

# Nin1 Multi Package (Type of MIS)

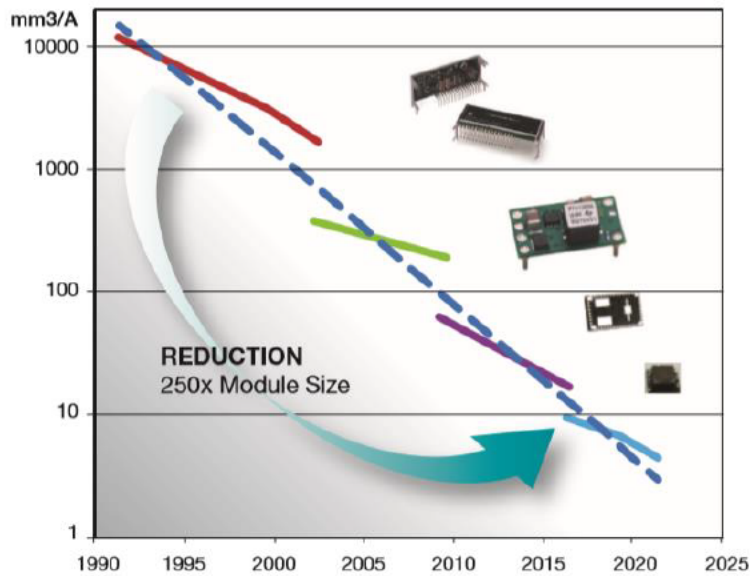
# Nin1Multi Package

## Market trend

There is an increasing need for miniaturization and increased power density in server power supplies and DCDC power supplies.

System-in-Package(SiP) modules ⇒ AOI suggestion : Lead-frame based power IC module.

### Module Volume Density Trend

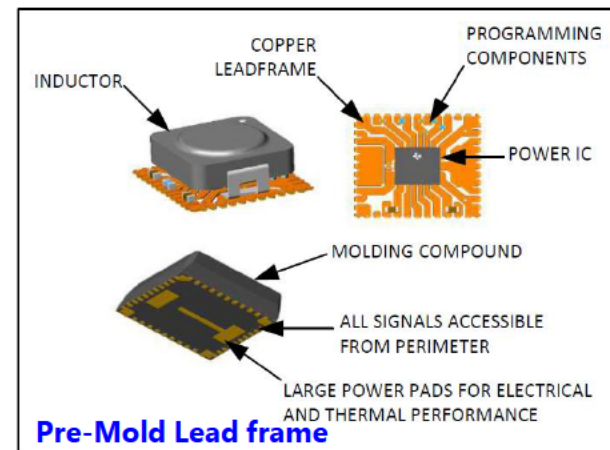
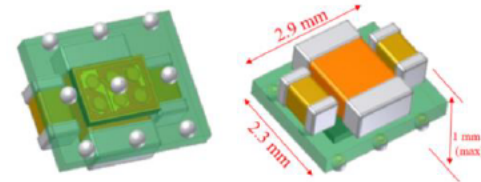


Long-term size reduction trend of converters compatible with TI's 6A to 10A power supply modules

Source : TI Powerful solutions come in small packages

### MicroSiP™ DC/DC Converter

- PCB (substrate)
- Embedded PicoStar™ DC/DC converter
- Integrated passives (L, C<sub>IN</sub>, C<sub>OUT</sub>)
- Released to market



