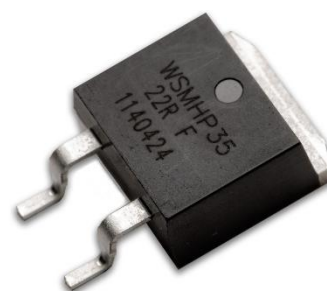


WSMHP Series

Features:

- TO-263 surface mount package
- Very low thermal impedance to heatsink
- Non-inductive 20, 25 and 35-watt high power resistors
- Low profile package for high density PCB installation
- Suitable for board mounting with either solder or clip
- AEC-Q200 qualified



All parts are Pb-free and comply with EU Directive 2011/65/EU amended by (EU) 2015/863

Electrical Data

		WSMHP20	WSMHP25	WSMHP35
Power rating on heatsink at 25°C flange temperature	W	20	25	35
Power rating without heatsink	W	2.5		
Thermal resistance resistor hotspot to flange	°C/W	4.3		
Limiting element voltage	V _{dc/acrms}	350		
Resistance range	Ω	R50 to 100K		
Resistance tolerance	%	1, 5		
TCR 25 to 105°C	ppm/°C	<1R0: ±300, 1R0 to 10R: ±100, >10R: ±50		
Standard values		E24 preferred		
Insulation resistance between terminals and flange	Ω	>10G		
Dielectric strength between terminals and flange	V _{acrms}	1800		
Ambient temperature range	°C	-55 to 175		

Physical Data

Dimensions in mm and weight in g		Recommended Pad Layout	
A	10.1 ±0.3		
B	10.1 ±0.3		
C	4.6 ±0.2		
D	5 ±1		
E	1.27 ±0.3		
F	2.54 ±0.5		
G	3.2 ±0.2		
H	0.51 ±0.15		
J	0.88 ±0.12		
K	1.32 ±0.15		
L	5.08 ±0.1		
M	1.32 ±0.14		
O	1.5 ±0.5		
Q	6.9 ±0.3		
T	6 ±1		
Wt.	1.5 nom.		

Construction

A thick film resistor on an alumina substrate is mounted on a metallic flange. Leadframe is attached and the component is overmolded to form a TO-263 package.

Marking

Type, value and tolerance code are laser marked on the molded body.

General Note

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Terminations

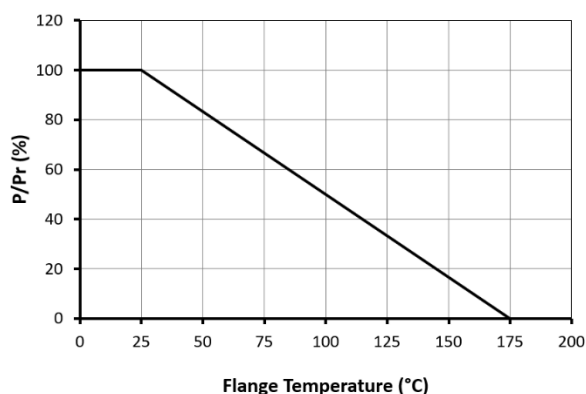
Terminations are matt tin plated copper leadframe.

Performance Data

Test		Maximum
Load at rated power: 2000 hours at rated power	$\pm\Delta R\%$	1
Short term overload: lesser of $2 \times P_r$ or $1.5 \times \text{LEV}$ for 5s	$\pm\Delta R\%$	0.3
High temperature exposure: MIL-STD-202 method 108, 175°C for 1000 hours, no load	$\pm\Delta R\%$	0.25
Temperature cycling: JESD22 method JA104, -65 to +150°C, 100 cycles	$\pm\Delta R\%$	0.3
Biased humidity: MIL-STD-202 method 103, 85°C, 85%RH, 1000 hours, 10% of P_r	$\pm\Delta R\%$	0.5
Moisture resistance: MIL-STD-202 method 106, 10 cycles, 24 hours	$\pm\Delta R\%$	0.5
Mechanical shock: MIL-STD-202 method 213	$\pm\Delta R\%$	0.5
Vibration: MIL-STD-202 method 204, 20g peak, 12 cycles x 3 orientations, 10 to 2000Hz	$\pm\Delta R\%$	0.2
Bending strength: AEC-Q200-005, 2mm for 60s	$\pm\Delta R\%$	0.25
Terminal strength: AEC-Q200-006, 2.4N for 60s	$\pm\Delta R\%$	0.2
ESD: AEC-Q200-002, human body model, 25kV, air discharge	$\pm\Delta R\%$	1
Resistance to solder heat: JIS-C-5201-1 4.18, IEC 60115-1 4.18, 260 $\pm 5^\circ\text{C}$ for 10s	$\pm\Delta R\%$	0.5
Solderability: J-STD-002		$\geq 90\%$ coverage

