



AN-04 LASER DIODES IN THE HHL PACKAGE

The HHL package must be screwed down to the heatsink, which can dissipate the heat generated by the laser and the TE-cooler. The heatsink should be sufficiently cooled so that the baseplate temperature rises no more than 40-45 °C during operation.

The heatsink surface should be machined flat and smooth so that the package base is not bent when the mounting screws are tightened. Screwing the package to a heatsink that is not flat could potentially damage the TE-cooler or other elements inside the package.

We do not recommend using any thermal pad between the laser and the heatsink. A thermal pad can potentially distort the base of the HHL package, causing damage to the elements inside the laser package. Generally, sufficient heat transfer is achieved simply by good contact with a flat heatsink surface, and a thermal pad does not improve it.

Under conditions of very high laser power dissipation or extreme temperature excursions, there can be some benefit to using thermal grease, preferably silver-filled. If thermal grease is used between the package and the heatsink, care must be taken to ensure it does not distort the laser package or damage the laser. When using thermal grease, only a very thin layer of material should be applied. Tighten the fastening screws gently at first, then gradually tighten them over several minutes to allow the excess grease time to squeeze out of the edges.

The laser chip is oriented so that the wide dimension (e.g., 150 μm) is along the X-direction shown below. The narrow dimension (e.g., 1 μm) is along the Y-direction. The light diverges at $\sim 6\text{-}10^\circ$ FWHM (Full Width at Half-Maximum) in the X-direction, and at $\sim 20\text{-}45^\circ$ FWHM in the Y-direction. The output is linearly polarized. For TE-polarized lasers, the electric field vector is along the X-direction.

The laser chip's output facet is < 1.3 mm from the front of the package.