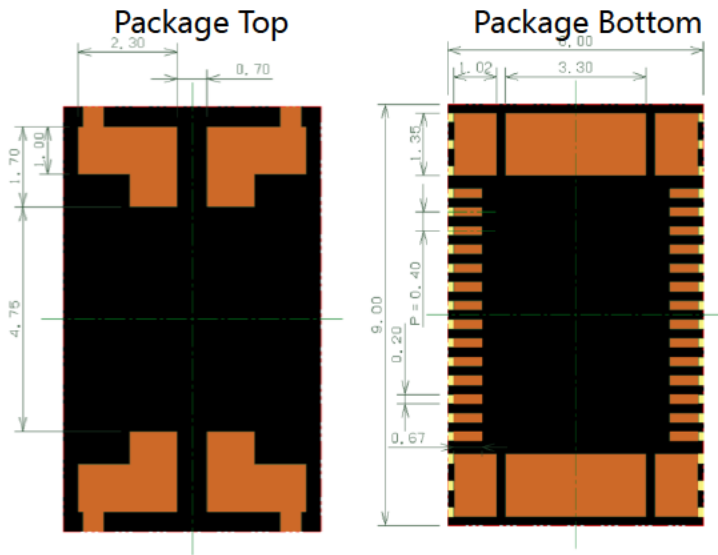
Leadframe-based Overmolded QFN Package

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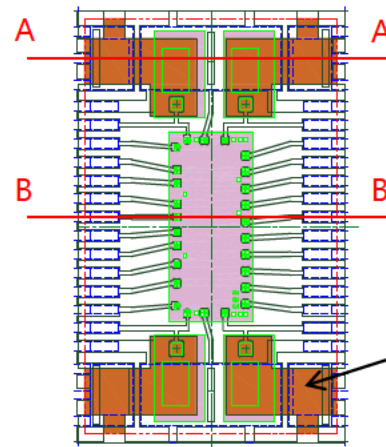
## ■ Characteristics

- Multi-chip power management modules
- 3D MIS Pre-Mold frame(substrate)
- Passive components
- Large area metal and partial fine line/space

## ■ Feasibility study sample

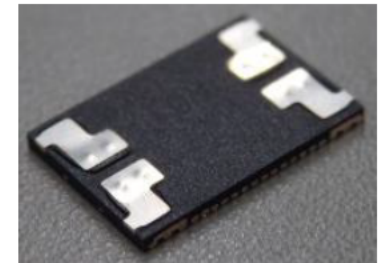


Internal structure

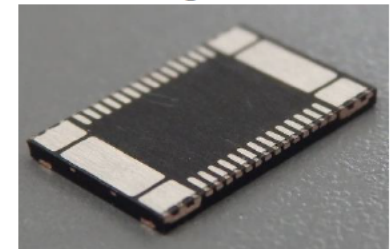


Driver IC×1, MOSFET×4

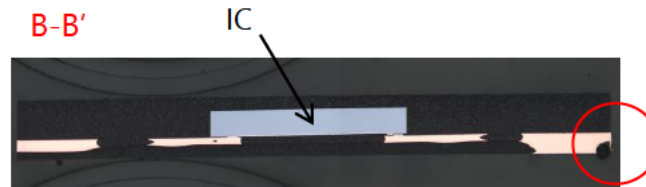
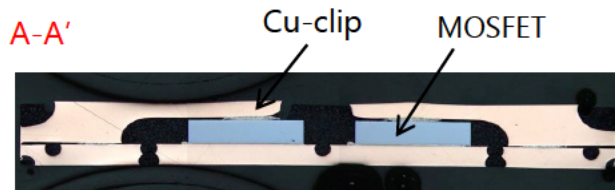
Package Top(Heatsink side)



