STI3000 Wafer Probe Test System

For
MEMS and ASIC Products
from Solidus Technologies, Inc.

Applications Sheet

STI3000 Wafer Probe Test System

The STI3000 is a wafer-level MEMS and mixed signal ASIC probe test system that combines several functional STI test equipment blocks for testing gyros, accelerometers, pressure sensors, microphones, resonators, and mixed signal ASICs. At the core of the test system is STI’s proprietary Drive Sense Technology (DST). DST is the technology that combines unique circuitry, software and test methods that produce the most representative measurements of MEMS sensor dynamic behavior at the fastest test times in comparison to traditional MEMS probe test methods. The STI3000 produces measurements at the wafer level that include resonant frequency, quality factor, stiction, quadrature error, hysteresis, spring rate, f3dB frequency, capacitance and leakage. The MEMS dynamic behavior data can be used to validate MEMS designs, monitor MEMS fabrication processes and drive product quality improvements, resulting in increased wafer-level and package-level test yields as well as decreased DPM rates. This results in the highest return on investment.

STI3000 System Configuration

STI9000 Mixed Signal Test Equipment - ATE
STI3000E Test Head Module

STI3000 Results
✓ Wafer Fabrication Process Validation
✓ Wafer Fabrication Process Monitoring
✓ Sensor Element Design Validation
✓ Drive Product Quality Improvements

STI3000 Benefits
✓ Faster Product Development Cycles
✓ Improved Product Test Yields
✓ Improved Product Quality
✓ High Return on Investment
✓ Lower Manufacturing Costs

Example Test Flow

Static Test → Step Response → Ramp Test → Sweep Test

Example Test Output

Leakage, Capacitance
Resonant Frequency, Q, Damping
Spring Constant, Stiction, Hysteresis
f-3dB freq.

For more information, contact your Solidus Technologies, Inc. Representative

Colorado Springs, CO, USA Tel: +1.719-471-1960 / Fax: +1.719-471-1961
www.solidustech.com
info@solidustech.com
**STI 3000E Wafer Probe Test Head**

For MEMS Dynamic Probe Testing from Solidus Technologies, Inc.

**STI 3000E Wafer Probe Test Head**

The STI3000E is a wafer level test head module that is a component of the STI3000 test system containing a variety of configurable mixed signal tester resources for dynamic testing gyros, accelerometers, pressure sensors, microphones, resonators, and mixed signal ASICs. A product conformable 70-pin probe ring insert connects into the test head module and contains the device probe pins and configurable signal pins. This probe ring insert is the only component that is specific to the product or wafer under test, resulting in utmost product test flexibility and significantly lowering the overall system replacement cost. The STI3000E is scalable for increased capacity from single site to multi site probe testing. The standard test configuration results in low maintenance and support for cost-sensitive product development and manufacturing organizations.

**Direct Digital Synthesis Resource**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range</td>
<td>0.1 to 12MHz</td>
</tr>
<tr>
<td>Frequency Resolution</td>
<td>28-bit</td>
</tr>
<tr>
<td>Voltage Range</td>
<td>0 to 2V</td>
</tr>
<tr>
<td>Voltage Resolution</td>
<td>8-bit</td>
</tr>
</tbody>
</table>

**Digitizers**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Rate</td>
<td>Up to 1MHz, 16-bit Resolution</td>
</tr>
<tr>
<td>Buffer Depth</td>
<td>256K Words</td>
</tr>
<tr>
<td>Analog Input Range</td>
<td>+/-2.5V F.S.</td>
</tr>
<tr>
<td>Anti-Aliasing Filters</td>
<td>8th order low pass, 10kHz to 150kHz, 10kHz step</td>
</tr>
<tr>
<td>Gain Stage</td>
<td>1 to 16, 1V/V steps, user-selectable</td>
</tr>
</tbody>
</table>

**Capacitance Measurement Resources**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure Capacitance</td>
<td>Up to 4 Capacitors in Parallel</td>
</tr>
<tr>
<td>Capacitance Resolution</td>
<td>24-bit</td>
</tr>
</tbody>
</table>

For more information, contact your Solidus Technologies, Inc. Representative

Colorado Springs, CO, USA Tel: +1.719-471-1960 / Fax: +1.719-471-1961  
www.solidustech.com  
info@solidustech.com