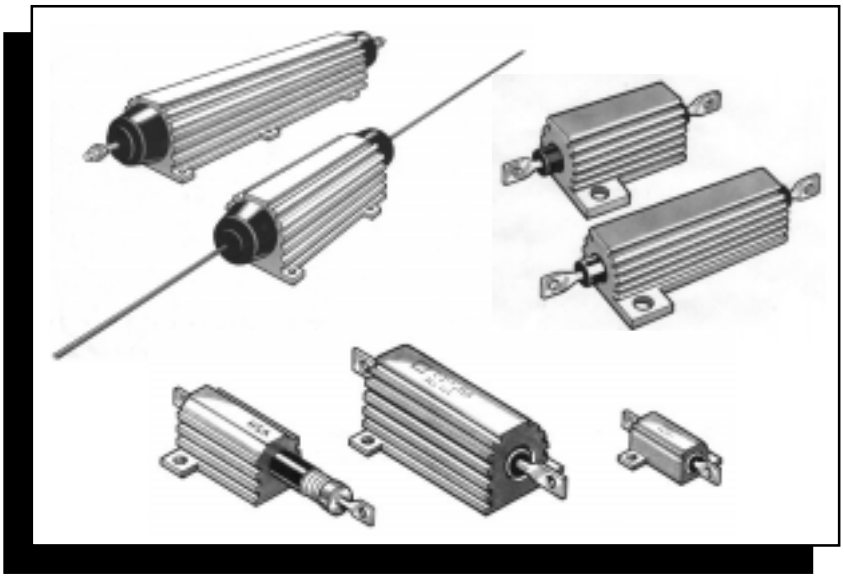
MEGGITT CGS

HIGH VOLTAGE RESISTORS
HIGH VALUE RESISTORS
HIGH POWER RESISTORS
ALUMINIUM CLAD RESISTORS
CURRENT SENSE RESISTORS

Aluminium Housed High Power Resistors

TYPE HS SERIES



MEGGITT CGS
KEY FEATURES

- **UP TO 1000 WATTS WITH HEATSINK**
- **LOW OHMIC VALUES AVAILABLE**
- **CECC - BS APPROVED**
- **NON INDUCTIVE + TIGHT TOLERANCE OPTIONS**
- **UP TO 2500 VOLTS DC**
- **RANGE OF CONNECTORS**
- **ATTRACTIVELY PRICED**
- **PROVEN RELIABILITY**
- **AVAILABLE IN DISTRIBUTION**
- **CUSTOM DESIGN OPPORTUNITIES WELCOMED**

MEGGITT
ELECTRONIC
COMPONENTS

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The HS series is the 'flagship' product of the CGS product range.
CGS are the leading European supplier of standard and custom designed Aluminum Clad Resistors for general purpose use, power supplies, power generation and the traction industries. The latest introduction - the HSX offers increased creepage voltage by virtue of a remodelled and extended nose cone, making it entirely suitable for the latest VDE European Safety requirements.
The HS is a range of extemely stable, high quality wirewound resistors capable of dissipating high power in a limited space with relatively low surface temperature. The power is rapidly dissipated as heat through the aluminium housing to a specified heatsink.

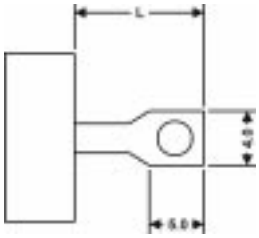
The resistors are made from quality materials for optimum reliability and stability.
Certain styles are approved to CECC specification, others are designed to conform to the relevent MIL, CGS or customer specification.
We will be happy to advice on the use of resistors for pulse applications, and to supply information for high voltage use, low ohmic value components, alternative mountings and terminations. For high power applications, a range of special designs are available, power dissipation up to 1000 Watts, insulated and designed to withstand 12KV impulse.

