

CERACON® - Substrate Mounting Application

Due to rigid and brittle nature of Ceracon substrate, proper mounting method needs to be established in order to prevent stress concentration on the substrate which will cause cracking problem. Careful handling of ceramic can solve the entire problem. Various mounting methods are listed below for your reference. Different design and applications will require different type of mounting method. Thus choosing the most suitable and effective way is of utmost importance!

Method 1 - Screwing

Screwing is the most commonly used in mounting applications. There are two types of screwing as illustrated below. The use of nylon screw and washer are able to reduce stress concentration on the substrate.

TYPE 1



Use Nylon screw for mounting

TYPE 2



Use metal screw with nylon washer

(Washer)



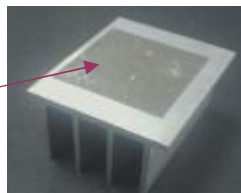
- Note:**
- 1). Do not over-screwed. Proper screw bit torque control is advisable for allowing consistent force being applied onto the substrate surface.
 - 2). **NOT** advisable to use the metal screw alone for CERACON® mounting purposes.
 - 3). Before mounting process, thermal compound has to be applied at the back portion of substrate. Kindly ensure that:
 - * the thermal conductivity of the compound is greater than 1 W/mk.
 - * the entire contact surface of the heat sink must be moistured with thermal compound.
 - * the thermal compound thickness must be kept as low as possible (typically 50µm, max 70µm).

Reference: Nylon screw supplier - <http://www.EnEcomponents.com>
Nylon washer supplier - RS Components

Method 2 - Taping

Double-sided thermal conductive adhesive tapes provide an effective thermal interface between substrate and heat sinks. The tape provides high bond strength without stress concentration on the substrate. Thus it will reduce concern over TCE mismatch and cracking issue.

Thermal adhesive tape



After mounting



Since the performance of the LED is influenced by the thermal conductive material, the followings should be taken into consideration:

- * the thermal conductivity of the adhesive tape is greater than 1 W/mk.
- * the tape thickness must choose as thin as possible (typically 0.15mm, max 0.25mm)
- * ensure the bonding surfaces are free from oil, dust, etc.
- * apply to center of the heat sink bonding area and smooth over entire surface using moderate pressure.
- * adhesive tape is more easier for rework on the board.

Reference: [Chomerics - THERMATTACH T412](#)

Method 3 - Bonding

Thermal conductive adhesive is also widely used for substrate/plate attach to heat sink. It is suitably used for bonding PCB substrate to heat sinks as well as being used in other bonding applications. The thermally conductive adhesives cure either with moisture or heat to produce durable and relatively low stress elastomers.

When using thermal adhesive for mounting of CERACON® to heatsink, the followings should be taken into consideration:

- * the thermal conductivity of the thermal adhesive is greater than 1 W/mk.
- * the thermal compound thickness must be kept as low as possible (typically 50µm, max 70µm).
- * the entire contact surface of the heat sink must be moistured with thermal adhesive.
- * sufficient mechanical force is applied during curing period.

Reference: a). Emerson & Cuming - AMICON® E 3503-1 (heat cure)
b). Dow Corning - SE4486 CV (moisture cure)

After curing the thermal adhesive, rework on the board at this point becomes extremely difficult, often causing damage to the board or LED. It is therefore recommended that the board be visualled and electrically checked before curing process.

Note: The information above is subject to change without any notice.

