

OTC - Series, OTC6335

Power - Thick Film Resistors

FEATURES

- Resistance from 0,01Ω
- Temperature Coefficients $\pm 100\text{ppm}/^\circ\text{C}$
- Resistance Tolerances $\pm 1\%$
- Power up to 35Watts (cooled)
- TO - 263 Style
- Low Inductance
- RoHS - compliant



RATED VALUES (IEC 60115-1)

Resistance Range	Ω	0,01Ω to 510KΩ
Resistance Tolerance	%	1%; 5%
Temperature Coefficient	ppm/°C	$\pm 300\text{ppm}/^\circ\text{C} < 0,05\Omega$; $\pm 250\text{ppm}/^\circ\text{C} < 0,1\Omega$; $\pm 100\text{ppm}/^\circ\text{C} \geq 0,1\Omega$
Operating Voltage (U_{\max})	V	500V or $\sqrt{P \times R}$
Insulation Resistance (R_{ins})	Ω	>1G
Capacitance	F	1,4 pF
Inductance	H	8,4 nH
Operating Temperature Range (T)	°C	-55°C to 175°C

Type	U_{\max} (V)	Power P25 (W)	Power P70 (W)	Heat Resistance (°C/W)	Tolerance- /Resistance Range (Ω / 1%; 5%) E6	(Ω / 1%; 5%) E24
OTC6335	500	35*	20,09*	3,3	0R01 - 0R09 ¹	0R1 - 510K ¹

*Power without additional cooling 2 Watts
¹Additional possible values 2,5; 4,0; 8,0 and 16,0

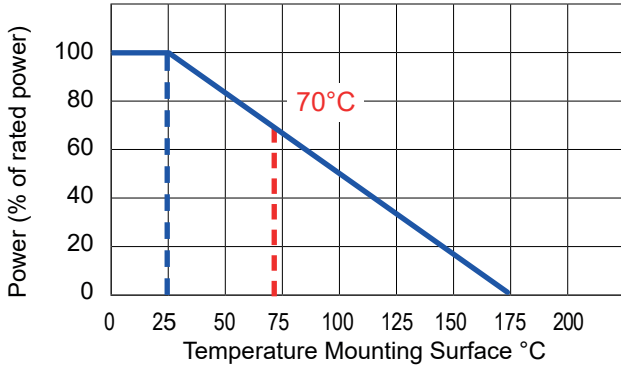
PERFORMANCE

IEC 60115-1	Test	Conditions of Test	Specification ΔR
4.23	Moisture Resistance	+40°C, 90-95% R.H., Rated Voltage at Power 0,1W, 1000h	$\pm(1,0\% R + 0,05\Omega)$
4.19	Thermal Shock	-55°C 30 Minutes, +155° 30 Minutes, 1000h	$\pm(0,25\% R + 0,05\Omega)$
4.6	Dielectric Strength	U_{ins} 2000VAC, 60 Seconds, 1mA	
4.25	Endurance	+25°C, U_{\max} 1,5h „ON“ and 0,5h „OFF“, 1000h	$\pm(1,0\% R + 0,05\Omega)$
4.22	Vibration	Frequency 100Hz - 2000Hz, 10 Cycles, 90 Minutes	$\pm(0,25\% R + 0,05\Omega)$
4.18	Soldering Resistance	350°C, max. 3s	$\pm(1,0\% R + 0,05\Omega)$

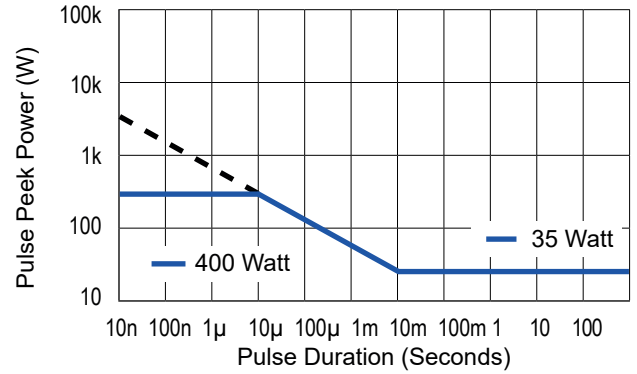
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POWER DERATING CURVE



