

### 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	$\Omega$	R50 to 100K		
Resistance tolerance	%	1, 5		
TCR 25 to 105°C	ppm/°C	1R0 to 10R: $\pm 100$ , >10R: $\pm 50$		
Standard values		E24 preferred		
Insulation resistance between terminals and flange	$\Omega$	>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			<b>Recommended Pad Layout</b> 
A	10.1 $\pm 0.3$		
B	10.1 $\pm 0.3$		
C	4.6 $\pm 0.2$		
D	5 $\pm 1$		
E	1.27 $\pm 0.3$		
F	2.54 $\pm 0.5$		
G	3.2 $\pm 0.2$		
H	0.51 $\pm 0.15$		
J	0.88 $\pm 0.12$		
K	1.32 $\pm 0.15$		
L	5.08 $\pm 0.1$		
M	1.32 $\pm 0.14$		
O	1.5 $\pm 0.5$		
Q	6.9 $\pm 0.3$		
T	6 $\pm 1$		
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

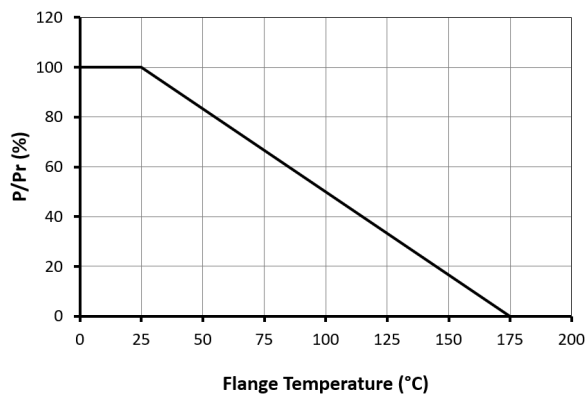
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### Performance Data

Test		Maximum
Load at rated power: 2000 hours at rated power	$\pm\Delta R\%$	1
Short term overload: lesser of 2 x P <sub>r</sub> 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 <sub>r</sub>	$\pm\Delta R\%$	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°C for 10s	$\pm\Delta R\%$	0.5
Solderability: J-STD-002, 270 $\pm$ 5°C for 3s		$\geq 90\%$ coverage

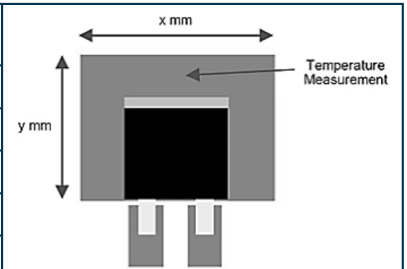
### Thermal, Pulse & HF Data

#### Temperature Derating



#### Typical Thermal Performance on FR4 Pad Heatsink

Dimensions		P <sub>90°C, 35μm</sub> (W)
x	y	
50	40	4.5
45	35	4
40	30	3.5
35	25	3
20	10	2



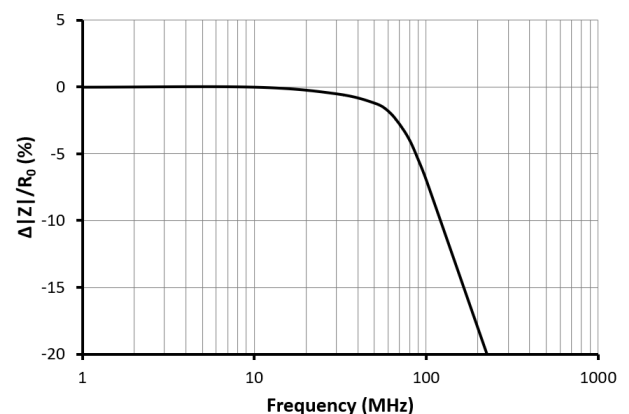
Characterisation was carried out using a 35μm PCB copper pad weight, with a temperature of 90°C used as a maximum reference on the PCB. P<sub>90°C, 35μm</sub> is the power when the measurement point reaches 90°C.

#### Pulse Performance



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

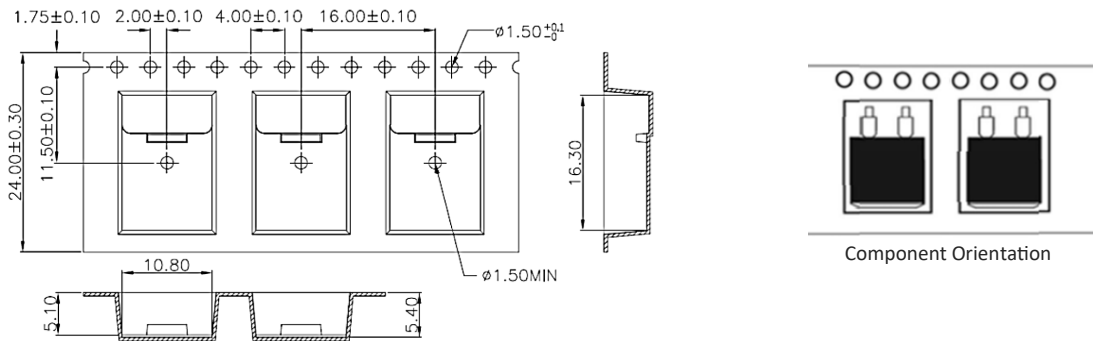
#### Typical High Frequency Performance



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

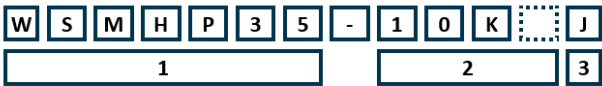
Packing

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		