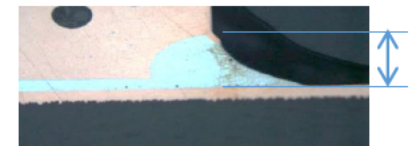
Package Bottom



Cross section

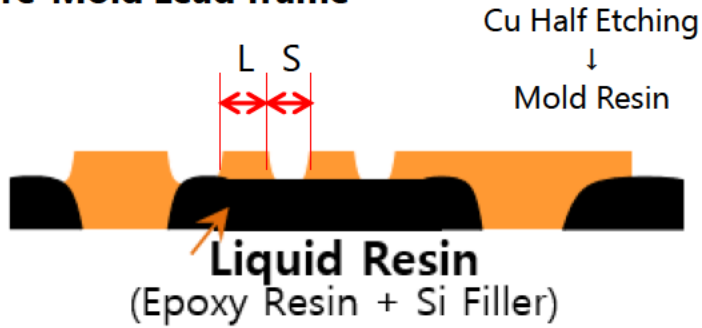


Wettable flank 0.14mm



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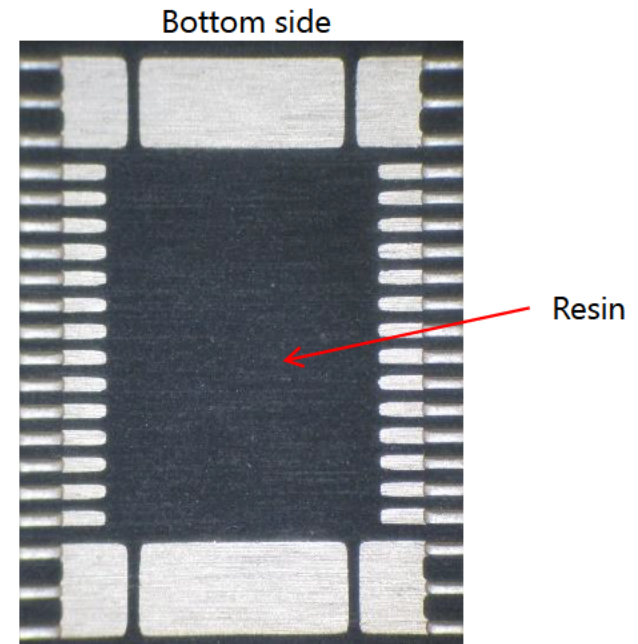
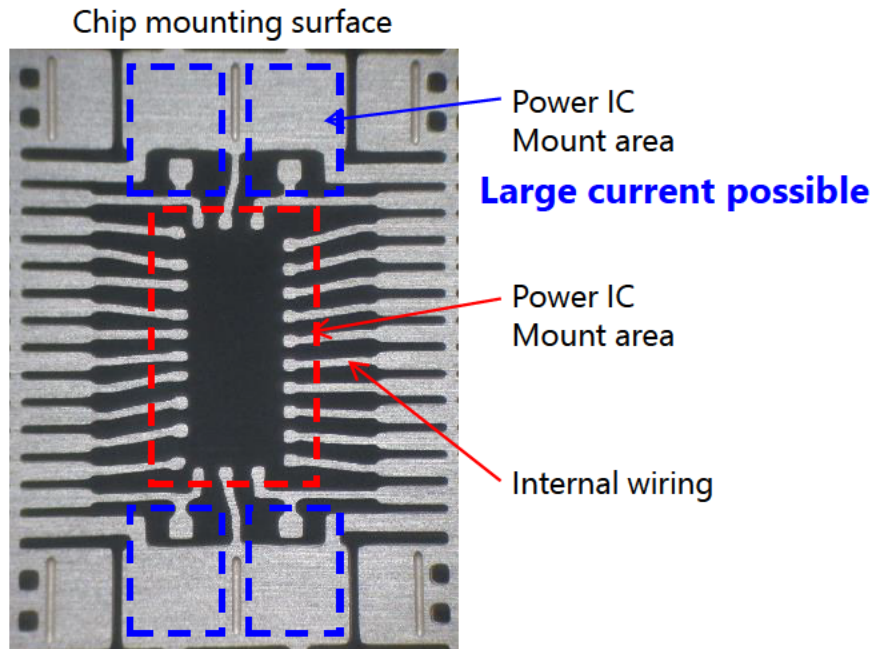
## ■ Pre-Mold Lead frame



(reference)  
Case study : Lead frame 0.20mmt

L=Min. 50 $\mu$ m  
S=Min. 118 $\mu$ m

## Power IC Pre-Mold Lead frame



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