Indium Mounting Procedure

INTRODUCTION

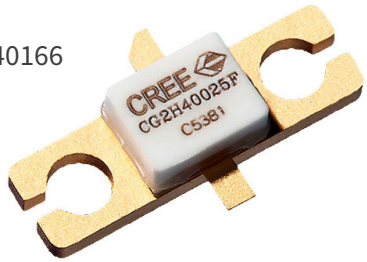
The objective of this application note is to provide users of Wolfspeed RF transistors with a guide on using indium foil. Indium foil is a thermal interface material and can be used for a variety of applications. In Wolfspeed RF fixtures it is used to provide a thermal interface between the transistor and the baseplate along with an electrical interface to provide a path to ground for the source connection. Other recommended interfaces include thermal paste and solder, but some benefits of indium foil are listed below:

- Ease of application
- Clean and requires no surface preparation
- Custom shapes and thickness available

INDIUM FOIL

Indium foil is available in a variety of thicknesses so it is important to use the correct thickness for the corresponding Wolfspeed package type to avoid mechanical issues due to stress on the flange. The current recommendation for all Wolfspeed package types is 0.003” thick indium foil except for the following packages, where the recommendation is 0.001” thick indium foil:

440166



The package type is available on the datasheet for each product for reference.

For more information on handling and proper storage please refer to the manufacturer’s datasheet.

TOOLS, MATERIAL AND EQUIPMENT LIST

Below is a list of suggested equipment that can be used to apply the indium foil in a test fixture. Similar equipment can be substituted.

- Indium Foil
- Utility knife or equivalent sharp edge
- Tweezers or other method of handling indium foil

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PROCESS

1. For non-custom indium sizes, use tweezers or another method of handling the indium and remove it from its package as shown in Figure 1.

Figure 1

2. Place the indium foil on a flat surface and using a ruler and a pen draw out the desired size of the indium foil based on the transistor size. The transistor size can be found on the datasheet or can be measured as well. Allow for some cutting tolerance to make sure the entire flange surface area is covered once the indium is cut. To allow for much smoother edges the lines should be drawn along the ridges so that cuts can be made accordingly.

3. Once the lines are drawn holding down the indium firmly use a knife or scissors to cut the foil. Repeat steps along all other edges.

4. Verify the test fixture pocket is free of any residual indium and/or foreign material contamination (anything visable under 10x magnification). The surface flatness should be within 0.5mil/in and surface roughness less than 32 micro inches to avoid potential damage to the device.

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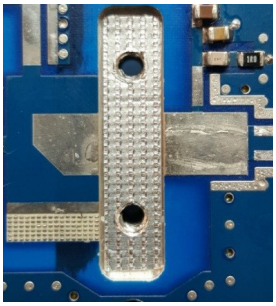
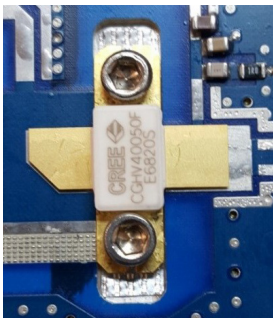
5. Place indium into test fixture making note of the marked side which will denote the indium side, which should be placed facing down in the test fixture. Make note of any screw holes used for flange device and using the utility knife make small incisions in to areas as shown in Figure 2.

Figure 2



6. Place transistor on top of the indium and using a 40 in-oz torque wrench carefully screw down the transistor making sure the transistor leads align with the PCB RF traces as shown in Figure 3.

Figure 3



7. Solder the package leads or use a clamp to make contact between the PCB trace and the package leads as seen in Figure 4.

Figure 4