

Precautions when using LED's

In addition to the standard procedures for semiconductors which should be observed when using LED's the following measures should also be taken into consideration when using LED lamps.

Temperature Stress

Control must be exercised over the soldering time/temperature to avoid heat stress. The epoxy resin body may have a Tg as low as 100°C and excessive temperatures will cause the resin to soften, this may result in damage to the internal bond wire.

In plastic LED packages the LED chip is generally mounted directly on the lead frame. This provides a direct thermal path to the chip and excessive soldering temperatures may cause heat stress to the LED die resulting in catastrophic failure or premature degradation.

It is recommended that wherever possible that the LED is mounted "stood off" the PCB surface to assist cooling particularly, in high density LED arrays.

Mechanical Stress

With the LED chip mounted directly onto the lead frame excessive forces can cause mechanical stress to the LED die resulting in catastrophic failure or premature degradation.

Lead forming should be carried out prior to soldering with the LED supported during forming and cutting operations.

When using auto insertion equipment for the placement of LED's care should be taken to the machinery set up to ensure that mechanical stresses are minimised.

Cleaning

Care should be taken with respect to the use of safe cleaning solvents for LED lamps. Solvents formulated with trichloroethylene can affect some epoxy types and should be avoided.

Solvents which contain acetone should not be used.

Potting or Encapsulation

Care should be taken when encapsulating LEDs using potting compounds. Specifications should be carefully checked to ensure that compounds are compatible with LED package materials to avoid adverse chemical reactions between material types.