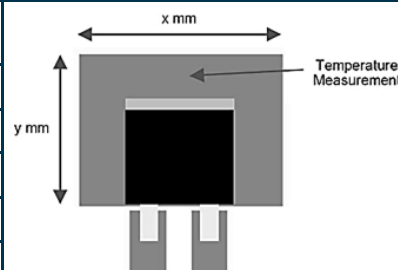
Thermal, Pulse & HF Data

Temperature Derating



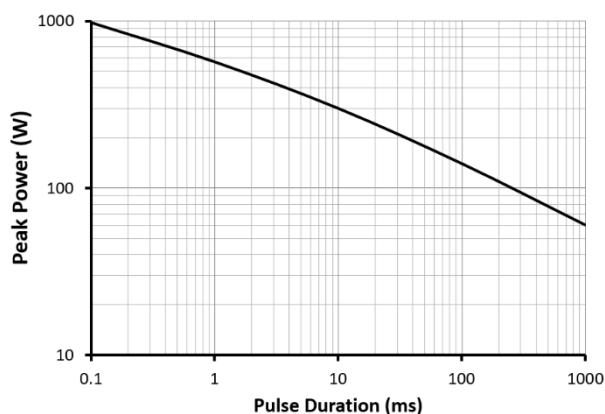
Typical Thermal Performance on FR4 Pad Heatsink

Dimensions		$P_{90^\circ\text{C}, 35\mu\text{m}}$ (W)
x	y	
50	40	4.5
45	35	4
40	30	3.5
35	25	3
20	10	2



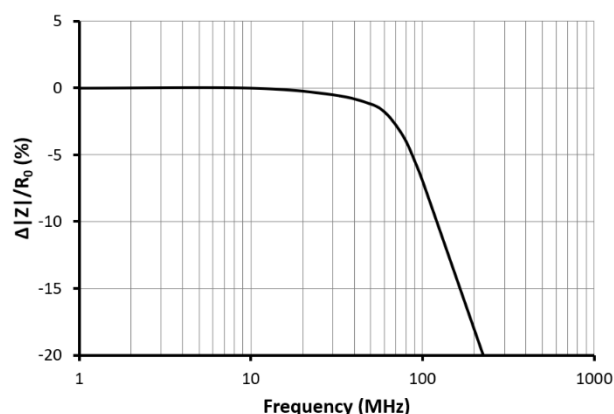
Characterisation was carried out using a 35 μm PCB copper pad weight, with a temperature of 90°C used as a maximum reference on the PCB. $P_{90^\circ\text{C}, 35\mu\text{m}}$ is the power when the measurement point reaches 90°C.

Pulse Performance



Pulse performance for durations >1s depends on mounting conditions.

Typical High Frequency Performance



Typical high frequency characteristics for WSMHP35-220R. Self-resonant frequency is 1GHz.

General Note

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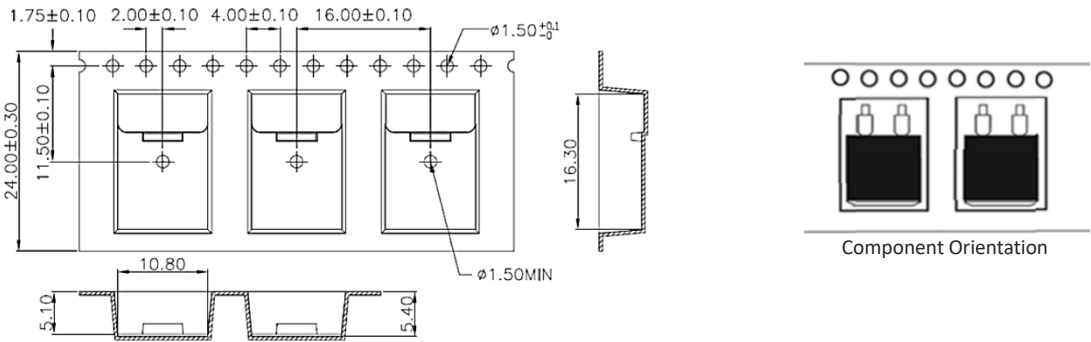
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Surface Mount High Power Resistors

WSMHP Series

Packing

WSMHP resistors are packed on 330mm diameter reels with 99mm inner diameter, in tape of width 24mm and with a quantity of 500 pieces per reel. The dimensions of the tape and orientation of the component are as shown below.



Ordering Procedure

Example: WSMHP35-10KJ (WSMHP35, 10 kilohms ±5%, Pb-free)

W	S	M	H	P	3	5	-	1	0	K		J
1						2				3		

1 Type	2 Value	3 Tolerance	Termination & Packing
WSMHP20	E24 = 3 / 4 characters	F = ±1%	Pb-free, tape & reel, 500/reel
WSMHP25	R = ohms	J = ±5%	
WSMHP35	K = kilohms		