Infrared Materials
The Leader in High Performance IR Detectors

HANDLING PRECAUTIONS FOR PACKAGED INFRARED DETECTORS

1. CLEANING: Clean the package window with a 50/50 mixture of isopropyl alcohol and water. Either rinse package gently, or use light strokes with a cotton tipped applicator. Care must be taken to avoid using excessive pressure on the window as you may destroy the hermetic seal. Do not use acetone or halogenated solvents. NEVER use an ULTRASONIC CLEANER to clean detectors or detector assemblies.

2. THERMOELECTRIC (T.E.) COOLER PRECAUTIONS: The following precautions apply to devices equipped with T.E. coolers:

• A heat sink MUST ALWAYS BE USED to remove the heat generated by the cooler. The ambient temperature of the detector package base directly limits the maximum cooling that can be achieved at the detector. Heat sinks that use some combination of conduction, convection, and radiation should be used.

• The heat sink must interface the TO-package base and not the circumference of the cap.

• The use of a thermal compound between the base of the device and the heat sink is essential. Paste compounds provide superior heat transfer compared with pre-formed pads.

• Do not operate the cooler in reverse polarity. (This can result in a cooler heating, which can lead to melting of the low temperature alloys of the T.E.

cooler). Improper heat sinking or overdriving of the T.E. cooler can also destroy the detector.

• The operating voltage and current shown in the Test Data Sheet reflect optimum cooling conditions, using a +25°C heat sink. Operation at a heat sink temperature other than +25°C may require a different optimum power value. Operation of the T.E. cooler beyond a critical current value will result in less net cooling, because the Joule heating is increasing at a faster rate than the Peltier cooling. If a closed loop temperature controller is used, take care not to over-drive the cooler.

3. DETECTOR POWER DISSIPATION: Detectors are typically biased with a series load resistor, and can be destroyed by excessive bias current. The recommended bias voltage should not be exceeded.

4. ESD SENSITIVITY: Photo detectors 1x1mm in area or larger are not particularly sensitive to Electro-Static Discharge. However, the same cautions should be taken as in handling other electronic components. Detectors are not immune to ESD damage. Detectors smaller than 1x1mm in area are quite vulnerable to ESD damage and full ESD precautions should be taken at all times when handling small area detectors or detector arrays

5. THERMISTOR POWER DISSIPATION: The standard thermistors used by Infrared Materials have high negative temperature coefficients. The power to these thermistors should not exceed 15 milliwatts. Accurate temperature readings require low and constant power to the thermistors.

6. SOLDERING: The same limitations apply as for soldering transistors. When hand soldering observe the following precautions:

• Use a low wattage microelectronic soldering iron.

• Use heat sink clips or pliers on lead wires between solder joint and base of package. If heat sinking is not possible then use minimum soldering iron tip temperature and time to form solder joint.

• DO NOT BEND leads at sharp angles near base of package as this may damage the hermetic seals.

• Clean properly as required after soldering (See Section 1).

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