

# TSON8-FL

TSON8-FL (Flat Lead) is a smaller package (3.3 x 3.3 mm) with thermal enhancements that give a 64% reduction in footprint area compared with standard SOIC 8 ld package, yet an equivalent maximum permissible power dissipation capability.

- ▶ This package may also be known as
  - ▷ TSON-Adv
  - ▷ PowerFLAT 3.3 x 3.3
  - ▷ TSDSON
  - ▷ miniHVSON
  - ▷ PowerPAK 1212-8
  - ▷ JEDEC: MO-240 BA

## FEATURES

- ▶ Small and thermally enhanced package with the same power dissipation but 64% less footprint area than SOIC 8 ld
- ▶ Dual Cu Clip interconnect for better heat dissipation efficiency
- ▶ Clip + wire and multiple wire options are also available
- ▶ Turnkey with test and packing services
- ▶ Green materials: Pb-free plating & halogen-free mold compound

## NEW DEVELOPMENTS

- ▶ Dual-side exposed pad for better thermal performance
- ▶ Thin wafer dicing with narrow saw streets
- ▶ Larger/higher-density leadframe strips
- ▶ Environmentally-friendly Pb-free solder paste

## PROCESS HIGHLIGHTS

- ▶ Bare copper leadframe with no plating
- ▶ Die attach: 55  $\mu\text{m}$  thin die pick up capability
- ▶ Interconnect: Cu clip technology for better electrical and thermal performance. Also available with clip + wire and multiple wire options
- ▶ Plating: 100% Matte Sn
- ▶ Marking: Pen-type laser



## Applications

TSON8-FL is suitable for medium-power applications, designed for low on-resistance and high-speed-switching MOSFETs.

- ▶ Battery protection circuits
- ▶ Notebook PCs
- ▶ Portable electronic devices
- ▶ DC-DC converters

## Reliability Qualification

Amkor devices are assembled with proven reliable semiconductor materials.

- ▶ All reliability test includes JSTD-020 moisture pre-conditioning except high temperature storage
- ▶ Moisture sensitivity characterization: JEDEC level 1 85°C/85% RH, 168 hours, IR reflow 260°C 3x
- ▶ uHAST: 130°C/85% RH, no bias, 96 hours
- ▶ Temperature cycle: -55~150°C, 1000 cycles
- ▶ High temperature storage: 150°C for 1000 hours

## Test Services

Amkor offers full turnkey business for all power discrete products, with the capability to test various types of power devices including MOSFETs, bipolar transistors, IGBTs, diodes and regulator ICs/intelligent power devices.

- ▶ Amkor power discrete test capability
  - ▷ Static test (DC)
  - ▷ Dynamic test (AC, switching/Trr, capacitance/Rg)
  - ▷ Destruction test (inductive load/VSUS)
  - ▷ Thermal resistance ( $\Delta\text{VDS}$ ,  $\Delta\text{mV}$ , etc.)
- ▶ Program generation/conversion
- ▶ Failure analysis
- ▶ Available test/handling technology
- ▶ Integrated marking, vision inspection and tape & reel services

# TSON8-FL

## Standard Materials

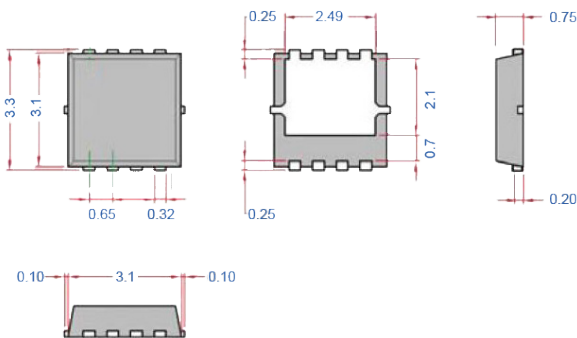
- ▶ Leadframe: Bare copper
- ▶ Die attach: Solder paste
- ▶ Interconnect (3 options)
  - ▷ Dual Cu clips
  - ▷ Multiple Cu wires
  - ▷ Cu clip + 1 gate wire
- ▶ Mold compound: Halogen-free

## Shipping

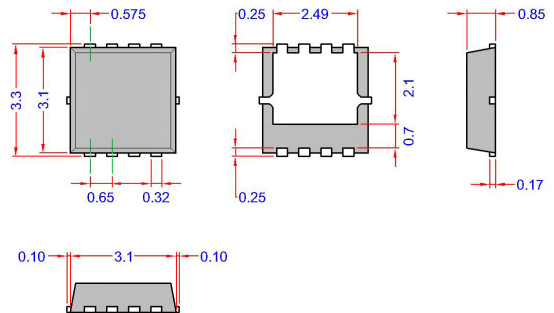
- ▶ Tape and reel packing
  - ▷ 3000 or 5000 pcs per reel
  - ▷ Tape width: 12 mm
  - ▷ Reel  $\Phi$  = 330 mm and 180 mm
- ▶ Barcode packing label
- ▶ Drop ship

## Package Outline Drawing

### XDLF

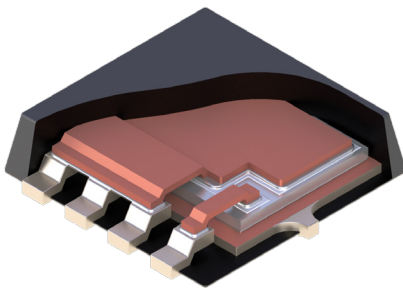


### HDLF (Non-XDLF)

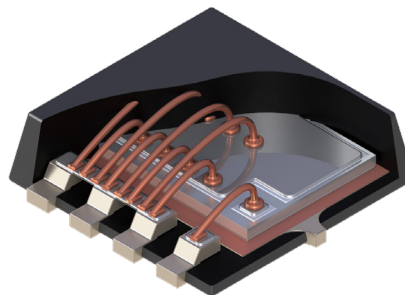


## Cross Sections

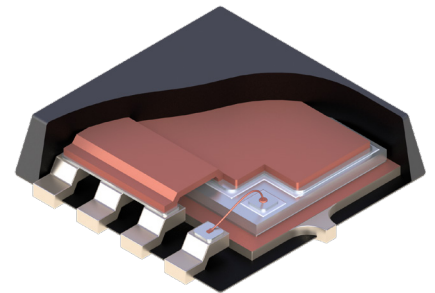
### Dual Copper Clip



### Multiple Copper Wires



### Copper Clip and Wire



Visit [amkor.com](http://amkor.com) or email [sales@amkor.com](mailto:sales@amkor.com) for more information.



With respect to the information in this document, Amkor makes no guarantee or warranty of its accuracy or that the use of such information will not infringe upon the intellectual rights of third parties. Amkor shall not be responsible for any loss or damage of whatever nature resulting from the use of, or reliance upon it and no patent or other license is implied hereby. This document does not in any way extend or modify Amkor's warranty on any product beyond that set forth in its standard terms and conditions of sale. Amkor reserves the right to make changes in its product and specifications at any time and without notice. The Amkor name and logo are registered trademarks of Amkor Technology, Inc. All other trademarks mentioned are property of their respective companies. © 2021 Amkor Technology, Incorporated. All Rights Reserved. DS612F-EN Rev Date: 02/21