



## Introduction

TO-220FP (Full Pak) is a full-pack version of TO-220, which has a better heat dissipation efficiency through Cu clip structure, and with mounted package height reduced by 2.8 mm compare to conventional TO-220NIS package.

## Application

TO-220FP is suitable for medium to high voltage MOSFETs and IGBTs used for:

- Switching power supplies
- AC adapters
- Motor drivers
- Flat panel display

## Features

- Cu Clip interconnect for better heat dissipation efficiency
- Mounted package height reduced by 2.8 mm vs. standard TO-220NIS
- Turnkey with test and packing services
- Green materials: Pb-free plating & halogen free mold compound

## New Developments

- Larger/higher density leadframe strips
- Environmentally friendly Pb-free solder paste

## TO-220FP

### Process Highlights

- Bare copper leadframe with no plating
- Interconnect: Cu clips for better electrical and thermal performance
- Plating: 100% matte Sn
- Marking: Pen type laser

### Standard Materials

- Leadframe: Bare copper
- Die attach: Solder paste
- Interconnect: Dual Cu clips
- Mold compound:
  - Both halogen and halogen free

### Reliability Qualification

Amkor devices are assembled with proven reliable semiconductor materials.

- Temperature & Humidity Storage, Ta = 85°C/Rh = 85%, 1000 hrs
- High Temperature Storage, Ta = 150°C, 1000 hrs
- Pressure Cooker, Ta = 121°C/Rh = 100%/P = 2 atm, 100 hrs
- Temperature Cycle, -45~150°C, 1000 cycles

### Test Service

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

- Amkor power discrete test capability:
  - Static test (DC)
  - Dynamic test (AC, Switching/Trr, Capacitance/Rg)
  - Destruction test (Inductive load/VSUS, I Latch, Surge, Isolation/VIL)
  - Thermal Resistance ( $\Delta VDS$ ,  $\Delta mV$ , etc.)
- Program generation/conversion
- Failure analysis
- Available test/handling technology
- Integrated marking, vision inspection and tape & reel services

Visit Amkor Technology online for locations and to view the most current product information.



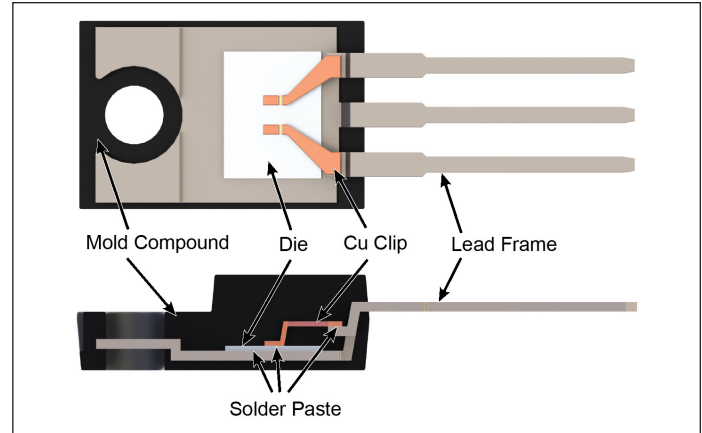
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## TO-220FP

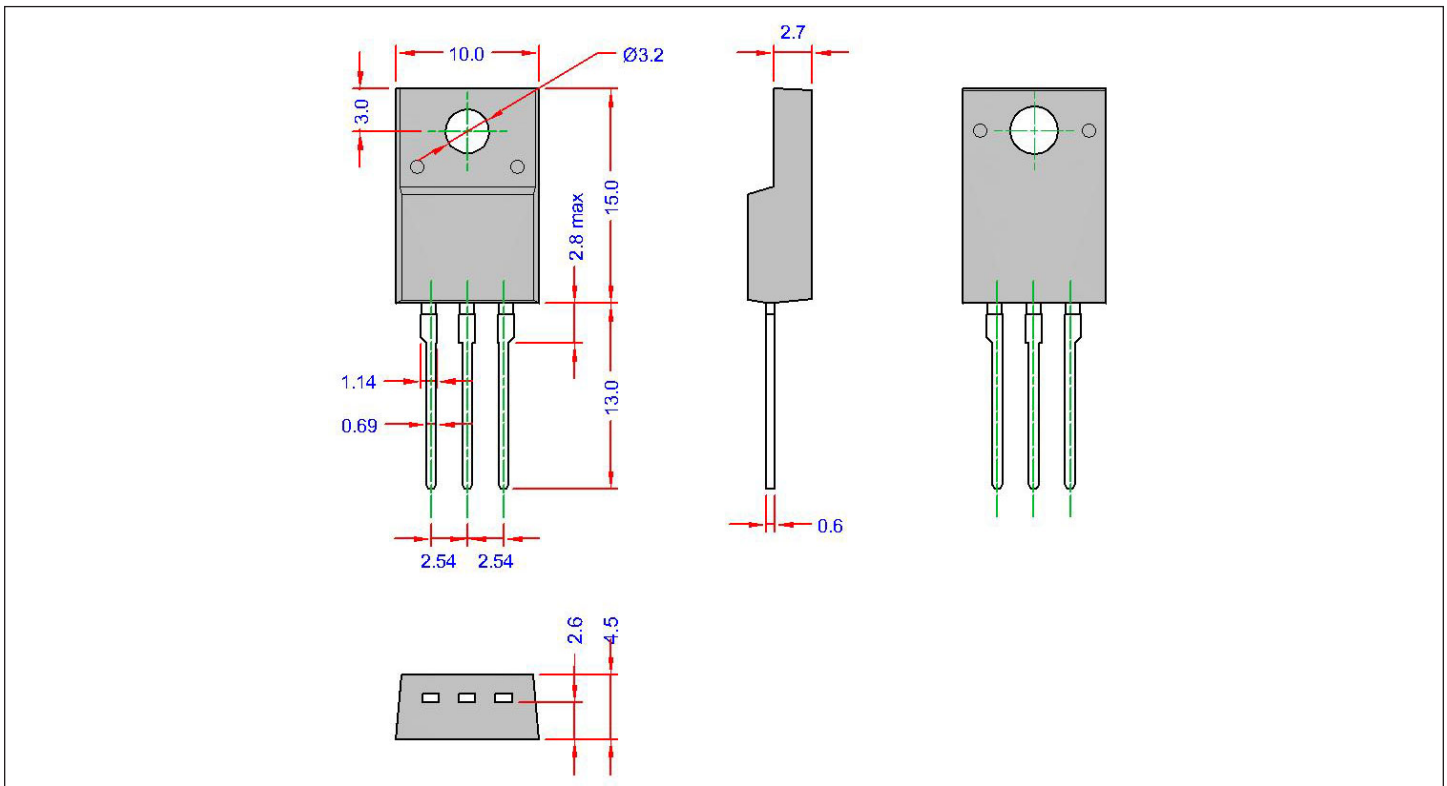
### Shipping

- Tube or loose packing
  - Tube = Std. 2500 pcs per box
  - Loose = 500 pcs per box
- Barcode packing label
- Drop ship

### Cross-section TO-220FP



### Package Outline Drawing TO-220FP



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