Innovating Technologies

The Series 12000 Switch Resonance (SR) integrates the Cascade Summit 12000 Series wafer probing system and the Polytec Micro-Scanning Laser Vibrometer (MSV) to provide an automated, non-invasive device characterization during the MEMS optical switch manufacturing process. Complete characterization of every MEMS device in an optical switch array is critical to ensure final switch performance. This includes dynamic measurements of each device in its actuated state. The Polytec MSV provides a unique, non-contact deflection measurement using a targeted laser spot at selected points on each device. Inside the vibration isolated and shielded MicroChamber® environment, important switch response characteristics such as deflection amplitudes, settling times, resonant frequencies and cross-talk can be quickly determined.

Dynamic MSV characterization combined with Cascade Microtech's advanced Nucleus™ Prober Control Software provides a complete test solution for optical switch characterization and functional test.

A complete in-line solution for wafer level testing of MEMS Optical Switches
Wafer Prober

The Cascade Microtech Summit Series wafer probing stations are the world’s leading semiautomatic probe stations for device characterization.

With a wide variety of wafer probing accessories, including high frequency probes, DC parametric probes, multi-pin probe cards, and precision micropositioners, the system is easily configurable to your specific needs.

The independently biasable, low noise, thermal wafer chuck precisely controls the temperature of the wafer from –65ºC to +200ºC for critical over-temperature measurements.

The patented MicroChamber™ provides both an electrical and EM-shielded environment ideal for making sensitive measurements as well as providing a superior thermal environment for hot and cold operation.

The versatile and configurable Nucleus Prober Control Software powers the Summit probe station. Superior 32-bit Windows® NT™ software enables maximum prober reliability and test productivity. With wafer mapping capabilities that include real-time data monitoring for Pass/Fail and other tests, device performance maps, mouse click wafer moves, and graphical subdie editor, the software is built to satisfy stringent requirements.

Laser Doppler Vibrometer

The Micro-Scanning Laser Doppler Vibrometer (MSV) is Polytec’s top-of-the-line system for mapping deflections of MEMS structures. Fast dynamic response measurements (at over 20 pts/sec) are possible with high spatial resolution (down to 1 µm).

The MSV includes two-channel FFT data acquisition, a fiber-optic vibrometer sensor, microscope adapter, piezo-scanning system, remote control functions and specialized software for analyzing and presenting data including 3-D response animations.

Scan areas and points are defined using a live video image and specialized mouse-driven graphic draw program. Each object can comprise up to 512 x 512 scan points.

High-resolution measurements can be displayed in displacement, velocity, acceleration, frequency response functions and coherence over a frequency range from DC to 1 MHz and amplitudes from <1µm/s to 10m/s. MEMS devices with large tilt angles may therefore be measured with amazing accuracy.

The MSV provides a complete turnkey solution for measurement automation and data management during MEMS production testing. Using a Visual Basic Engine (VBA), routines can be scripted and exported to the main wafer map database.

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Innovating Test Technologies for better measurements faster

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