

High Power Product Application Notes

Barry products are specifically designed for high power RF and microwave applications. The following factors are critical for proper device operation.

Heat Sink Characteristics: The primary thermal transfer mechanism for these devices is conduction through the mounting flange. The derating curve for each device shows the effect of elevated temperature on power handling capability. It is imperative that the heat sink be designed to maintain the design temperature while accepting the power dissipated by the device.

Circuit Construction: The electrical performance of these resistive products can vary significantly depending upon the parameters of the stripline or microstrip circuitry to which they are connected. Barry Industries has extensive experience in the design of high frequency circuits in many media and can provide assistance if desired.

Mounting Method: The use of a thermal conducting compound or preform between the mounting flange and the heat sink surface is strongly recommended. This greatly decreases the thermal resistance and therefore, the film temperature of the device. Make sure that the devices are mounted on flat surfaces, .001" under the device, to optimize the heat transfer. Drill and tap the heat sink for the appropriate thread size to be used. Position device on mounting surface and secure using socket head screws, flat and split washers. Torque screws to the appropriate value. Make sure that the device is flat against the heat sink. Care should be taken to avoid upward pressure of the leads. Form leads to allow a small strain relief and solder leads in place using a 60/40 type solder with a temperature controlled soldering iron (210°C). Keep lead length as short as possible for RF applications. Use minimal amounts of flux and remove with solvent.

Film Temperature: As power is dissipated in the resistive film, its temperature increases until thermal equilibrium is reached. Excessive film temperature is the principal cause of device failure. Maintaining the temperature at the bottom of the flange, at or below the rated value, will ensure that the film temperature is maintained at an acceptable value.

Suggested tightening torque values for stainless steel fasteners, values are in Nm and in pound inches.

Size	8.8
M2	.33
M3	1.17
M4	2.74
M5	5.49
M6	9.38

Screw Size	18-8 Cres.
.086-56	2.5
.112-40	5.2
.138-32	9.6
.164-32	19.8
.190-32	31.7

