# fc-FBGA
## Exposed MUF / LDP

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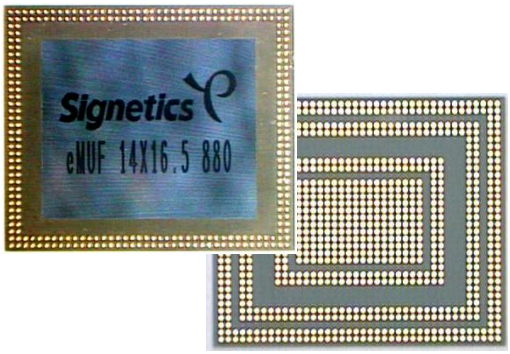


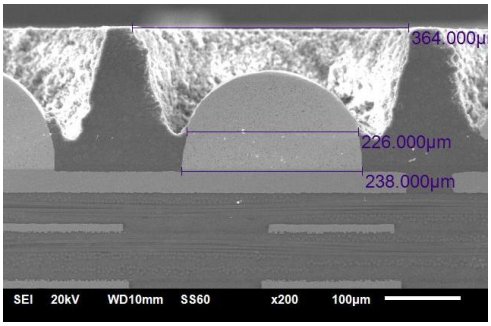


## Description

eMUF & LDP has a exposed die. LDP is short for laser drilled package and it is for bottom package of POP. Compared the heat release rate of normal fc-package with eMUF, eMUF is better performance on condition that add a heat slug or air flow on package.

eMUF & LDP offer chip scale capacity for I/Os around 300 or more. These are also available in both thin core laminate substrate technology as well as build up. eMUF & LDP feature thin and small profile, lightweight packages.

And these packages have advantages of electrical and thermal characteristics than conventional wire bonding method.

| | |
|---|---|
| **Package Sizes** | 10 x 10mm – 15 x15mm |
| **I/O Counts** | 300 – 1296 |

## Features

- Eutectic, Pb-free & Cu pillar bumps
- Ni-Au, Ni-Pd-Au, SOP (solder on pad), OSP (org anic solder preservative), Immersion Tin
- Overall package height 1.0mm to 0.7mm
- Solder ball : Pb-free solder ball available
- Marking : Laser Marking
- Thermally enhanced version with exposed die by Molded underfill
- Available Laser Drilled process for PoP Bottom package .
- Package thickness of max height 0.7mm to 1.0mm available.
- Supports minimum 0.4mmm ball pitch on top and bottom pads.
- Packing : JEDEC tray
- Package configuration : JEDEC standards

## Applications

- Handheld or portable electronic devices
- Mobile Processors for smart phones, Tablets, Network AP, Chipsets for peripheral IC’s

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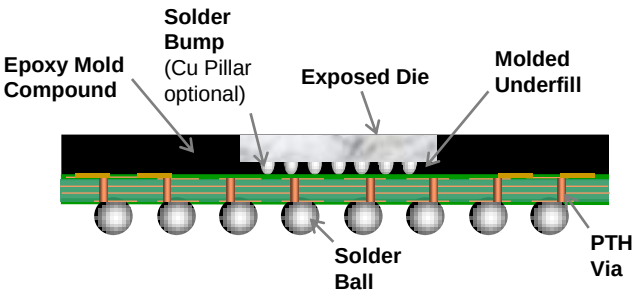
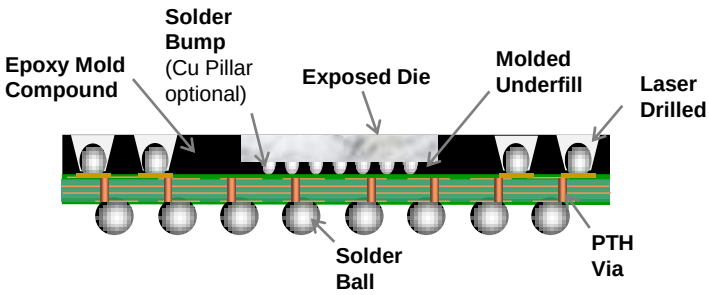
### eMUF

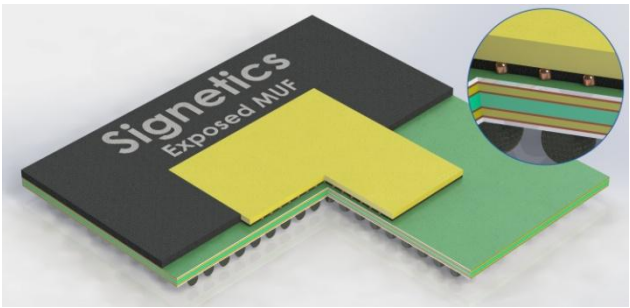



### LDP




## Reliability

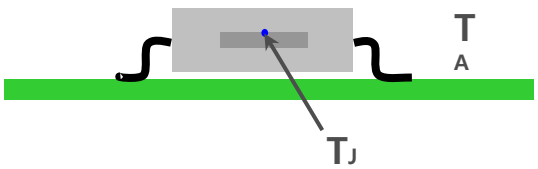
| | |
|---|---|
| **MSL Level** | JEDEC Level 3 |
| **Temp Cycling** | -55°C/125°C, 1000 cycles |
| **Unbiased HAST** | 130°C/85% RH, 2 atm, 96hrs |
| **High Temp Storage** | 150°C, 1000hrs |




## Thermal Data

| BODY SIZE | Ball Count | Theta JA (°c/w) |
|---|---|---|
| FCFBGA 10X10 eMUF | 100B | 27.50 |

• JEDEC STD 2S2P PCB, Still air

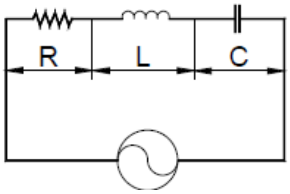



## Electrical Data

- 17X17mm Body, 400B
- Simulation Frequency : 10 GHz

| | |
|---|---|
| **Resistance (mΩ)** | 1520~4840 |
| Inductance (nH) | 3.52~11.85 |
| **Capacitance (pF)** | 0.57~1.38 |

• Results dependent on body size, die size, and Substrate design etc..

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