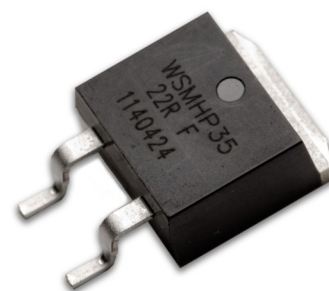


Surface Mount High Power Resistors

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 (RoHS3)

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 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.

Terminations

Terminations are matt tin plated copper leadframe.

General Note

TT Electronics reserves the right to make changes in product specification without notice or liability.
All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

BI Technologies IRC Welwyn

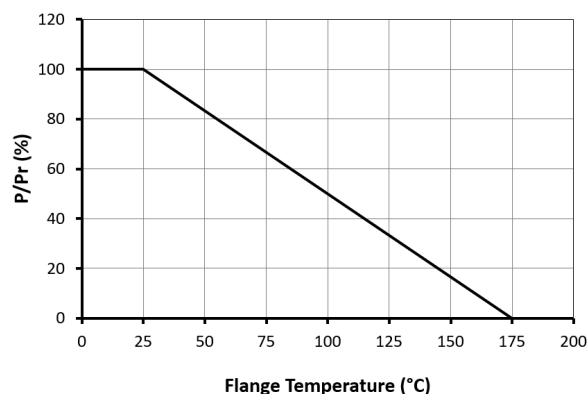
www.ttelectronics.com/resistors

Performance Data

Test		Maximum
Load at rated power: 2000 hours at rated power	$\pm\Delta R\%$	1
Short term overload: lesser of 2 x P _r or 1.5 x 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, 270 $\pm 5^\circ\text{C}$ for 3s		$\geq 90\%$ coverage

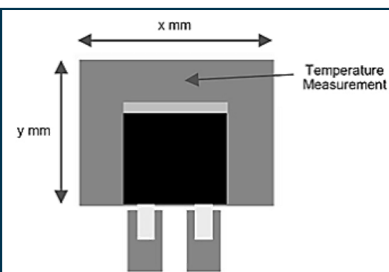
Thermal, Pulse & HF Data

Temperature Derating



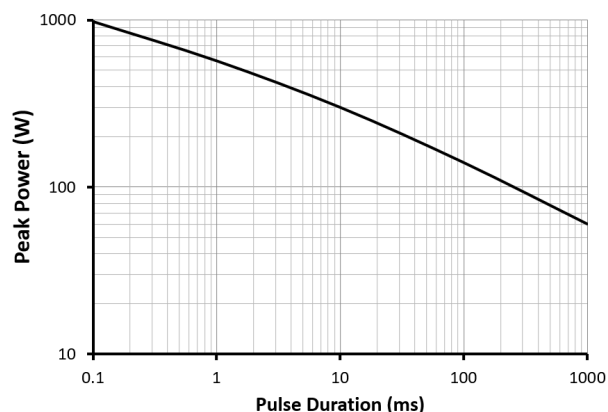
Typical Thermal Performance on FR4 Pad Heatsink

Dimensions		P _{90°C, 35μm} (W)
x	y	
50	40	4.5
45	35	4
40	30	3.5
35	25	3
20	10	2



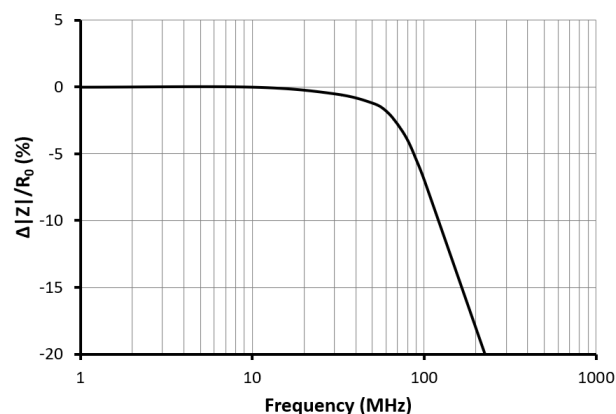
Characterisation was carried out using a 35μm PCB copper pad weight, with a temperature of 90°C used as a maximum reference on the PCB. P_{90°C, 35μm} is the power when the measurement point reaches 90°C.

Pulse Performance



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

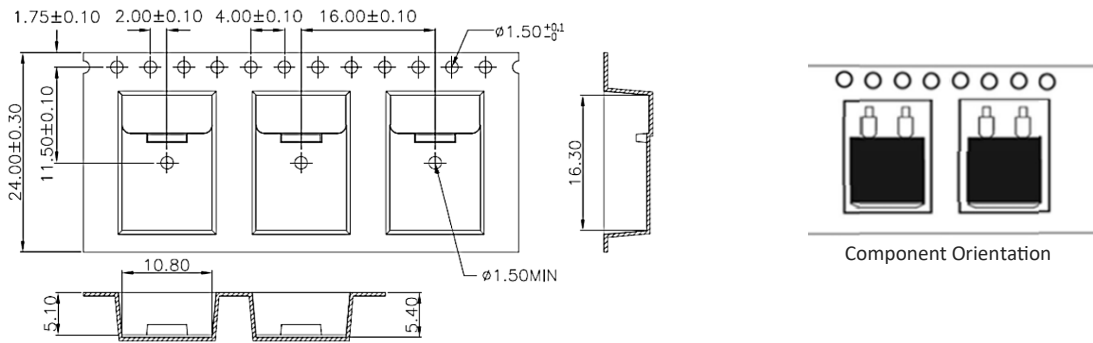
Typical High Frequency Performance



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

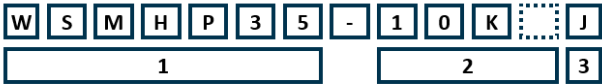
Packing

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)



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		