HSA AND HSC TYPE 5 WATTS TO 300 WATTS

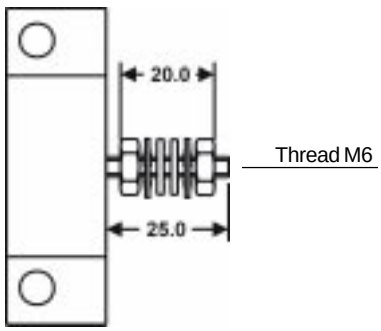
HS Type	**HSA 5**	**HSA 10**	**HSA 25**	**HSA 50**	**HSC 75**	**HSC 100**	**HSC 150**	**HSC 200**	**HSC 250**	**HSC 300**
CECC 40203 - 001	AA	BA	CA	DA						
Dissipation at 25°C (Watts)										
With Heatsink	10	16	25	50	75	100	150	200	250	300
Without Heatsink	5.5	8	12.5	20	45	50	55	50	60	75
Ohmic Value										
Min.	R01	R01	R01	R01	R05	R05	R10	R10	R10	R10
Max.	10K	15K	36K	100K	50K	100K	100K	50K	68K	82K
Max. Working Voltage (DC / AC RMS)										
V	160	265	550	1250	1400	1900	2500	1900	2200	2500
Dielectric Strength (AC Peak)										
V	1400	1400	2500	2500	5000	5000	5000	5600	5600	5600
Stability % Resistance change, 1000 hrs.	1	1	1	1	2	2	2	3	3	3
Surface Temperature Rise Mounted on Standard Heatsink										
°C/W	5.5	5.0	4.4	2.9	1.2	1.1	1.0	0.75	0.65	0.60
Standard Heatsink										
Area, cm^2	415	415	535	535	995	995	995	3750	4765	5780
Thickness, mm.	1	1	1	1	3	3	3	3	3	3
Mounting Style	← 2 Hole →				← 4 Hole →			← 6Hole →		
Approximate Weight, grams.	5	10	16	35	90	120	180	475	600	700
Increased Dielectric Strength (AC Peak)						**KHSA25**			**KHSA50**	
V						3500			3500	
Terminations										

Types HSA5 to HSC150

Type	L
HSA5, 10	7
HSA25, 50	10
HSA75, 100, 150	8



Types HSC200, 250, 300



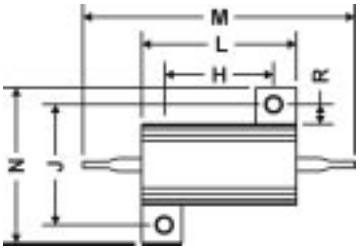
Faston connections available on request

DIMENSIONS (mm.)

HS Type	HSA 5	HSA 10	HSA 25	HSA 50	HSC 75	HSC 100	HSC 150	HSC 200	HSC 250	HSC 300
H ± 0.3	11.3	14.3	18.3	39.7	29.0	35.0	58.0	35.0	44.5	52.0
J ± 0.3	12.4	15.9	19.8	21.4	37.0	37.0	37.0	57.2	57.2	59.0
K ± 0.2	2.4	2.4	3.3	3.3	4.4	4.4	4.4	5.3	5.3	6.5
L Max.	17.0	21.0	29.0	51.0	49.0	65.5	98.0	90.0	109.0	128.0
M Max.	30.0	36.5	51.8	72.5	71.0	87.5	122.0	143.0	163.0	180.0
N Max.	17.0	21.0	28.0	30.0	47.5	47.5	47.5	73.0	73.0	73.0
P Max.	9.0	11.0	15.0	17.0	26.0	26.0	26.0	45.0	45.0	45.0
R Min.	1.9	1.9	2.8	2.8	5.0	5.0	5.0	5.6	5.6	6.0
T ± 0.5	3.4	5.2	7.2	7.9	11.5	11.5	11.5	22.2	22.2	22.2
U Max.	2.5	3.2	3.2	3.2	3.5	3.5	3.5	6.75	6.75	6.75

