Mounting Instructions for Hockey-PUK

Vishay Semiconductors

This application note introduces Vishay´s Hockey-PUK diodes and thyristors and discusses the mounting techniques.

Fig. 1 - Example of Hockey-PUK thyristor

Fig. 2 - Example of Hockey-PUK diodes

INTRODUCTION

Vishay's Hockey-PUK devices are distinguished by the following key features:

- Metal cases with ceramic insulators
- International standard cases (B-43, DO-200AA, DO-200AB, A-24, DO-200AC, TO-200AB, TO-200AC)
- Low-thermal-resistance packages in which the contact of the silicon die is obtained with pressure externally applied by a clamp system.

MOUNTING REQUIREMENT AND ASSEMBLY OPERATION

Care must be taken to neither exceed nor fall short of the specified mounting pressure.

In order to obtain the maximum possible current from a capsule thyristor or diode, double-sided cooling (DSC) is normally used. In this case, the device is clamped between two identical heatsinks. It is also permissible to have single-sided cooling (SSC) only. In the case of DSC, the thermal resistance figures are related to both heatsinks together.

The heatsinks should be mounted so that their cooling fins are parallel to the flow of cooling air, and located near to air inlet so that the air is not preheated by other components.

In order to guarantee good electrical and thermal contact, the contact areas of the heatsinks must be cleaned and metallic bright. The flatness remaining after machining these areas should be 0.001 in per in, and the roughness should be less than 2 µm (80 µin). The contact areas should be coated by a thin layer, 100 µm (0.003 in approx.), of thermal compound, such as Penetrox A or A13.

A pre-calibrated spring type clamp (pictured), which employs either Bellville washers or a flex spring bar, should be used to provide the required clamping force for the specific Hockey PUK. The clamp design should provide an even force to the two mounting surfaces.

APPLICATION NOTE

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A locating pin installed in each heat sink is used to properly position the Hockey-PUK. It is important to keep the two mounting surfaces parallel when installing the clamp.

Example of a Hockey-PUK thyristor heatsink assembly (if it is diodes, could be the same assembly procedure, but without the cable connection with gate)

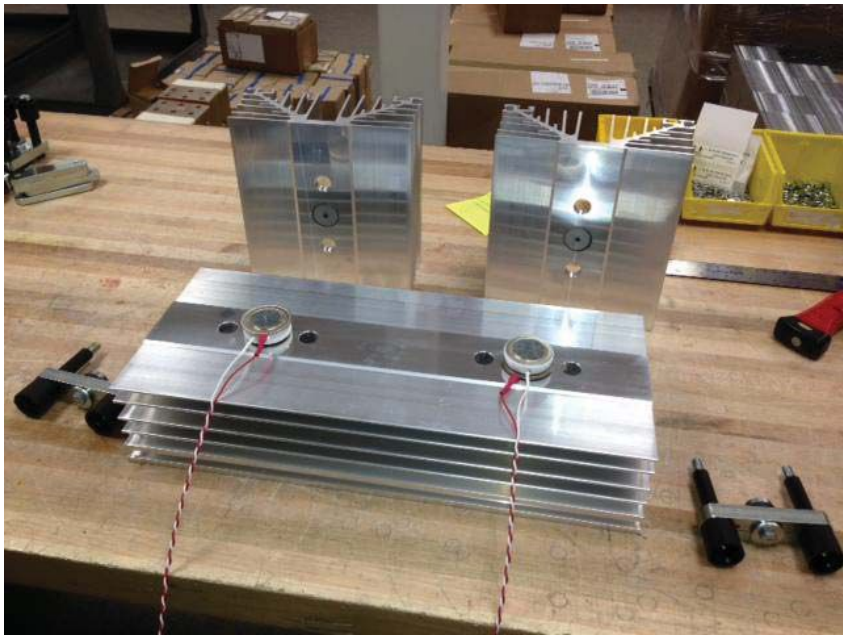

Fig. 3 - Step 1: Clean the surface of the heatsink then put thermal paste on the Hockey PUKs.

Fig. 4 - Step 2: Put the top heatsink on Hockey PUK using centering pins as a guide, and rotate the heatsink back and forth to distribute the paste evenly.

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Fig. 5 - Step 3: Drop the clamp into the top heatsink

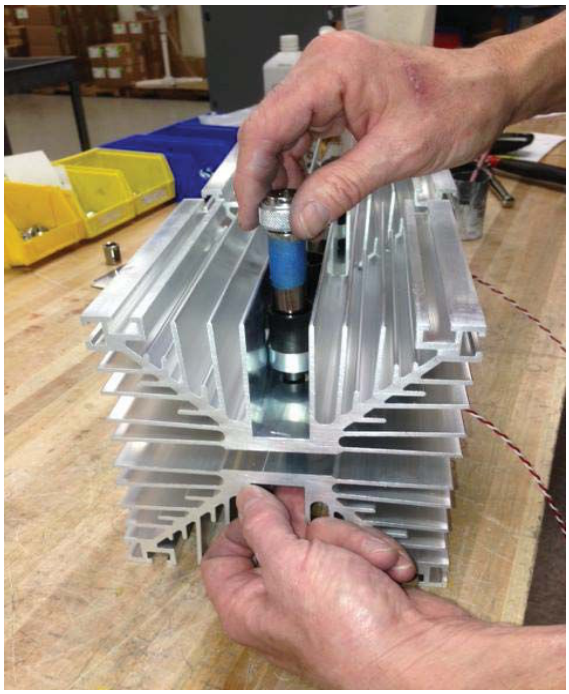

Fig. 6 - Step 4: Insert the bottom clamp bar and hold it with a finger while hand tightening the top clamp bolts. Check or measure to make sure the top and bottom heatsinks are parallel to each other.

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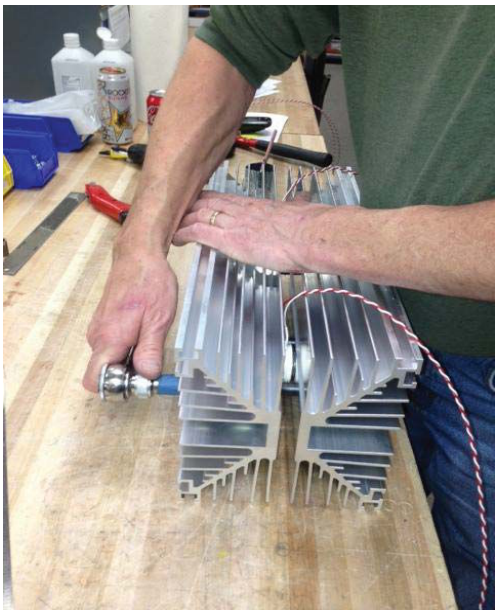

Fig. 7 - Step 5: Rotate the heatsink assembly 90 degrees and hold the top heatsink with one hand, so it does not rotate, while tightening the bolts. Tighten each bolt alternately a quarter turn until the clamp indicator washer spins free (Bellville washer type clamp).
For spring bar type clamps, there is an indicator arm that snaps into place.

Fig. 8 - Step 6: Check to make sure the two mounting surfaces are still parallel. Tighten each bolt a 1/10th turn more.
Do not tighten beyond this point.