



## **Application Note For High Power Loads:**

- LR010A
- LR010B
- LR010C
- LR010D

### **1. Heat Sink Requirement**

Additional heat sink is required for LR010A, LR010B, LR010C, LR010D (10 Watt load). The maximum temperature of 175°C is allowed for the internal high power load resistor. The following equation is used to calculate the thermal dissipation of the heat sink

$$175\text{ }^{\circ}\text{C} = T_{\text{amb}}\text{ }(^{\circ}\text{C}) + P_0\text{ (W)} R_{\text{th}}\text{ }(^{\circ}\text{C/W})$$

For 85 °C ambient temperature and 100 W power dissipation, the maximum thermal resistance of the required heat sink will be

$$R_{\text{th}}\text{ }(^{\circ}\text{C/W}) = (175 - 85)/100 = 0.9\text{ }(^{\circ}\text{C/W})$$

In order to have such low thermal resistance, the thermal compound is necessary between the bottom of the load and the heat sink. The forced air may be used to further decrease the thermal resistance, especially there is a limited room for the placement of the heat sink.

### **2. Load Installation**

Materials Needed:

- 4 pieces #2-56 3/4" mounting screws;
- 4 pieces washers for the mounting screws;
- Thermal Compound

Tap 4 mounting holes with the depth of 0.250" on the heat sink. Make sure the location is correct so that the SMA connector of the load can be accessed easily. Apply the thermal compound on the bottom of the heat sink. Use the correct torque to mount the load on the heat sink.

For forced air thermal dissipation enhancement, the fan can be mounted on the opposite side of the heat sink so that the forced air can directly blow on bottom of side of the heat sink.

### **3. Existing Heat Sink for Power Amplifier**

For existing heat sink such as power amplifier applications, the additional heat sink may not required if the load is used for the combiner load. The load can be directly mounted on the heat sink assuming the heat sink is sufficient for the total DC power dissipation of the PA.

### **4. Connecting to the External Components**

No more than 8 inch-lb torque wrench shall be used to connect external cable to the SMA connector on the Load. Torque wrench with 5 ~ 6 inch-lb coupling torque setting is highly recommended, like Agilent 8710-1582 (5 inch-lb).