OHMITE INCREASE POWER RATINGS AND DECREASE THERMAL MANAGEMENT REQUIREMENTS

New TO247 resistor has a 100W rating and New heatsink design saves time and money

Ever aware that the threat of high temperatures caused by pushing boundaries will result in serious malfunction and damage, Ohmite's engineers have spent some time investigating ways in which they can a) improve thermal management which, in turn, leads to the improved performance of their products.

Knowing that thermal management is an important part of environmental care, and that anything which doesn't require the use of electricity in order to maintain acceptable temperatures is likely to be welcomed by design engineers, Ohmite have developed a range of heatsinks which not only meet these requirements, but also save time and money.

Consequently, the new, fully tested heatsink design has enabled Ohmite to push the power ratings of their TO-247 resistors to new levels, resulting in the new TEH100 which is rated at 100W at a 25ºC case temperature.

Ideally suited to power supply applications, the thick film, non-inductive power resistor is totally encapsulated and insulated and attaches to the heatsink with a simple, single screw mounting. Environmental issues are addressed by the totally moulded housing.

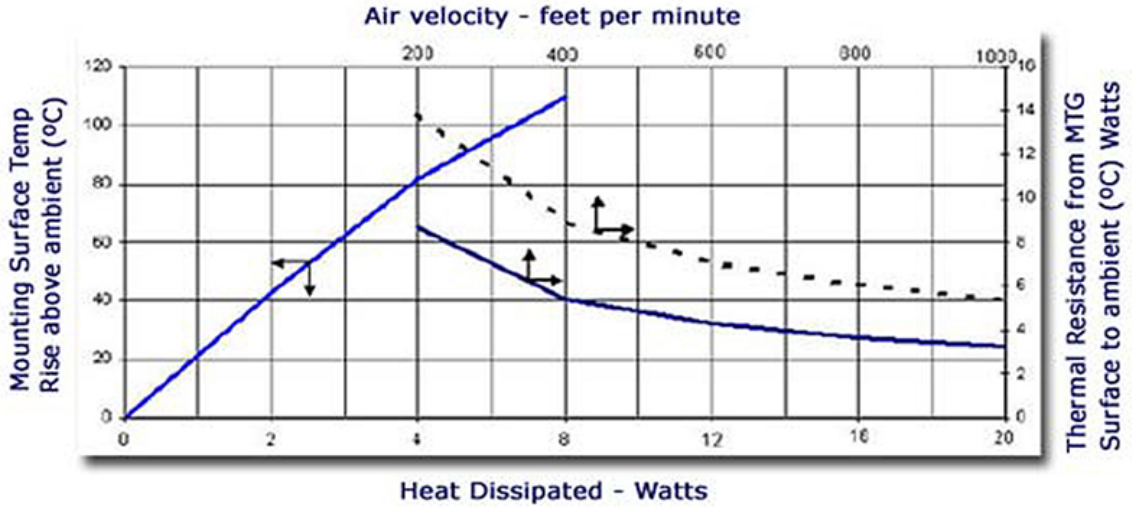
The TEH100 has a maximum working voltage of 350V and is available in stock resistance ranges of 0.05Ω to 1MΩ. Resistance tolerances are ±1%, ±2%, ±5%, ±10% and the linear derating is 100% at 25°C to 0% at 175°C.

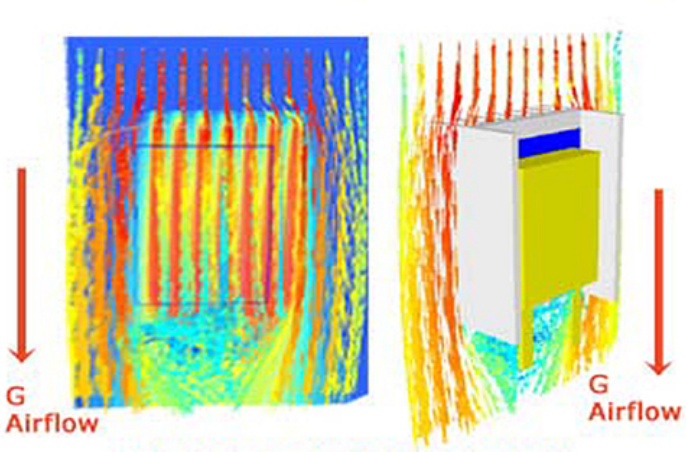
Ohmite's new heatsinks have been specifically designed for use with TO-220 and TO-247 packages, including Ohmite's own TAH20, TBH25, TCH35, TEH70, TEH100, TK20 and TN15 power resistors. They feature an integrated clip for securing the component to the heatsink without the need of a screw which saves time, money and potential damage.

Pressure is directed on to the center of the heat dissipating device, maximising the efficient transfer of heat and avoiding the cantilever effect which can result from over torqueing the screw in conventional designs. The torsion spring clip also has solderable feet to secure the assembly to the PCB.

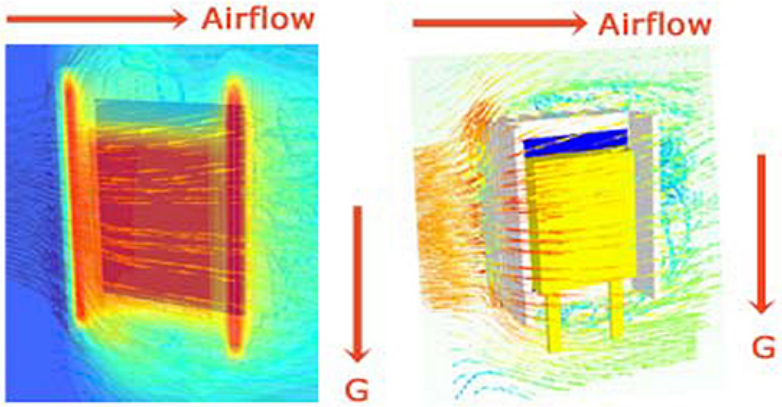
Among the many advantages to this design are the reduced labour cost of assembly. The spring clips make mounting holes, screws, and fasteners obsolete in the assembly process. The spring coil also provides superior performance under shock and vibration. Light weight and resilient, the spring clip can absorb energy as it locks the electronic component in place. Since no screw hole needs to be tapped, stray metal particles are eliminated as is the possibility of an accidental short circuit resulting from their presence.

