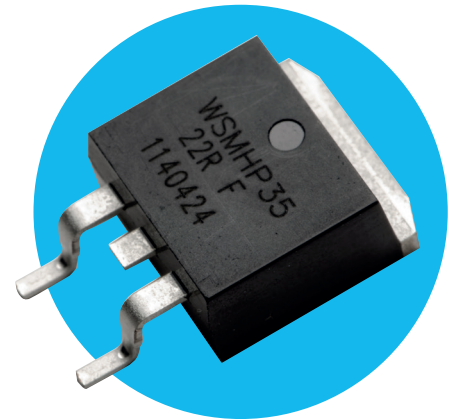


## Surface Mount High Power Resistors

### WSMHP Series

- TO-263 surface mount package
- Very low thermal resistance
- 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	Conditions
Power rating	watts	20	25	35	Heatsink with 25°C flange temperature
Power rating	watts	2.5			Without heatsink
Thermal resistance	°C/W	3.3			Resistor hotspot to flange
Limiting element voltage	volts	500			dc or ac rms
Resistance range	ohms	0R5 – 100K			
Dielectric strength	volts	2000			dc for 60s
Working temperature range	°C	-55 to 175			
Insulation resistance	ohms	>10G			Between terminals and tab
Tolerances	%	≤1R0: ±5 >1R0: ±1, ±5			
TCR	ppm/°C	≤3R0: ±300 >3R0-10R: ±100 >10R: ±50			25 to 105°C
Standard values		E24 preferred			

### Physical Data

Dimensions (mm) & Weight (g)	
A	10.1 ±0.3
B	10.1 ±0.3
C	4.6 ±0.2
D	5.0 ±1
E	1.27 ±0.3
F	2.54 ±0.5
G	3.2 ±0.2
H	0.43 ±0.07
J	0.88 ±0.12
K	1.32 ±0.15
L	5.08 ±0.1
M	1.35 ±0.1
O	1.5 ±0.5
P	2.54 ±0.1
Q	6.9 ±0.3
T	6.0 ±1
Wt	1.5 nom.

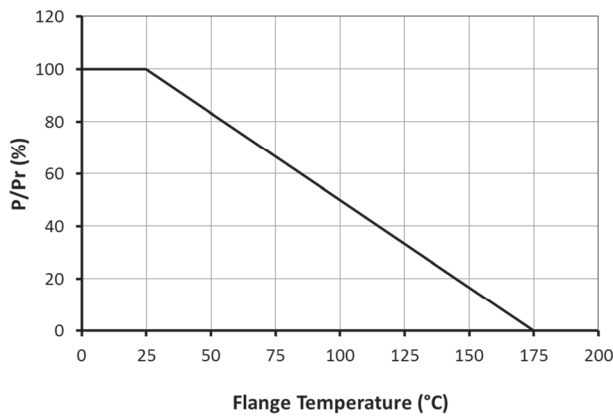
#### General Note

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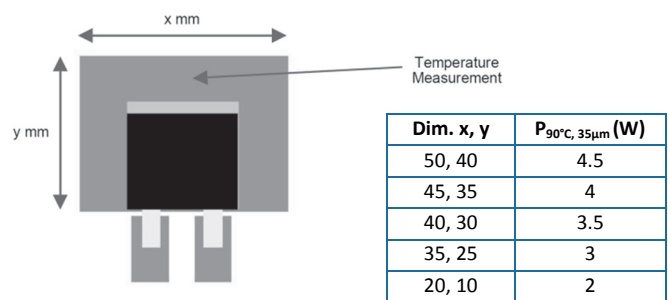
## Performance Data

Test		Performance
<b>Load at Rated Power:</b> 2000hrs at rated power	±ΔR%	1
<b>Short Term Overload:</b> 2 x rated power with applied voltage not to exceed 1.5 x maximum continuous operating voltage for 5 seconds	±ΔR%	0.3
<b>High Temperature Exposure:</b> MIL-STD-202 method 108, at 175°C for 1000hrs, no load	±ΔR%	0.25
<b>Temperature Cycling:</b> JESD22 method JA-104, -55°C/175°C, 1000cycles	±ΔR%	0.3
<b>Biased Humidity:</b> MIL-STD-202 method 103, 1000hrs 85°C/85% RH, 10% of operating power	±ΔR%	0.5
<b>Mechanical Shock:</b> MIL-STD-202 method 213	±ΔR%	0.5
<b>Vibration:</b> MIL-STD-202 method 204, peak acceleration 5g for 20min, 12 cycles each of 3 orientations, 10-2000Hz	±ΔR%	0.2
<b>Resistance to Soldering Heat:</b> JIS-C-5201-1 4.18 IEC 60115-1 4.18, 260±5°C for 10 seconds	±ΔR%	0.5
<b>HBM ESD:</b> AEC-Q200-002, human body 25kV (AD)	±ΔR%	1
<b>Solderability:</b> J-STD-002, 240±5°C for 3 seconds		≥90% coverage
<b>Moisture Resistance:</b> MIL-STD-202 method 106, 10 cycles, 24hours	±ΔR%	0.5
<b>Bending Strength:</b> AEC-Q200-005, Bending 2mm for 60 seconds	±ΔR%	0.25
<b>Terminal Strength:</b> AEC-Q200-006, 1.8Kg for 60 seconds	±ΔR%	0.2

