POWER RESISTORS

OSS - Serie

Power- Thick Film Resistors

FEATURES

- Resistance from 0,1Ω
- Temperature Coefficients ±100ppm/°C
- Resistance Tolerances to ±1%
- Power up to 600Watts (cooled)
- SOT227 Design
- Low Inductance
- RoHS - compliant

RATED VALUES (IEC 60115-1)

Resistance Range	Ω	0,1Ω to 1MΩ (E24 Reihe)
Resistance Tolerance	%	1%; 5%
Temperature Coefficient	ppm/°C	±100 > 0,1Ω
Operating Voltage (U_{max})	V	√(P x R)[1]
Inductance	H	14 nH
Insulation Resistance (R_{ins})	Ω	>1G
Operating Temperature Range (T)	°C	-55°C to 155°C

Type	U_{max}	Power P_{70}	Power P_{85}	Heat Resistance	Tolerance- /Resistance Range	
	(V)	(W)	(W)	(°C/W)	(±5% / Ω) E12[2]	(±1% / Ω) E12[2]
OSS2720	1000*	200	200	0,35	0R1 - 1M0	0R1 - 1M0
OSS2730	1000*	300	300	0,23	0R1 - 1M0	0R1 - 1M0
OSS2760	1000*	600	600	0,11	0R1 - 1K0	0R1 - 1K0

[1]Restriction to max. 1000V, [2]additional possible values 2.0 and 5.0

PERFORMANCE

IEC 60115-1	Test	Conditions of Test	Specification ΔR
4.23	Moisture Resistance	+40°C, 90-95% r.F., Rated Voltage and power 0,1W, 1000h	±(1,0% R +0,05Ω)
4.6	Insulation Voltage	U_{ins} 2500VAC, 60 Seconds (4000VAC on request)	10GΩ
4.13	Short Time Overload	< 1,2x Rated Voltage U_{max}, 2 Seconds	±(0,25% R +0,05Ω)
4.25	Endurance	+25°C, U_{max} 1,5h „ON“ and 0,5h ”OFF”, 1000h	±(1,5% R +0,05Ω)
4.22	Vibration	Frequency 10Hz - 54Hz, 10 Cycles in x,y,z Direction	±(0,25% R +0,05Ω)

CONSTRUCTION

Typ	OSS2720	OSS2730	OSS2760
Resistance Material	Ruthenium-based Thick Film Layer		
Housing	Insulation-proof Plastic		
Terminals	Screw Terminals, Screw M4 x 6, Torque 1Nm max.		
Thermal Flange Plate	Ceramics	Nickel Plated Copper	Nickel Plated Copper

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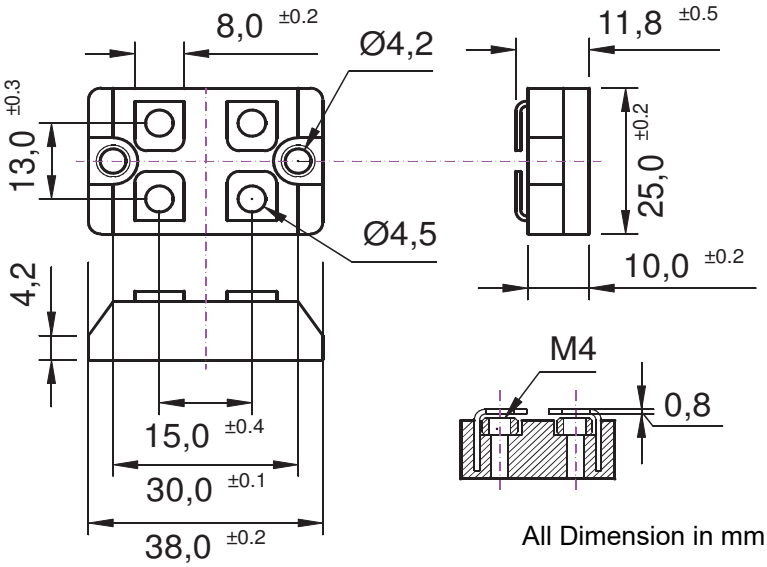
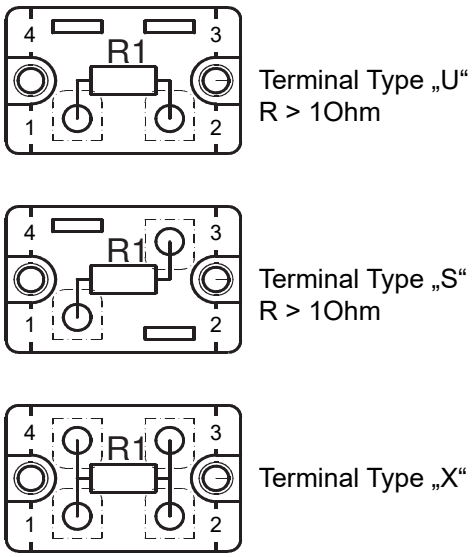
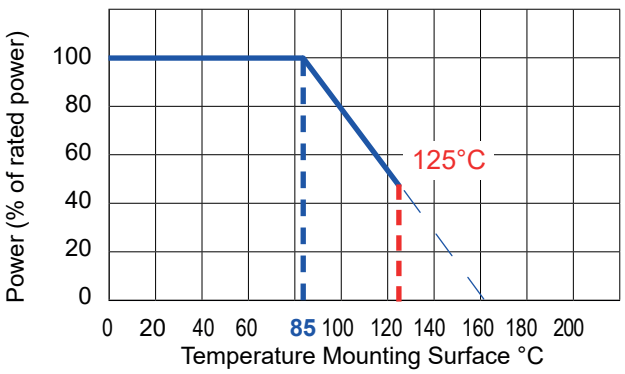
ABMESSUNGEN





