

# High-Density QFN Leadframe Package for Power Applications

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## I. OVERVIEW

- One of the known technology for surface mount devices with multiple input/output (I/O) requirements for power applications is a semiconductor quad flat no-leads multi-row (QFN-MR) leadframe package
- Realization of this technology is through incorporating a “chemical etching” process in the end-of-line (EOL) process steps where the exposed copper from the leadframe material is removed chemically

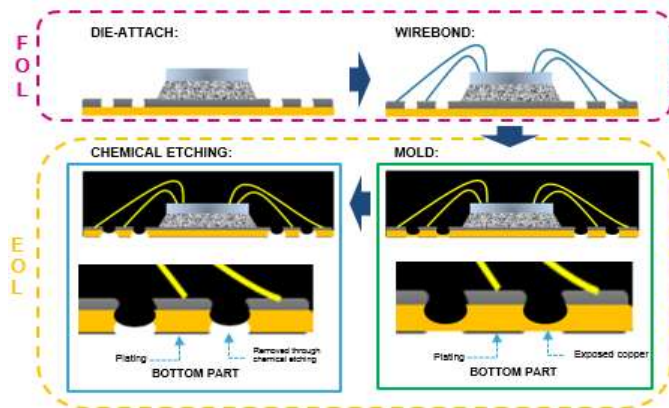


Fig. 1. QFN-MR leadframe process steps.

- Upon removing the copper material, each I/O leads and leadframe diepad will be separated individually

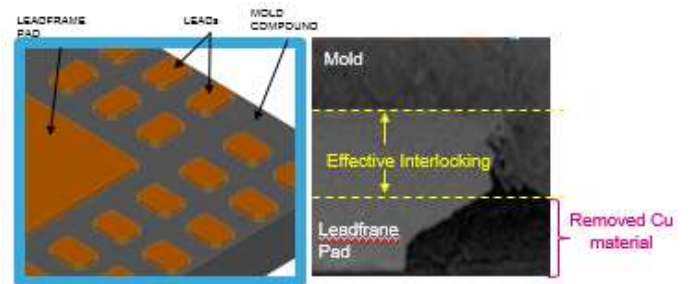


Fig. 2. Illustration of the interlocking design for QFN-MR.

- However, the interlocking capability of this technology is limited only to 60% of the total thickness of the leadframe
- In addition, as leadframe thickness become thinner the effective area for interlocking is reduced

## II. PACKAGE DESIGN SOLUTION

- A new high-density QFN-MR leadframe package design is illustrated in Fig. 3, wherein the interlocking design is improved

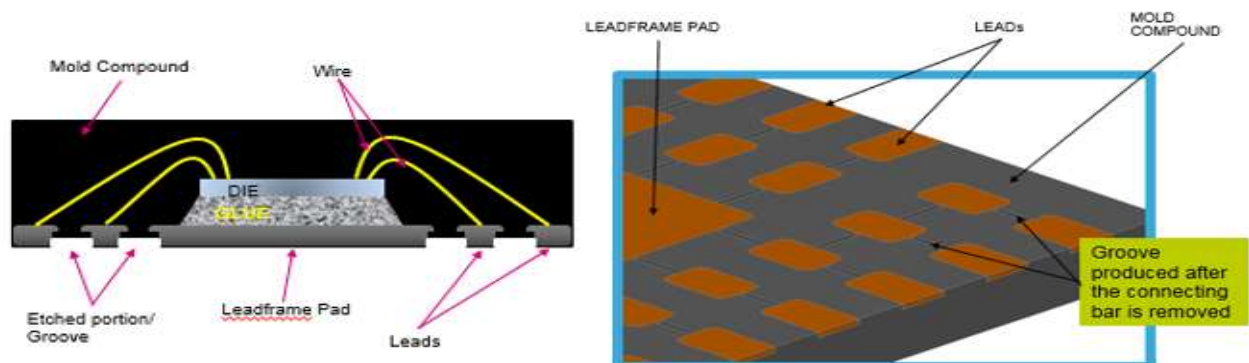


Fig. 3. QFN-MR leadframe package design improvement.

- The improved design limits the exposed copper material at the bottom part of the unit to leave more area for interlocking