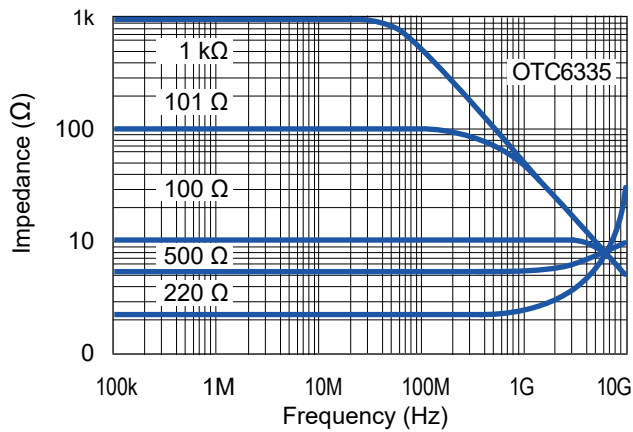
PULSE ENERGY DURABILITY



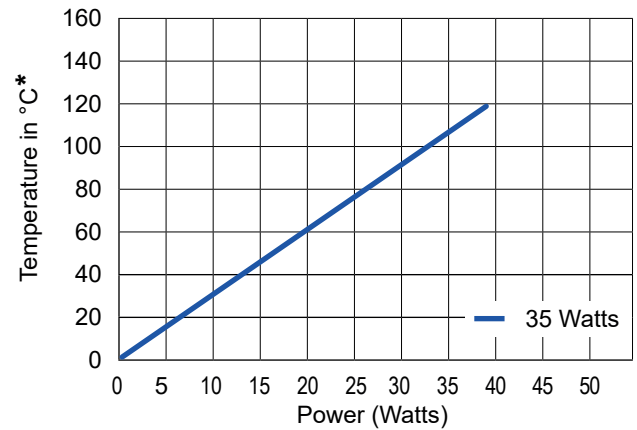
— OTC6335 100R00 ±1% ±100ppm/°C
 - - - expected value

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

FREQUENCY CHARACTERISTICS



TEMPERATURE RISE

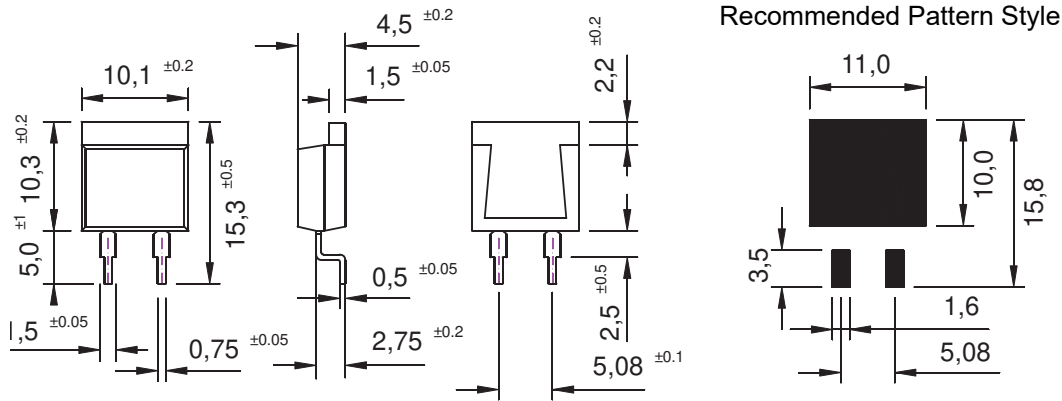


* The max. permissible surface temperature must not exceed 125 °C.

CONSTRUCTION

Resistance Material	Ruthenium-based Thick Film Layer
Housing	Insulation-proof Plastic
Terminals	Tin Plated Copper
Thermal Flange Plate	Nickel Plated Copper, electrical isolated

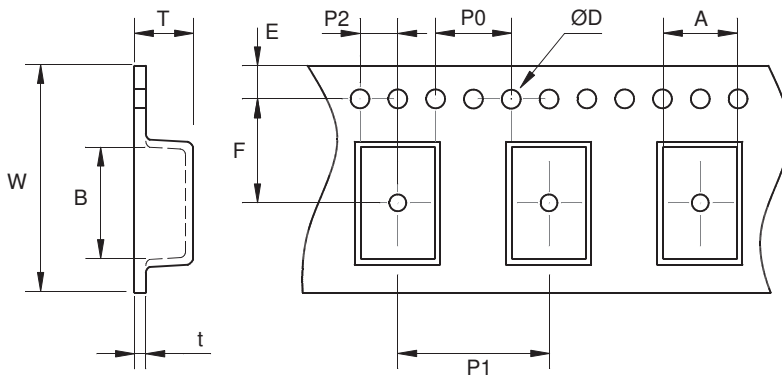
DIMENSIONS



All Dimensions in mm

- Mounting advice: If the resistor is soldered with the rear mounting surface onto a printed circuit board, the mounting surface may be heated up to 270 °C ± 10 °C for a maximum of 30 seconds (temperature of the soldering tip 300 - 350 °C). The connection contacts are then to be soldered (230 °C ± 5 °C, 3 seconds). In the reflow process, the resistor can be exposed for a maximum of 20 seconds to a temperature of up to 270 °C. For low resistance values, less than 0.1 ohm and reflow soldering, tests are recommended. If the reflow process leads to changes of the nominal resistance value outside acceptable tolerances, the resistor must be soldered by hand.