Note: K refers to mounting hole diameter

HSA5 - HSA50



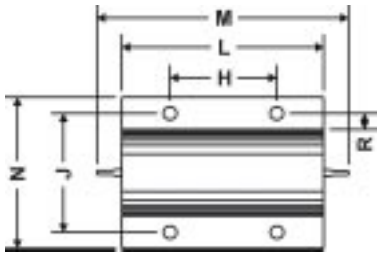
2 x Mounting Hole

HSA5 - 2.4mm
HSA10 - 2.4mm
HSA25 - 3.3mm
HSA50 - 3.3mm

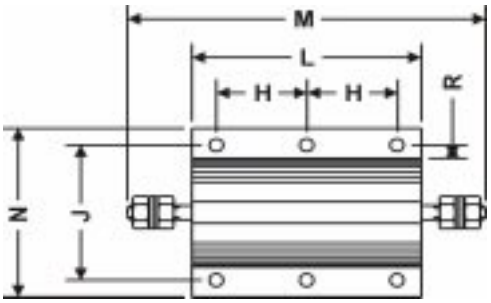
HSC75 - HSC150

4 x Mounting Hole

HSC75 - 4.4mm
HSC100 - 4.4mm
HSC150 - 4.4mm

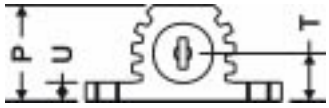


HSC200+



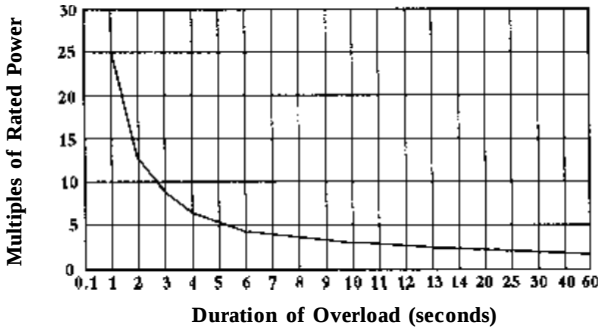
6 x Mounting Hole

HSC200 - 5.3mm
HSC250 - 5.3mm
HSC300 - 6.5mm



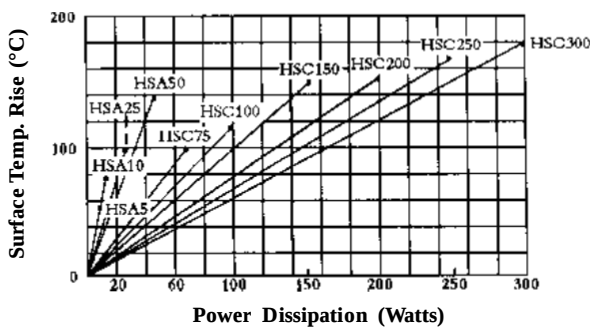
POWER OVERLOAD

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.



HSX TYPE 25 WATTS/50WATTS HIGH CREEP

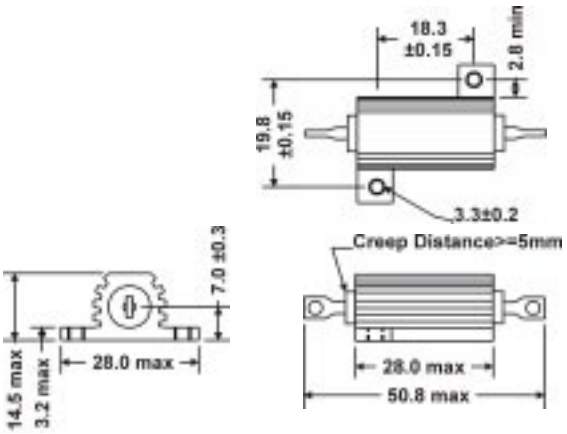
Power Dissipation on Water Cooled Heatsink: (Inlet Water Temperature (= 20°C)	25 Watts	50 Watts
Resistance Range: (Tolerance ± 5% STD)	R05 to 36K	R05 to 86K
Stability ΔR after 2000 hrs. @ 1½ hrs - ON, ½ hr - OFF	< = 2%	< = 2%
Insulation Resistance @ 500V:	> 10,000 MΩ	> 10,000 MΩ
Overload Resistance Change Δ R: 5 x Rated Power for 5 seconds	< = 1%	< = 1%
Limiting Element Voltage:	500V DC or AC rms	1250V DC or AC rms
Isolation Voltage:	3.5KV AC pk	3.5KV AC pk
Temperature Coefficient:	< ± 50 ppm/°C	< ± 50 ppm/°C
Environmental Category:	-55/200/56	-55/200/56

