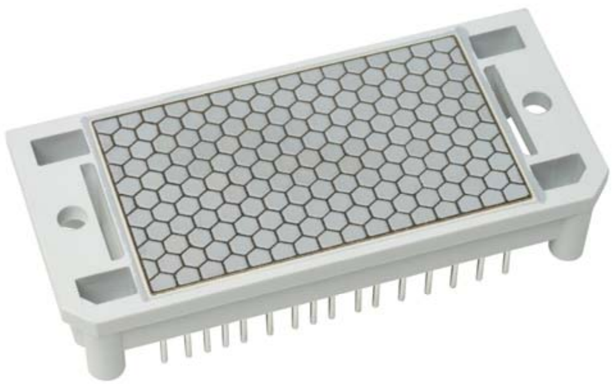

Short Specification

# Phase Change Paste

Pre-applied thermal interface material

Revision 1.2

## Introduction

There are a lot of advantages in using phase change thermal interface material for enhancing the thermal conduction between module and heat sink. There is no risk of smearing during transportation or assembly as the material is solid at room temperature. The applied screen-printing process is very accurate. Therefore the thickness of the material is well defined and the heat transfer capability can be optimized to a maximum.

As the phase change material is solid at room temperature, the workers do not have to handle it with special care at the assembly. When the material is heated during the soldering process, it is becoming soft but don't flow. Surface has to be protected only if something can touch the surface of the module during or directly after the soldering process (e.g. a carpet of the soldering oven). Figure 3 shows an example for such a spacer.

After the soldering, the heat sink can be mounted. There is no difference to the standard mounting process, described in the housing specification. If the heat sink is mounted, the module should be heated up (e.g. during the burn-in test of the system). If the surface temperature of the module exceeds 45°C, the phase change material melts fills the gaps and provides an optimal thermal connection between module and heat sink.

## Features

- Faster and easier assembly of the module
- Optimized thickness of the thermal conducting material
- Better Rth and reduced risk of DCB crack
- Easier production process, no need of screen printing facilities
- Highest process reliability because of automated screen printing
- No risk of smearing of the thermal paste, material is solid at room temperature
- Standard solder profile applicable (e.g. J-STD-001, J-STD-003)
- Compatible with Press-fit pins

## Physical Properties

| Parameter | Value | Unit |
|---|---|---|
| Thermal Conductivity | 3.4 | W/m*K |
| Phase Change Temperature | +45 | °C |

## Mechanical Dimensions

| Parameter | Value | Unit | | |
|---|---|---|---|---|
| | Min. | Typ. | Max. | |
| Thickness *flow 0* | 30 | 55 | 80 | µm |
| Thickness *flow 1* | 40 | 60 | 80 | µm |
| Thickness *flow 1B* | 70 | 90 | 110 | |
| Diameter of Pattern (D1, see Figure 1) | | 3.46 | | mm |
| Distance between Pattern (D2, see Figure 2) | | 0.5 | | mm |

## Reliabilty Tests

| Test | Conditions |
|---|---|
| High Temperature Storage | 2 x 500h @ 85°C |
| High Humidity and High Temperature | 2 x 500h @ 85% RH and 85°C |
| Temperature Cycling | 100 x (30m @ 125°C / 30m @ -40°C) |

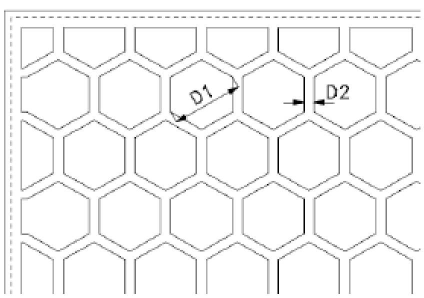


Figure1: Pattern dimensions

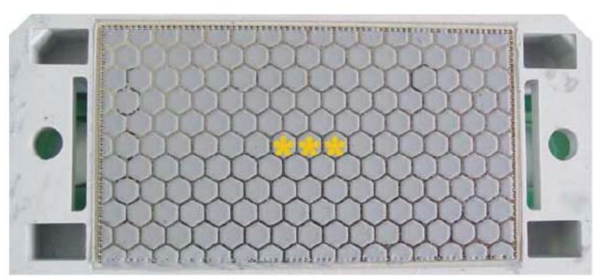

Figure 2: Measurement points for material thickness

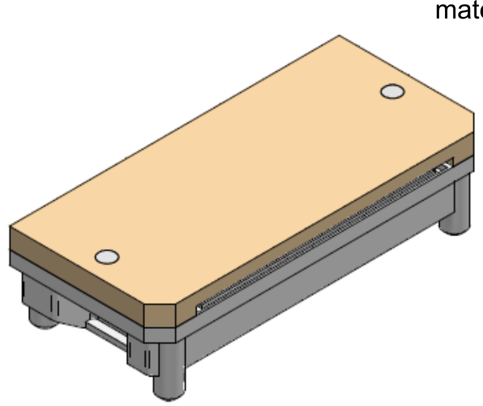

Figure 3: Example for a surface protection spacer