Ohmite plans to release a number of derivative heatsink products based on this design over the next few months including dual, ganged, and SMD versions.

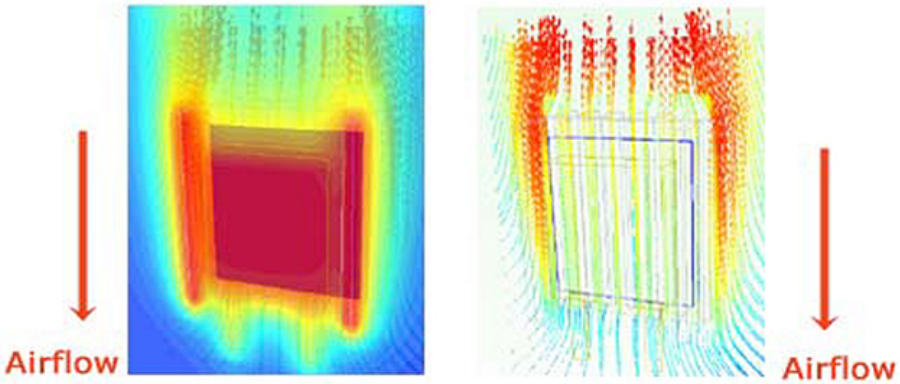




Option 1 Air flow direction

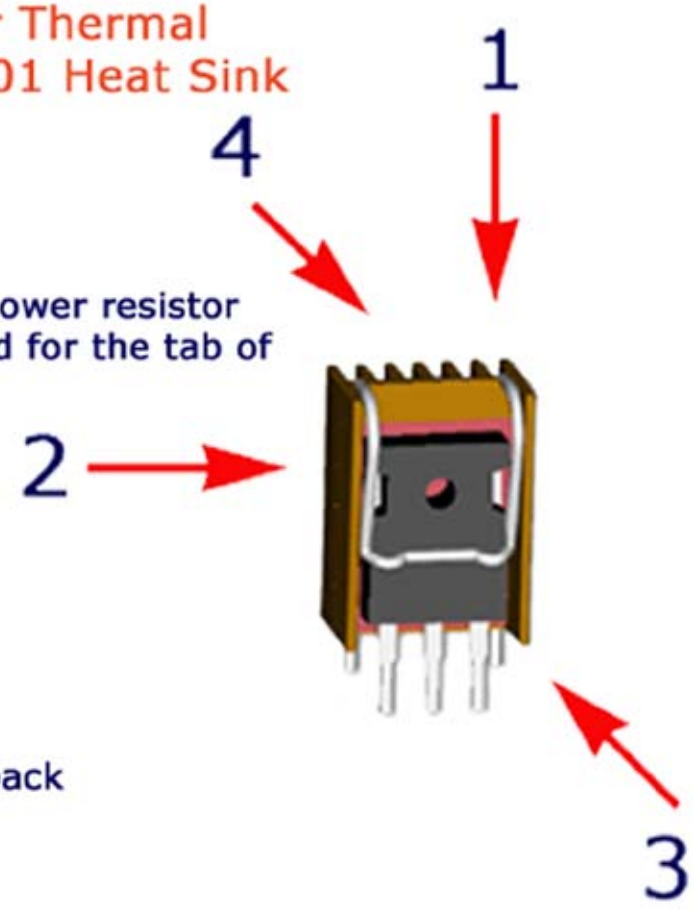


Option 2 Air flow direction



Natural Convection

Thermal Analysis/Test Report
100W TO-247 Power Resistor Thermal Performance with WVT247-101 Heat Sink



Materials:
(1) Aluminum 6061-T6 for heat sink
(2) Sil-Pad 950 for the insulator
(3) Semiconductor grade epoxy for power resistor housing and copper with nickel plated for the tab of the resistor.

Environmental Conditions:
(1) Ambient temperature: 25 ºC
(2) Sea level Atmosphere: 1 atm
(3) Standard Gravity: 9.8 m/s2

Air Direction Options:
1) Parallel with fins
2) From side to side of the heatsink
3) Perpendicular to device from the back

Analysis Data							
Power (W)	0	2	4	8	12	16	20
Air Velocity (Feet per Min)	0		200	400	600	800	1000
Mounting Surface Temp (ºC) (Forced air/Option 1)	0		55.1	63.1	70.1	75.9	80.8
Mounting Surface Temp (ºC) (Forced air/Option 2)	0		77.2	97.3	111.6	122.9	132.6
Mounting Surface Temp (ºC) (Free air)	0	59.7	92.6	122.2			
Mounting Surface Temp Rise above Ambient (ºC)	0		30.1	38.1	45.1	50.9	58.8
	0		52.2	72.3	86.6	97.8	104.6
	0	34.7	67.6	97.2			
Thermal resistance from MTG Surface to Ambient (ºC/W)	0		7.53	4.76	3.76	3.18	2.79
			13.05	9.04	7.22	6.11	5.38
		17.4	16.9	12.2			