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(71) Applicant (for all designated States except US): **TOUCH-DOWN TECHNOLOGIES, INC** [US/US]; 5188 Commerce Dr., Baldwin Park, CA 91706 (US).

(72) Inventor: **NAMBURI, Lakshmikanth**; 5188 Commerce Dr., Baldwin Park, CA 91706 (US).

(74) Agent: **DE LA CERRA, Manuel, F.**; 6885 Catamaran Drive, Carlsbad, CA 92011 (US).

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(54) Title: A DEVICE AND METHOD FOR REPAIRING A MICROELECTROMECHANICAL SYSTEM

(57) Abstract: A novel device and method for repairing MEMS systems, including probe cards for use in semiconductor testing is disclosed. In one embodiment, a probe card for use with a diagnostic computer for testing semiconductor wafers comprises a substrate, a plurality of operational probes connected to the substrate, wherein the plurality of operational probes are adapted to make an electrical connection with the diagnostic computer and a plurality of replacement probes connected to the substrate, wherein the plurality of operational probes and the plurality of replacement probes are constructed in substantially the same manufacturing process. Also disclosed is a novel probe card that can be repaired. Specifically, a probe card for use with a diagnostic computer for testing semiconductor wafers, the probe card comprises a substrate and a plurality operational of probes connected to the substrate, wherein the plurality of operational probes are adapted to make an electrical connection with the diagnostic computer, and wherein the plurality of operational probes include a sacrificial material that is activated by applying a voltage. A method for removing a damaged probe from a probe card is also disclosed. The method removes a damaged probe from a probe card that includes a plurality of operational probes connected to a substrate and the plurality of operational probes comprises a sacrificial material that is activated by applying a voltage. The method comprises identifying the damaged probe, applying the voltage to the damaged probe, exposing the damaged probe to an etching solution and removing the damaged probe from the probe card. A second method for repairing a damaged probe from a probe card is also disclosed. The method repairs a damaged probe from a probe card that includes a plurality of operational probes connected to a substrate and a plurality of replacement probes connected to the substrate and wherein the plurality of operational probes and the plurality of replacement probes are constructed in substantially the same manufacturing process. The method comprising the steps of identifying the damaged probe, removing the damaged probe from the probe card, separating one of the plurality of replacement probes from the substrate, and installing the one probe separated from the plurality of replacement probes where the damaged probe was removed. Several refinements to these devices and methods are disclosed.

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