



**MIC45205-1/MIC45205-2 52-Lead
H4QFN 8mm × 8mm Package
Soldering Guidelines**

Introduction

This document provides a simplified guideline focused on the solderability process for the MIC45205 power module. It is intended to assist with the PCB layout design and should be used in conjunction with the MIC45205 datasheet and MIC45205 evaluation board document.

Simplified PCB Design Recommendations**Periphery I/O Pad Layout and Large Pad for Exposed Heatsink**

The board design should begin with copper/metal pads that sit beneath the periphery leads of a mounted QFN. The board pads should extend outside the edge of the QFN package by a distance of approximately 0.20mm per side.

Total pad length = 8.00mm + (0.20mm per side × 2 sides) = 8.40mm

After completion of the periphery pad design, the larger exposed pads will be designed to create the mounting surface of the QFN exposed heatsink. The primary transfer of heat out of the QFN will be directly through the bottom surface of the exposed heatsink. To aid in the transfer of generated heat into the PCB, the use of an array of plated through-hole vias beneath the mounted part is recommended. The typical via hole diameter is 0.30mm to 0.35mm, with a center-to-center pitch of 0.80mm to 1.20mm. Figure 1 and Figure 2 below provides a more detailed description. It should be noted that the exposed metal trace (Figure 2) is the mirror image of the package bottom view (Figure 1). The blue-shaded crosshatched area in Figure 2 denotes a keep out area in this illustration.

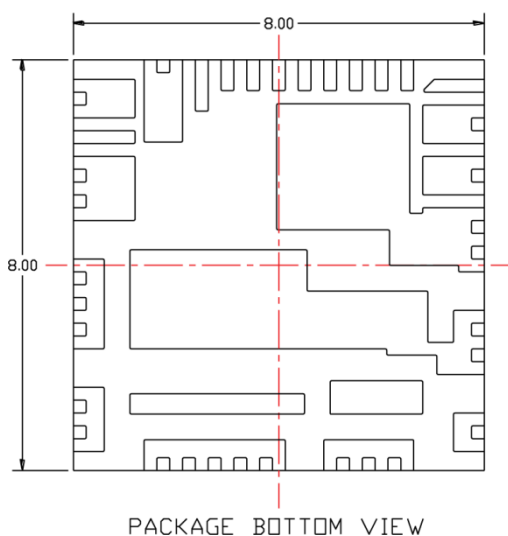


Figure 1. Package Bottom View

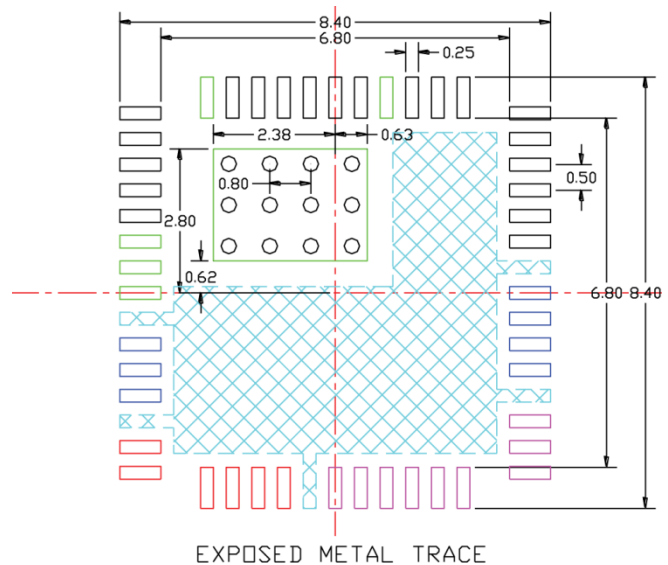
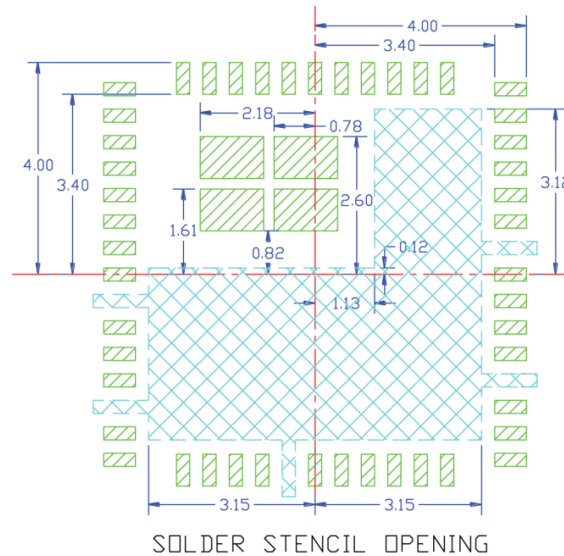


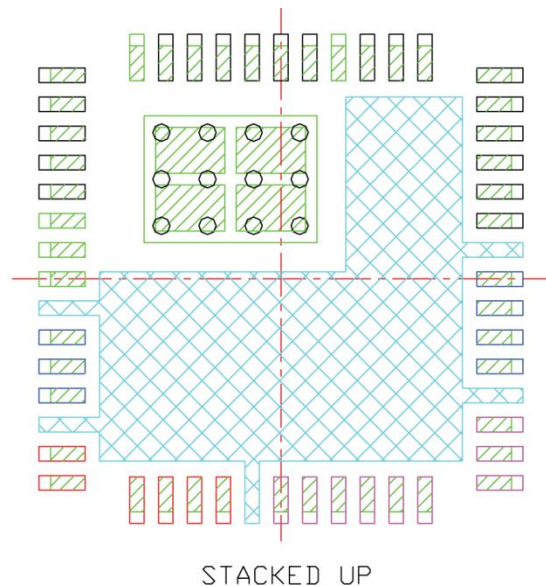
Figure 2. Exposed Metal Trace

Solder Paste Stencil Design (Recommended stencil thickness is $112.5\mu\text{m} \pm 12.5\mu\text{m}$)

The solder stencil aperture openings should be smaller than the periphery or large PCB exposed pads to reduce any chance of excess solder building up at the large exposed pad area, which can result in solder bridging. The suggested reduction of the stencil aperture opening is typically 0.20mm smaller than exposed metal trace. The blue-shaded crosshatched pad shows the exposed trace keep out area in Figure 3.

**Figure 3. Solder Stencil Opening**

Note: Do not duplicate land pattern for exposed metal trace as solder stencil opening because the design and dimension values are different.

Stacked-up of Pad Layout and Solder Paste Stencil**Figure 4. Stacked-up View**

Summary

The guidelines above provide recommendations for basic design principles for a simplified PCB land pattern for use with the MIC45205YMP. All designs should be verified for manufacturability with their assembly vendors as tolerances can vary.

MICREL, INC. 2180 FORTUNE DRIVE SAN JOSE, CA 95131 USATEL +1 (408) 944-0800 FAX +1 (408) 474-1000 WEB <http://www.micrel.com>

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