Temperature Derating



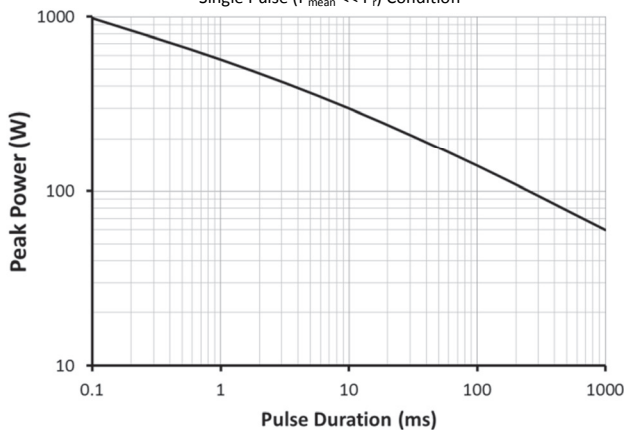
Typical Thermal Performance on FR4 Pad Heatsink



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

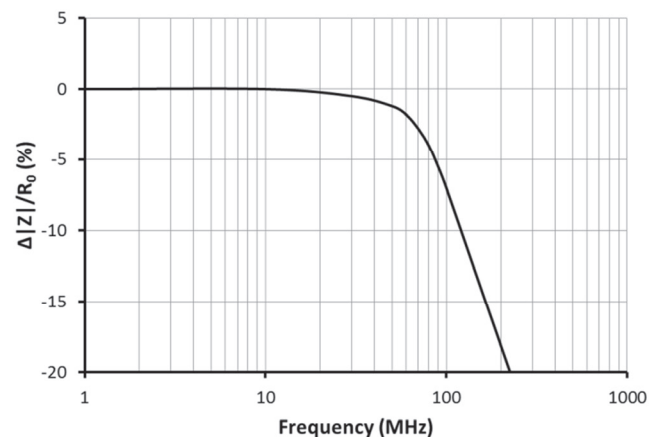
Pulse Performance

Single Pulse (P<sub>mean</sub> << P<sub>r</sub>) Condition



Pulse performance for durations ≥1s is dependent on mounting conditions. The short term overload power limit is 2 x power rating for 5s.

Typical High Frequency Performance



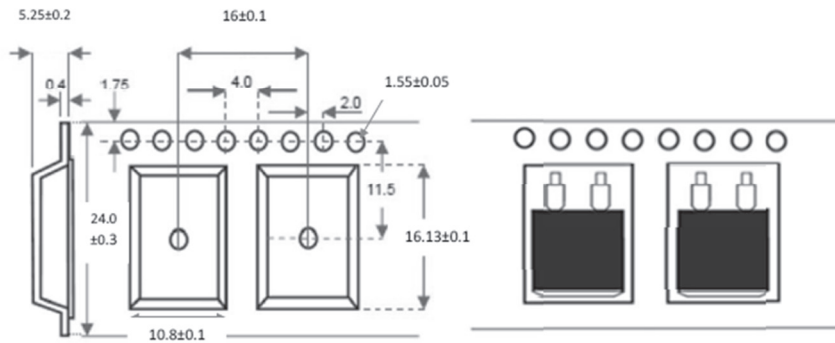
Typical high frequency characteristics for WSMHP35-220R. Self resonant frequency is 1GHz.

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## Packing

WSMHP components are packed on 330mm diameter reels, with 100mm 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 at 10 kilohms ±5%, Pb-free)



1	2	3	4	Packing
Type	Rating	Value	Tolerance	
WSMHP	20	3 / 4 characters R = ohms K = kilohms	F = ±1%	Plastic tape 500/reel
	25		J = ±5%	
	35			

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[WSMHP35-51RF](#) [WSMHP20-47RJ](#) [WSMHP25-130RJ](#) [WSMHP35-7R5J](#) [WSMHP35-47RJ](#) [WSMHP20-100RJ](#)  
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[WSMHP25-5R0F](#) [WSMHP35-2R5F](#) [WSMHP25-25RF](#) [WSMHP20-01RJ](#) [WSMHP35-300RF](#) [WSMHP35-30RF](#)  
[WSMHP25-0R5J](#) [WSMHP35-02RF](#) [WSMHP35-3R3F](#) [WSMHP35-150RJ](#) [WSMHP25-12RF](#) [WSMHP35-3K3F](#)  
[WSMHP35-1K2F](#) [WSMHP25-39KF](#) [WSMHP35-30RJ](#)