MEMS and Sensors

Micro-Electro-Mechanical Systems and Sensors

FEATURES

• Very small size
• Very low power consumption
• Low cost
• Easy to integrate into systems

DESCRIPTION

Sensor
A sensor is a device or system that detects/measures a physical property and then records, reports and/or responds to the stimulation. Sensors are typically assembled in a module that responds based on the stimulation or feed to the sensor. There are many different types of sensors and applications such as:

• Pressure sensor
• Inertial sensor
• Microphone
• Proximity sensor
• Fingerprint sensor
• Environmental sensor

MEMS
Micro-Electro-Mechanical-Systems (MEMS) are specialized sensors that combine mechanical and electrical components in a discrete format or a module. MEMS are typically multi-die solutions such as a sensing die paired with an application-specific integrated circuit (ASIC). A MEMS can consist of mechanical elements, sensors, actuators, and electrical and electronics devices on a common silicon substrate.

Some of the advantages of using a MEMS based sensor in consumer, automotive and mobile applications are smaller size, low power consumption, lower cost, etc.

APPLICATIONS

• Voice / sound (Silicon microphones)
• Motion / positioning sensors (Accelerometers, Gyroscopes, Magnetometers and Inertial Combos)
• Pressure monitoring (Pressure sensors)
• Optical / image (Proximity sensors, HRMs, light sensors, etc.)
• Fingerprint sensors
• Bio sensors (Wearables)
• RF-related functions (Oscillators, Resonators, Switches and Tuners)
• Automotive (ADAS: Advanced Driver Assistance Systems, LiDAR: Light Detection and Ranging)

TURNKEY MEMS AND SENSOR CYCLE

Our dedicated MEMS team can provide a comprehensive turnkey solution to support your production ramp, including package co-design, simulation, Bill of Material (BOM) qualification, assembly, quality assurance and in-house test solutions.
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ASSEMBLY PROCESS HIGHLIGHTS

- Class 1k or better assembly line
- Back-end and front-end process on the same manufacturing floor
- 2D barcode
- AOI thru assembly process
- Die traceability through assembly process
- Strip detect map for final test

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<th>Molding Methods</th>
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<td>Sensitive features</td>
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<td>Thin &lt;100um</td>
<td>Glass Wafer Saw</td>
<td>Film Assisted Mold &amp; Cavity Mold</td>
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<td>MEMS with released membrane</td>
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TECHNOLOGY BLOCKS

Wirebond

- Au, Ag, and Cu wire
- 0.5mil (Au), 0.6mil (Cu), and 0.7mil (Ag)

Substrate

- Up to 6L strip and 14L singulated
- 1L/2L/3L/4L for wirebond LGA & BGA package
- High density strip
- Embedded passive in high volume manufacturing (Eaps and Embedded Capacitative Material)

TEST SERVICES

- Turnkey test solution: test, System Level Test, laser marking, LIS, packing, and drop shipment
- Engineering support and services to improve test performance during high volume production
- Test production capabilities with multiple sites (4x, 8x, 12x, and 16x)
- Experienced in thin core substrates (300 um), higher ball counts
- Supports sound test production with higher quality by experienced test engineering, stable manufacturing resources, automation and advanced tools
- Supports various inspection (LIS) requirements with advanced equipment

PACKAGE TYPES

cWLb – Single die, multi die, stacked PoP configurations
WLCSP – Very small single die
fcFBGA – Single or multi die flip chip configurations
FBGA – Single die, multi die configurations
LGA – Single die or multi die configurations
QFN – Single die or multi die configurations

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