TAPE & REEL DIMENSIONS



	W	A	B	T	P ₀	P ₁	P ₂	E	F	t	D ₀
OSC6335	24,0 ±0,3	18,08 ±0,1	15,8 ±0,1	5,0 ±0,2	4,0 ±0,1	16,0 ±0,1	2,0 ±0,1	1,75 ±0,1	11,5 ±0,1	0,4 max.	1,5 +0,1/-0,0
(IEC 60286-3, EIA 481 compliant) All Dimension in mm Packaging Qty. 500pcs/Reel Reel: 13", Outer Diameter 330mm, Inner Diameter 100mm, Reel Width 23,9 to maximum 27,4mm											

CALCULATION / DIMENSIONING OF A SUITABLE COOLING

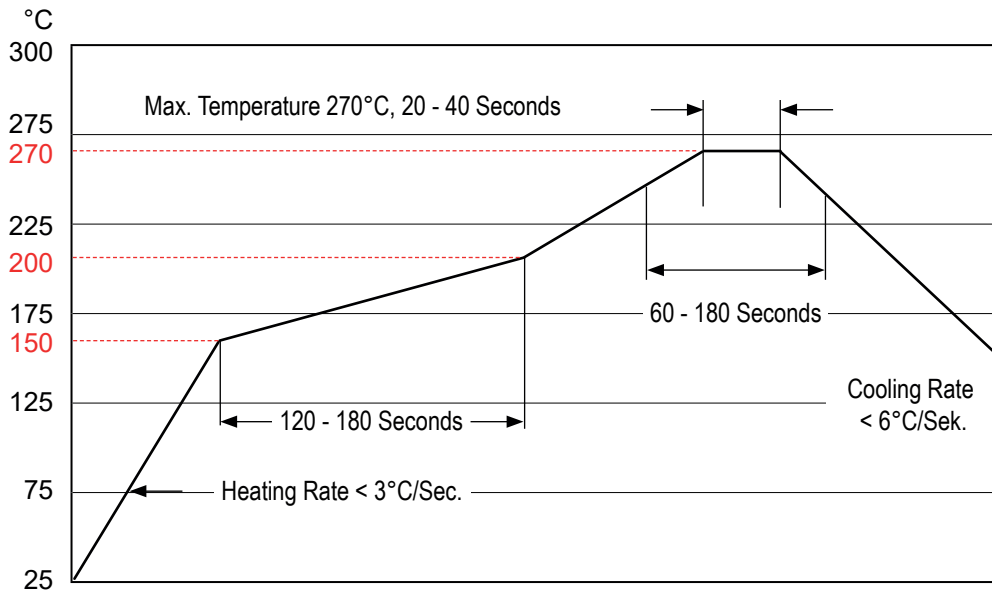
The power resistors of the OTC series must be combined with a sufficiently dimensioned cooling system. Suitable are heat sinks, housing surfaces, active cooling by means of fans or water cooling. It is recommended that these power resistors are not constantly operated at maximum continuous load. Operating 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 OTC 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.

- P_{θ} - Power of the Resistor in W
- T_{max} - Maximum Temperature of the Resistor
- $R_{\theta JC}$ - Thermal Resistance of the Resistor in K/W
- $R_{\theta S}$ - Thermal Resistance of the Heat Sink in K/W
- T_A - Ambient Temperature

$$R_{\theta S} = \frac{T_{max} - (P_{\theta} \times R_{\theta JC}) - T_A}{P_{\theta}}$$

SOLDERING RECOMMENDATIONS



ORDERING INFORMATION

OTC6335 100R00 1% TK100 (OTC6335; 100Ω; ±1%; ±100ppm/°C)

Type	Special	Resistance Value	Tolerance	Temperature Coefficient	Power	Options	Packaging
OTC6335	- XXX	0R1000 100R00 10K000	5% 1%	TK300 TK250 TK100	-	-	-