MECHANICAL

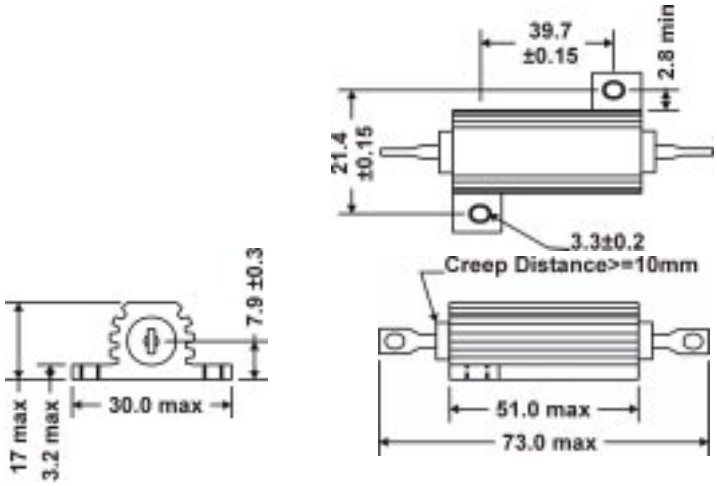
Core:	High Grade Steatite Ceramic
Cap:	Stainless Steel
Element:	Ni/Cr
Primary Insulation:	Epoxy Moulding
Nosecone:	Epoxy Moulding
Housing:	Anodised Aluminium

