	3.5
HSC150	58.0	37.0	98.0	122.0	48.0	24.0	5.0	11.5	3.5
HSC200	35.0	57.2	90.0	143.0	73.0	42.0	5.6	20.25	5.3
HSC250	44.5	57.2	109.0	163.0	73.0	42.0	5.6	20.25	5.3
HSC300	52.0	59.0	128.0	180.0	73.0	42.0	5.6	20.25	5.3
HSC75S	29.0	37.0	49.0	78.0	48.0	24.0	5.0	11.5	3.5
HSC100S	35.0	37.0	66.0	94.0	48.0	24.0	5.0	11.5	3.5
HSC150S	58.0	37.0	98.0	127.0	48.0	24.0	5.0	11.5	3.5
HSHC350	61.50	59.0	147	196.0	73	42.0	5.6	20.25	5.3
HSHC400	71.0	59.0	166	215.0	73	42.0	5.6	20.25	5.3
HSHC450	80.5	59.0	185	234.0	73	42.0	5.6	20.25	5.3
HSHC500	90.0	59.0	204	253.0	73	42.0	5.6	20.25	5.3

ORDERING INFORMATION



Common part

HS	Standard
HSH	High power
NHS	Low inductance

Mounting style

A	Single opposing mounting feet
B	Flange one side
C	Flange two sides

Power rating

10 Watt	HSA5
16 Watt	HSA10
25 Watt	HSA25
50 Watt	HSA50
75 Watt	HSA75, etc,

Tolerance

F	1%
G	2%
E	3%
J	5%
K	10%

Resistance Value

R10	0.1 ohm (1000 mille ohms)
1R0	1 ohm (1000 mille ohms)
1K0	1K (1000 ohms)

Terminal

	Standard
S	Screw

te.com

1773035 Rev. E 04/24 ED