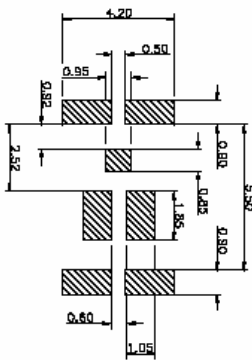


Manufacturing Engineer

4Ps – Checklist

P¹ - Pads



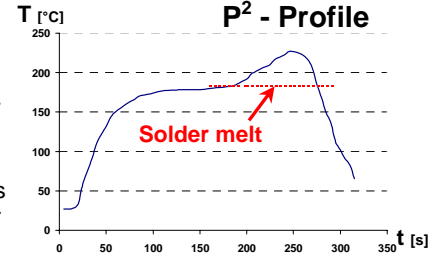
Ensure that the pad outline on the board matches the recommendations for each of the DirectFET MOSFETs component outline being used.

Outline are shown either in the “Board Layout” section, in the Application Note AN1035, or on the device datasheet

Please note that it is critical that the pad outlines on the board are checked, as boards delivered from PCB vendor may differ from original gerber design files

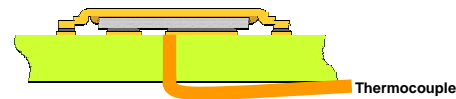
<http://www.irf.com/product-info/hexfet/dfboardmount.html>

P² - Profile



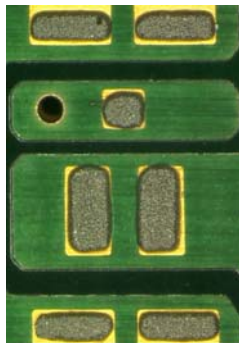
Ensure that the temperature profile seen by the DirectFET MOSFET meets at the least the minimum profile requirements as specified by the solder paste vendor.

Temperature profile of the DirectFET MOSFET must be measured at the DirectFET MOSFET with a thermocouple ‘buried’ in the board.



<http://www.irf.com/product-info/hexfet/dfreflow.html>

P³ - Paste



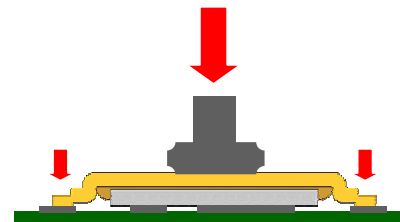
Solder paste volume is critical to achieving good solder joint quality and high production yields.

Ensure the ratio of solder paste volume to PCB pad area is correct.

There are recommended stencils designs for each of IR’s DirectFET outlines based on a 6mil/150µm thick stencil. These recommendations can be found in the “Stencil Design” section, or in the Application Note AN1035, or on the device datasheet.

<http://www.irf.com/product-info/hexfet/dfsolderpaste.html>

P⁴ - Pick & Place



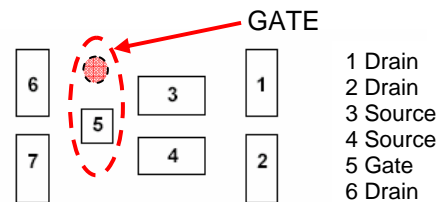
In order for all DirectFET solder connections to be made, your Pick & Place machine should be set to give a placement force of 150 - 250 g and/or an overtravel into the printed solder paste of 0.05 – 0.10 mm (0.002 – 0.004”)

<http://www.irf.com/product-info/hexfet/dfplacement.html>

Suggested PAD numbering

If pad numbering is required to produce a component outline within the library of a CAD system, International Rectifier recommends that the convention shown in Figure 2 is adopted. This makes it easier to discuss any issues that may arise during design and assembly.

<http://www.irf.com/product-info/hexfet/dfmarkings.html>



(viewed from top of substrate)

Fig.2: Recommended pad numbering

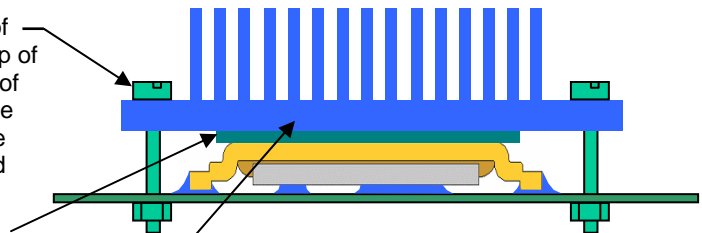
Heatsink

Board attachment: in the majority of cases the method of attachment is a compression fit of the heatsink onto the top of the device. This is achieved either by the screw mounting of the heatsink (shown) or through the use of a clip to affix the heatsink to the board. In both cases the DirectFET and the interface material is sandwiched between the heatsink and the board.

Interface material: interface material should be used and provides two functions:

- 1) Improves the intimacy on thermal contact between the top of the DirectFET and the heatsink.
- 2) Provides electrical isolation between the drain clip which is at drain potential and the heatsink (not required if only one device is to be heatsink or all devices are running at the same potential and phase.

<http://www.irf.com/product-info/hexfet/dfheatsinking.html>



Heatsink: the size/shape of the heatsink will depend on the customer’s requirement for $R_{th(c-amb)}$ and required thermal capacity. The heatsink can be designed to sink single or multiple devices