DIMENSIONS

HSX 25



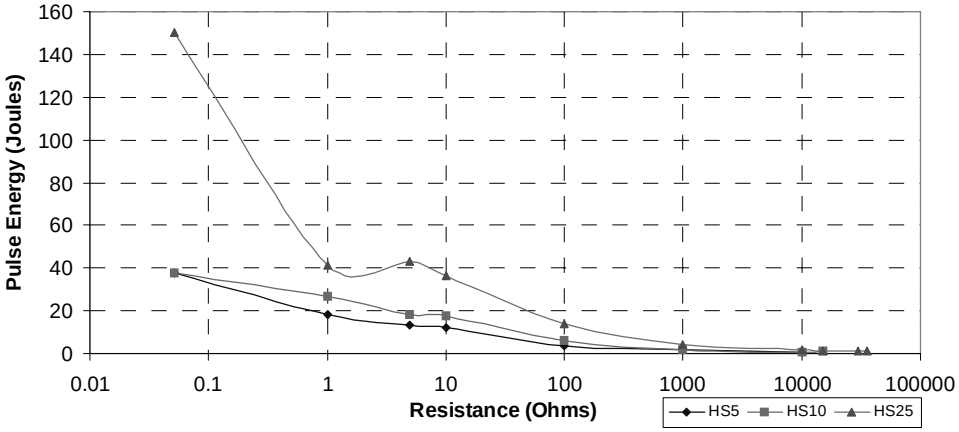
HSX 50



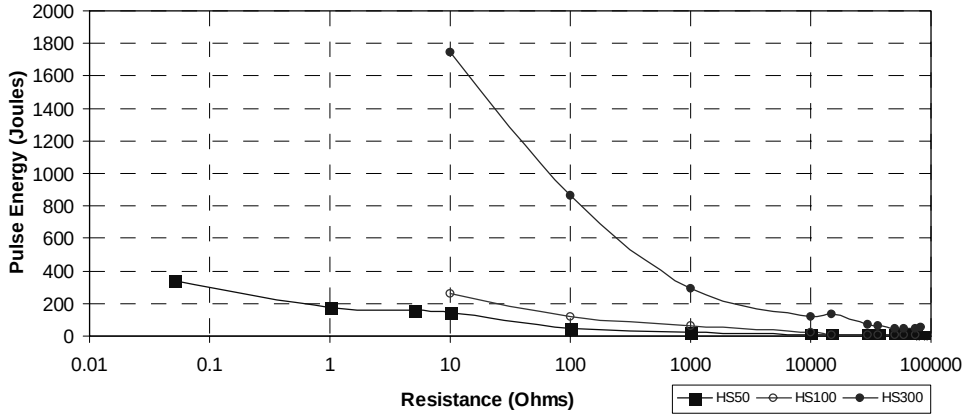
All dimensions are nominal and in mm. unless otherwise shown. Do not scale.

PULSE FORM GRAPHS FOR HSA, HSC AND HSX TYPES

Pulse Energy



Pulse Energy



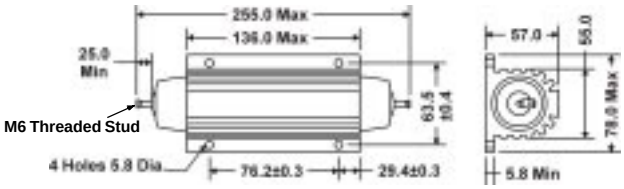
HPV TYPE 500/1000 WATTS MINERAL FILLED

Meggitt CGS is probably unique in offering an elegantly packaged resistor range with power dissipations up to 1000 watts, resistance ranges to 50K and 12KV DC voltage proof in an elegant mineral filled aluminium case. These resistors have been specifically designed for the power generation industry but are increasingly finding applications in locomotive and other industrial markets where high power, long life and exacting pulse requirements are key design parameters. Most resistors are tailored to user specifications and we offer a range of mounting patterns and terminal configurations.

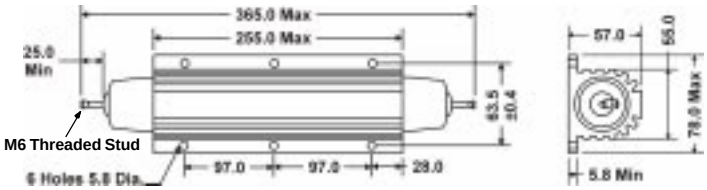
ELECTRICAL	HPV 500	HPV 1000
Power Dissipation on Water Cooled Heatsink: (Inlet Water Temperature (= 20°C)	500 Watts	1000 Watts (Max. Continuous)
Resistance Range: (Tolerance ± 5% STD)	0R5 to 33K	1R0 to 50K
Stability ΔR after 2000 hrs. @ 1½ hrs - ON, ½ hr - OFF	< = 2%	< = 2%
Insulation Resistance @ 500V:	> 10,000 MΩ	> 10,000 MΩ
Overload Resistance Change ΔR: 5 x Rated Power for 5 seconds	< = 1%	< = 1%
Limiting Element Voltage:	2.5KV AC rms	2.5KV AC rms (For continuous operation)
Pulsed Voltage:	12KV peak	12KV peak
Isolation Voltage:	4.8KV AC pk	4.8KV AC pk
Voltage Proof:	6.8KV AC rms or 12KV DC	6.8KV AC rms or 12KV DC
Temperature Coefficient:	< ± 100 ppm/°C	< ± 100 ppm/°C
Environmental Category:	-55/200/56	-55/200/56

