



# Mounting Considerations for Vishay Through-Hole TO Packages

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## DEVICE MOUNTING CONSIDERATIONS

Failure (body cracks) caused by mechanical stress during device mounting are common in plastic semiconductor through-hole packages

The aim of this document is to suggest a few good practices for the mounting of through-hole packages. It is important to minimize any mechanical stress effects to the device by applying the optimum screw mounting torque

Vishay through-hole devices are intended to be mounted by screws and flat washers, as shown in the following picture

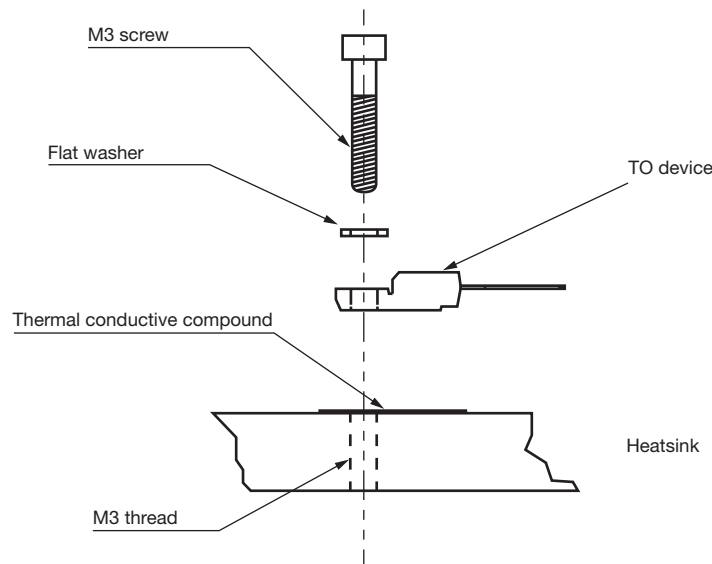


Fig. 1

The recommended mounting torque - using the assembly above - is provided in a component's datasheet.

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Following are the minimum precautions necessary to avoid inducing stress and damage to the device:

- Fasten the device to the heatsink before soldering the leads to avoid stress to the leads
- A flat washer for spreading the pressure must be used. The M3 screw head must not press directly onto the device's body. Ensure that the washer does not damage the plastic body of the package during the mounting process
- To avoid stress to the device and poor contact between the device and heatsink, care must be taken with the mounting hole. Punched mounting holes must be avoided, because they may not guarantee proper surface flatness and may lead to device deformation and consequent body cracks when mounting torque is applied
- When drilled mounting holes are used, surface clean up to remove burrs is essential. To prevent body deformation, a large countersink must be avoided or reduced to the smallest size possible (see Fig. 2)
- The recommended maximum mounting hole diameter (including countersink) is not to exceed 3.6 mm

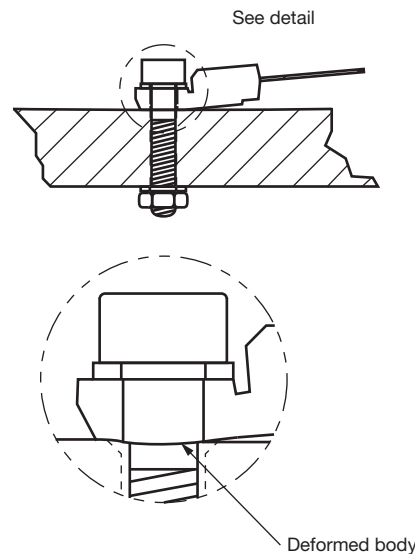


Fig. 2

- Make sure the contact surfaces of the heatsink and washer are free of burrs, flat, and clean
- Use thermal conductive compound (thermal paste) between the contact surfaces to eliminate any air gaps and improve the contact

### HEATSINK RECOMMENDED SPECIFICATION

- The contact surface of the heatsink must be flat, with a recommended tolerance of 16  $\mu\text{m}$  (reference length 0.8 in) and a surface roughness of < 0.02 mm (< 0.79 mil)
- The heat sink mounting surface must be clean, with no corrosion or oxides surface. It is very important to keep the mounting surface free from particles, scratches, and burrs

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### BENDING AND CUTTING LEADS

Leads bending must be done carefully.

Following are the minimum precautions to be taken to avoid inducing stresses and damages to the device:

1. Never clamp the plastic package, but the leads only.
2. When clamping the leads, they must be clamped between the device body and the bending point (Fig. 3)

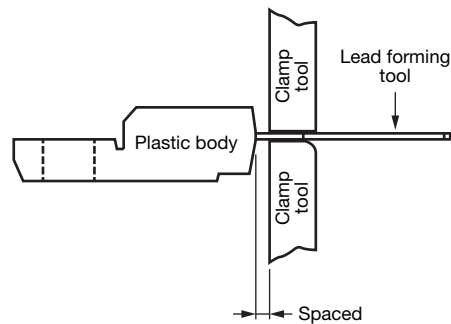


Fig. 3

3. Leads should be bent at a minimum distance of 5.0 mm from the diode body (Fig. 4)

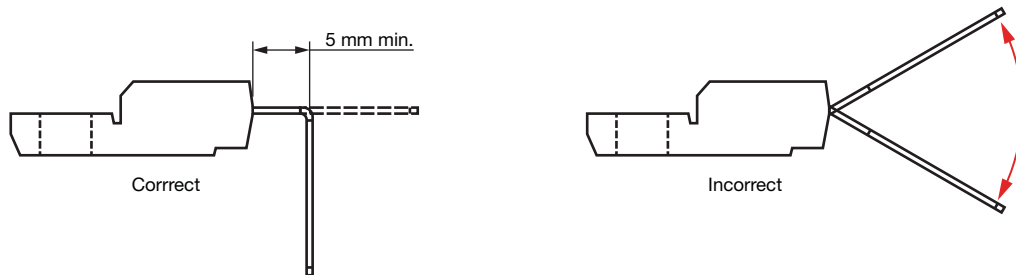


Fig. 4

4. To avoid breaking / fractures of the leads, never bend the leads more than 90° and L with a radius smaller than the terminal thickness (Fig. 5)

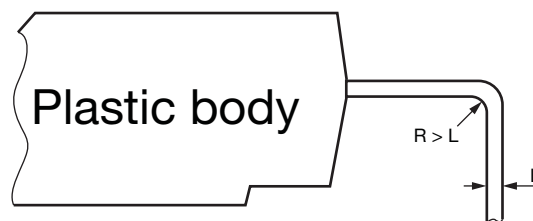


Fig. 5

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5. Lateral bending of the terminal is not allowed (Fig. 6)

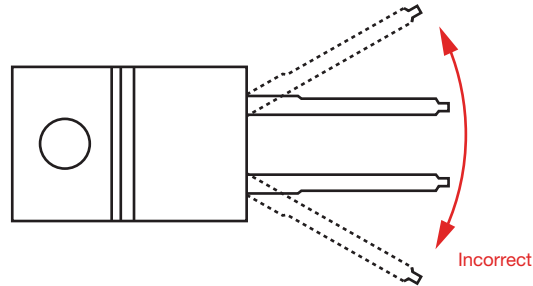


Fig. 6

6. Leads should never be bent more than once

It is important to minimize strain during lead bending.

If the package / lead interface is strained, the resistance to humidity could be compromised and mechanical stress could be induced to the silicon chip. Any damage may affect the reliability of the devices.