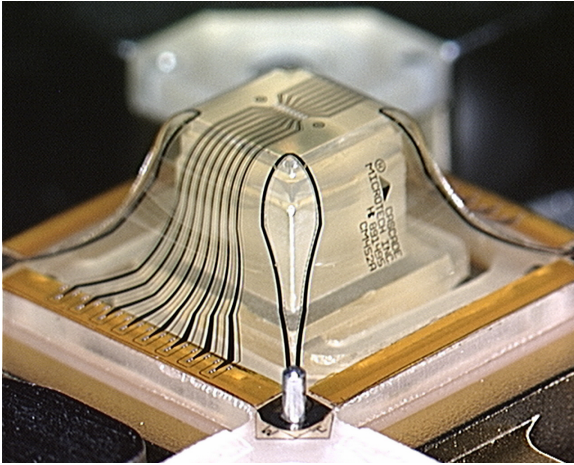


## Pyramid Probe® Parametric Product Update

**Manufacturing improvements deliver lower leakage current specifications, plus dramatically improved settling times for DC parametric measurements**



By design, Cascade Microtech's Pyramid Probe® Card solutions are renowned for delivering high-precision parametric measurement capability to the semiconductor industry's most advanced fabrication facilities. Pyramid Probes offer custom pad layout configurations, low and stable contact resistance, extremely low leakage, fast settling time and dimensional stability across small pad sizes. These advanced features enable accurate and repeatable parametric measurements for process monitoring and characterization.

In an effort to continuously improve the quality and reliability of its products, Cascade Microtech has implemented substantial manufacturing improvements to its parametric and RF-parametric products. Specifically, these improvements now yield lower initial leakage current and a faster settling time. As a result, you can count on greater measurement stability for the life of the product. Among the new parametric Pyramid Probe specifications is a maximum leakage current of 5 fA/V leakage achieved after five seconds.

### Parametric Probe Manufacturing Improvements

Each parametric probe is manufactured to match customer-specific pad layout requirements. That means every probe undergoes many quality-assurance steps during fabrication, assembly and test. Yet, recent field data has revealed anomalies in the electrical measurement capability of certain probes. In particular, it was observed that leakage current measurements had a tendency to drift higher as the product aged. This leakage current, along with the associated settling time, tended to increase variations in the parametric measurements made with the probe.

Improvements to the product have been implemented to correct for this situation. Characteristics of the new probes include lower measured-leakage current of each trace, as well as a tighter variation of leakage current from trace to trace.

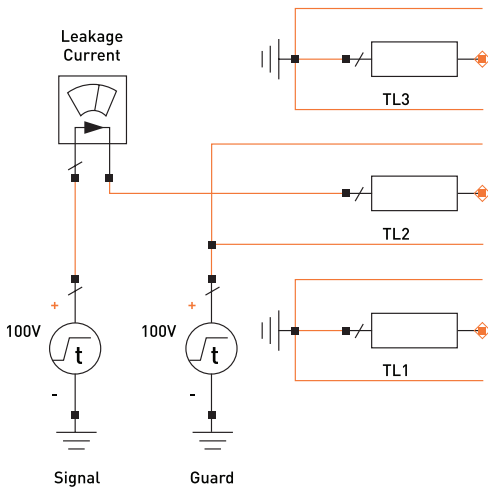
### Qualifying Parametric Probes with Leakage Current

During Cascade Microtech's manufacturing process, parametric probes are characterized by applying a 100V step (at time=0) to the signal and guard traces. All other traces on the probe are grounded. The resistance between the signal and ground is measured by monitoring the current leaving the power supply. This current is then normalized to 1V. Typical maximum leakage current values are in the range of 1 fA/V.

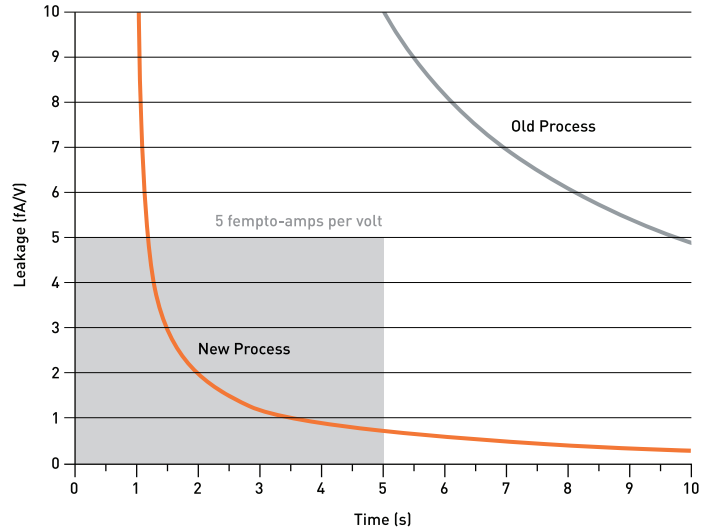
As it stands, a small amount of residual capacitance between probe tips is unavoidable. In turn, settling time in leakage current measurements is caused by this capacitance. Steady-state leakage current values are achieved within 100ms of applying the voltage to the probe.

The manufacturing improvements have lowered the typical leakage current of the probe. Consequently, the settling time of the probe has improved dramatically. Now you're ready to make faster, more accurate measurements of parametric structures.

## Leakage Measurement Setup



## Leakage Results



## Answers to Common Questions:

- This manufacturing improvement is applicable to all Pyramid Probe DC parametric designs. All cores built after August 1, 2007 will incorporate the manufacturing improvement.
- Existing designs (completed prior to August 1, 2007) do not require any re-design, in order to achieve the manufacturing improvement.
- The manufacturing improvement does not alter RF performance characteristics.
- New designs may include layout-enhanced algorithms that further improve the performance of the probe. However, it is not necessary to modify the design to take advantage of the production methodology performance improvement.
- This improvement is applicable to RF-parametric and DC-parametric probes as well.
- This manufacturing improvement only applies to parametric Pyramid Probe® product lines.

## Care and Handling of Parametric Pyramid Probes:

- Operate the probe in a temperature and humidity-controlled environment.
- Never touch the probe without gloves.
- Follow all proper cleaning procedures.
- Never exceed the recommended amount of over-travel past initial touchdown.
- When not in use, store the probe card in a sealed container, away from particles and dust.

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