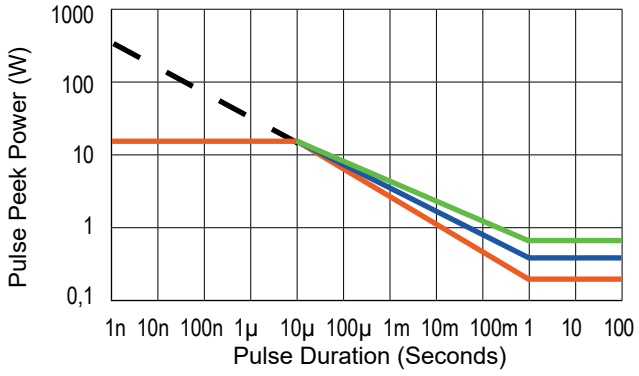
- Mounting instructions: Resistor and cooling surface (body) must be free of grease and contamination. Cooling surface or heat sink should not have unevenness (max. 0.05mm / 50mm2). For better heat dissipation it is recommended to use suitable thermal compounds. The tightening torque for fixing the resistor to the heat sink must be selected according to the thermal paste used. About 2nm are recommended.

POWER DERATING CURVE



- The max. permissible surface temperature must not exceed 125 ° C. This must be taken into account in the cooling surface dimensioning.

PULSE ENERGY DURABILITY



The pulse test was performed with a pulse repeat rate of 100Hz. The specifications are typical test values, they do not describe any specification.

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CALCULATION / DIMENSIONING OF A SUITABLE COOLING

The power resistors of the OSS series must be combined with a sufficiently dimensioned cooling system. Suitable are heat sinks, housing surfaces, active cooling by means of fans or water cooling. It is recommended that these power resistors are not constantly operated at maximum continuous load. Operating at approx. 80 - 85% of the rated power ensures the stability of the resistance tolerance, the nominal resistance values and the load live especially under load changing conditions.

The maximum surface temperature of the OSS resistors must not exceed 125 ° C. When calculating the cooling, the ambient temperature must be taken into account. This factor is directly included in the calculation, so it is advisable not to disregard the use in the field. Typical example: Use in the control cabinet, if it is not temperature-controlled, heat build-up in the convective air flow is possible, this can negatively influence the assumed values of the original calculation.

Calculation of the heat resistance of the heat sink:

P_θ - Power of the Resistor in Watts
R_θ - Thermal Resistance K/W
$R_{\theta JC}$ - Thermal Resistance of the Resistor in K/W
$R_{\theta S}$ - Thermal Resistance of the Heat Sink in K/W

Example:

P_θ = 200W; $R_{\theta JC}$ = 0,35 K/W; T_J = 125 °C; T_A = 30 °C

Calculation:

$\Delta T = TJ - TA = 125°C - 30°C = 85K$

$$R_\theta = \frac{\Delta T}{P_\theta} = \frac{95K}{200W} = 0{,}475K/W$$

$$R_{\theta S} = R_\theta - R_{\theta JC} = 0{,}475\ K/W - 0{,}35\ K/W = 0{,}125K/W$$

Result: $R_{\theta S} \leq 0{,}125$ K/W max. Thermal Resistance of the Heat Sink

Remark: K/W = °C/W

ORDERING INFORMATION

OSS2720 100R00 1% TK100 S (OSS2720; 100Ω; 1%; TK100; Anschlussform „S“)

Type	Special	Resistance Value	Tolerance	Temperature Coefficient	Power	Options	Packaging
OSS2720	- XXX	0R1000 100R00 10K000 1M0000	1% 5%	TK100	-	Terminal U S X	-

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