DIMENSIONS

HPV500



HPV1000



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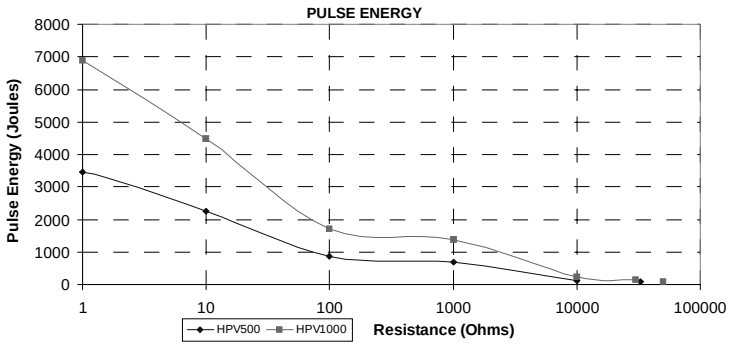
MECHANICAL

Core:	High Grade Alumina
Cap:	Stainless Steel
Stud: (Threaded Terminals Only)	Stainless Steel
Element:	Ni/Cr
Primary Insulation:	High Grade Alumina
Nosecone:	Silicone Moulding
Housing:	Aluminium Extrusion (Anodised)

PULSE FORM GRAPH



SPECIAL DESIGN VARIANTS

- Ohmic values from R01 dependent on size
- Addition of tinned copper wire attached by high melt solder, wire supplied with or without insulation at length to suit customer.
- Length of tag increased by 3mm. to provide additional hole 1.0mm. for voltage connector.
- HS25 and HS50 manufactured with extended nosecones to improve creep distance.
- Embedded wire terminals

CHARACTERISTICS

Maximium Overload
For overloads of the order of 2 x power rating for 3 mins., 5 x power rating for 5 secs., or 25 x power rating for 1 second, change of resistance is less than 0.5% + 0.05 ohm maximum voltage must not exceed maximum working voltage.

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 the rating.

Heat Dissipation
Although the use of proprietary heatsinks with lower thermal resistance is acceptable, uprating is not recommended. The use of proprietory heatsink compound to improve thermal conductivity is recommended for optimum performance of all sizes but essential for HSC200, HSC250, HSC300.

Insulation Resistance
Dry: 10,000 Megohm minimum. After moisture test: 1000 Megohm minimum.

High Ambient Power Dissipation
Dissipation derates linearly to zero at 250°C from 25°C

Specification
Temperature coefficient below 100R, 50ppm/°C.
Temperature coefficient above 100R, 30ppm/°C.
Tolerance, 5% standard; 10%, 3%, 2%, 1%, 0.5% & 0.25% available.
Tolerance for values below R10, 10% standard.

MATERIALS

Core
Ceramic, steatite or alumina depending on size.

Element
Copper nickel alloy or nickel chrome alloy.

Endcaps
Nickel iron or stainless steel.

Encapsulant
High temperature material moulding

Housing
Anodised aluminium

Stock
The HSA5, 10, 25 and 50 are stocked in selected values of the E24 series at 5% tolerance.

HOW TO ORDER

HS	A	50	680R	J	X
COMMON PART	**MOUNTING STYLE**	**WATTAGE RATING AT 25°C WITH HEATSINK**	**RESISTANCE VALUE**	**TOLERANCE**	**RELEASE CONDITION**
HS - Standard KHS - Increased Dielectric Strength NHS - Low Inductive Winding	A - Single Opposing Mounting Feet B - Flange One Side C - Flange Two Sides X - High Creep (25 & 50 Watt only)	10 Watt = HSA5 16 Watt = HSA10 25 Watt = HSA25 50 Watt = HSA50 75 Watt = HSA75 etc.....	0.1 ohm (100 mille ohms) R10 1 ohm (1000 mille ohms) 1R0 1K ohm (1000 ohms) 1K0	F - 1% G - 2% E - 3% J - 5% K - 10%	X - BS CECC No Letter - Commercial

HOW TO ORDER HPV TYPES

As many applications require major or minor customisation Meggitt will normally allocate a R number special sequence to your requirement. This is logged with drawings and maintained indefinitely to facilitate your re-order or spares requirements.
These various specials may be low inductance types, various wire terminal types, special pulse application designs or various stud terminal types.

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