STI3000 Standard Density Wafer Probe Test System

For

MEMS and ASIC Products

STI3000 Wafer Probe Test System

Our wafer-level MEMS and mixed signal ASIC probe test system provides high throughput and dynamic test coverage for measuring:

Gyroscopes	Accelerometers	IMU's
Microphones	Micro-speakers	Micro-mirrors
Magnetometers	Pressure Sensors	Mixed Signal ASICs

The STI3000 Wafer Probe Test System

We utilize electrostatic stimulus at the wafer-level to perform comprehensive dynamic testing which provides detailed measurements and characterizations such as:

Resonant Frequency	Quality Factor	Stiction
Quadrature Error	Hysteresis	Spring Rate
Phase Response	Capacitance	Leakage

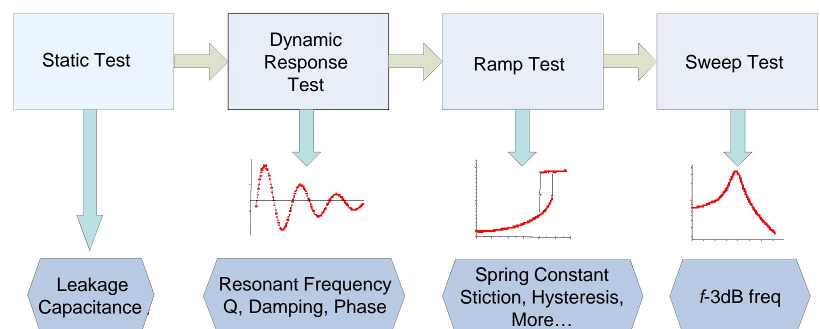
STI 3000 System Includes:

- STI 3000 Probe Test Head
- STI 9000 Mixed-Signal Test Module
- Filter Gain Calibration Module
- Communication and Power Supply Modules
- PC & Software

STI3000 System Benefits

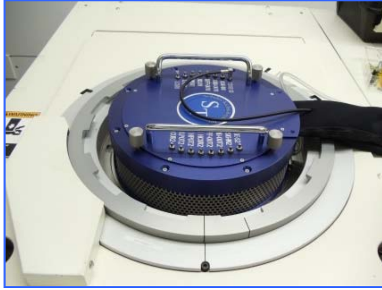
- ✓ Dynamically measures MEMS on the wafer
- ✓ Adapts to any wafer handler
- ✓ No special power or size requirements
- ✓ Can characterize and map devices before going to packaging
- ✓ Can run traditional capacitance tests
- ✓ Improved test yields
- ✓ Sensor element design validation
- ✓ Reduces manufacturing costs
- ✓ Exceptional return on investment

STI3000 Example Test Flow and Test Data



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

Colorado Springs, CO, USA Tel: 719-471-1960 / Fax: 954-301-8514 www.solidustech.com



STI 3000 Test System Resources

- ✓ 8 STI Drive Sense Resources
- ✓ 8 Pico Parametric Measurement Units
- ✓ 8 Digitizers
- ✓ 4 Capacitance Measurement Resources
- ✓ I²C Communications Bus
- ✓ 70-Pin Ring Insert Probe Card
- ✓ 1 Four Quadrant Parametric Measurement Unit
- ✓ 8 Drive Sense DAC Resources
- ✓ 16 Probe DACs
- ✓ 4 Point External LCR Connection
- ✓ 8 Digital Output Pins
- ✓ 4 Digital I/O Pins
- ✓ 4 Digital Input Pins

System Resources	Eight Parametric Measurement Units					Capacitance Measurement Resources		Eight Simultaneous Digitizers				
Parameter:	Forcing Voltage	Measure Output	Sensitivity	Full Scale Output	Settling Time	Measure Capacitance	Capacitance Resolution	Sample Rate	Buffer Depth	Analog Input Range	Anti-Aliasing Filters	Gain Stage
Specification:	0 to 5.0V, 16-bit	1mV per pA	1pA	5,000 pA	15mS (to 100fA)	Simultaneous Multi-Channel Measurements	24-bit ± 4pF Full Scale	Up to 1MHz, 16-bit Resolution	256K Words	+/-2.5V F.S.	8th order low pass, 10kHz to 50kHz, 10kHz step	1 to 16, 1V/V steps, user-selectable

Digital Resources	Digital Response			Vector-Synchronous and Asynchronous DUT Clocks				Digital Stimulus		
Parameter:	Pattern Width	Pattern Depth	Vector Rates	1Hz to 100 KHz	100 KHz to 1 MHz	1 MHz to 10 MHz	10 MHz to 20 MHz	Stimulus Width	Stimulus Depth	Vector Rates
Specification:	16 bit, mode dependent	512 K	1 Hz to 50 MHz	step 500Hz	step 2 KHz	step 20 KHz	step 200 KHz	18 bits	256 K	1 Hz to 30 MHz

Analog Resources	Arbitrary Waveform Generator					Parametric Measurement Unit: Force Voltage / Measure Current			
Parameter:	Data Rate	Analog Bandwidth	Resolution	Output Ranges	Settling Time	Force Voltage Range	Current Measurement Range 1	Current Measurement Range 2	Current Measurement Range 3
Specification:	DC to 500 KHz; 2 MHz max.	DC to 70kHz	15 bits +Sign	+/-5.0, 10.0, 20 V full scale	2 µS to 0.0015 % for 10 V step	+/- 8 V; Accuracy: +/- 2 mV	+/- 20 mA; Accuracy: +/- 5 µA	+/- 2 mA; Accuracy: +/- 500 nA	+/- 200 µA; Accuracy: +/-50 nA

Analog Resources	Device Power Supplies					
Parameter:	DPS1 and DPS2 Range	DPS1 and DPS2 Accuracy	DPS3 Range	DPS3 Accuracy	DPS4 Range	DPS4 Accuracy
Specification:	+1.0 V to +16.0 V; Step 2 mV @ 80 mA	Set point +/-4.0 mV, current readback +/-25 µA, voltage readback +/-4.0 mV	+1.0V to +24.0V; Step 3mV @ 8mA max	Set point +/-6.0 mV, current readback +/-5 µA, voltage readback +/-6.0 mV	-1.0 V to -16.0 V; Step 2 mV @ 80 mA	Set point +/-4.0 mV, current readback +/-25 µA, voltage readback +/-4 mV

STI3000 Wafer Probe Type I Test Head

STI 9000 ATE & STI300 Type II Test Head

Wafer Probe Card (Sold Separately)

Force Current Resources

Parameter	Range 1	Range 2	Range 3	Range 4
I_F (range)	-8 to+8mA	-800 to+800µA	-80 to+80µA	8.0 to+8µA
I_F (accuracy)	+/- 2µA	+/- 200nA	+/- 20 nA	+/- 2 nA
I_F (resolution)	+/- 1µA	+/- 100nA	+/- 10 nA	+/- 1 nA

Note: Current force V_{clamp} is variable from ±3.0V to ± 20.0 V. Positive and negative clamp voltages may be set to track, or may be varied independently.

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