



Mounting Instructions for DO-205AA, DO-205AB, DO-205AC, and B-8 Stud Diodes

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This application note introduces Vishay's DO-205AA (DO-8), DO-205AB (DO-9), DO-205AC (DO-30), and B-8 stud diodes and provides instructions for mounting them to a heat sink.

INTRODUCTION

Vishay's DO-205AA (DO-8), DO-205AB (DO-9), DO-205AC (DO-30), and B-8 stud diodes are distinguished by these key features:

- Stud cathode and stud anode
- Through-hole, non-isolated device
- High surge current capability and wide current range

Important factors in the assembly process are:

- Heat sink design
- Distance from adjacent heating parts

HEAT SINK SPECIFICATIONS

The contact surface of the heat sink must be flat, with a recommended tolerance of < 0.03 mm (< 1.18 mils) and a levelling depth (surface roughness) of < 0.02 mm (< 0.79 mils), according to DIN/ISO 1302. In general, a milled or machined surface is satisfactory if prepared with tools in good working condition. The heat sink mounting surface must be clean, with no dirt, corrosion, or surface oxides. It is very important to keep the mounting surface free from particles exceeding 0.05 mm (2 mils) in thickness.

THERMAL COMPOUND

Apply thermal joint compound on the hex side (mounting interface) of the device surface and heat sink mounting surface prior to mounting. It is necessary to clear out the excess compound from the edges of the contact area with a suitable clearing agent to prevent the dust and particles from causing arc-over. The use of the compound produces a low initial contact resistance that helps it seal out air and moisture, which can help to prevent oxidation or corrosion over the life of the stud. A silicon-based thermal joint compound or petroleum-based thermal joint compound such as Penetrox is the best choice for metal-to-metal joints.

MOUNTING TO HEAT SINK

Considering most heat sinks are stored and will not be used immediately, a cleaning operation is necessary before the mounting. Care must be taken during handling of the devices and heat sinks to prevent any scratches and other imperfections in the mounting interface area. Place a suitable amount of thermal compound on the hex side (mounting interface) of the device surface and heat sink mounting surface, then spread it evenly with a spatula. Thermal grease contact and distribution will be improved during the first hours and after heating up the system for the first time. All mounting holes of the heat sink should be free of burrs. Bolt the stud with a nut and washer to the threaded heat sink hole. Be sure the stud is inserted straight into the threaded hole without forcing it and always use a torque wrench for the stud devices (refer to torque specification in individual datasheet). Any mounting error or exceeding the maximum recommended torque limit may cause the hex base to warp and eventually crack the semiconductor die.



Fig. 1 - Example of DO-205AA (DO-8)



Fig. 2 - Example of DO-205AB (DO-9)



Fig. 3 - Example of (B-8)



Fig. 4 - Example of DO-205AC (DO-30)