

STDDB

Standard TDDB
40 V / 1 mA



DATA SHEET

Cascade Microtech's Standard Time Dependent Dielectric Breakdown Module (STDDB) is designed for TDDB and SILC (Stress Induced Leakage Current) evaluation of copper dielectrics, barrier layers, MIM (Metal-Insulator-Metal) capacitor structures and 2-terminal gate oxide structures.

Dedicated ammeters measure every DUT at the same high speed during stress, many times per second, regardless of total system capacity. This instantly captures breakdown precursor events (soft breakdown and noise) and DUT failures. There is no scanning of measurements. During SILC characterization the TDDB ammeters measure all DUTs in parallel to minimize their time off stress conditions. This reduces relaxation, measures all DUTs with the same timing and reduces total SILC experiment time.

With an intuitive, full-featured test suite, TDDB/BTS and SILC experiment data, both stress and use condition measurements are analyzed quickly to determine DUT failure times. The data analysis tools offer Arrhenius and voltage/E-field evaluation for accurate lifetime projections with confidence intervals. All data can easily be exported to other applications for analysis.

FEATURES / BENEFITS

Flexibility

- Compatible with both 1164 and Symphony™ reliability test systems
- Broad measurement range, setpoints up to ± 40 V
- Temperatures up to 450°C
- Package and wafer-level testing in same system
- Accurate source/measurement system
- Full-featured test suite, including constant voltage TDDB, SILC and BTS

Full parallel measurements

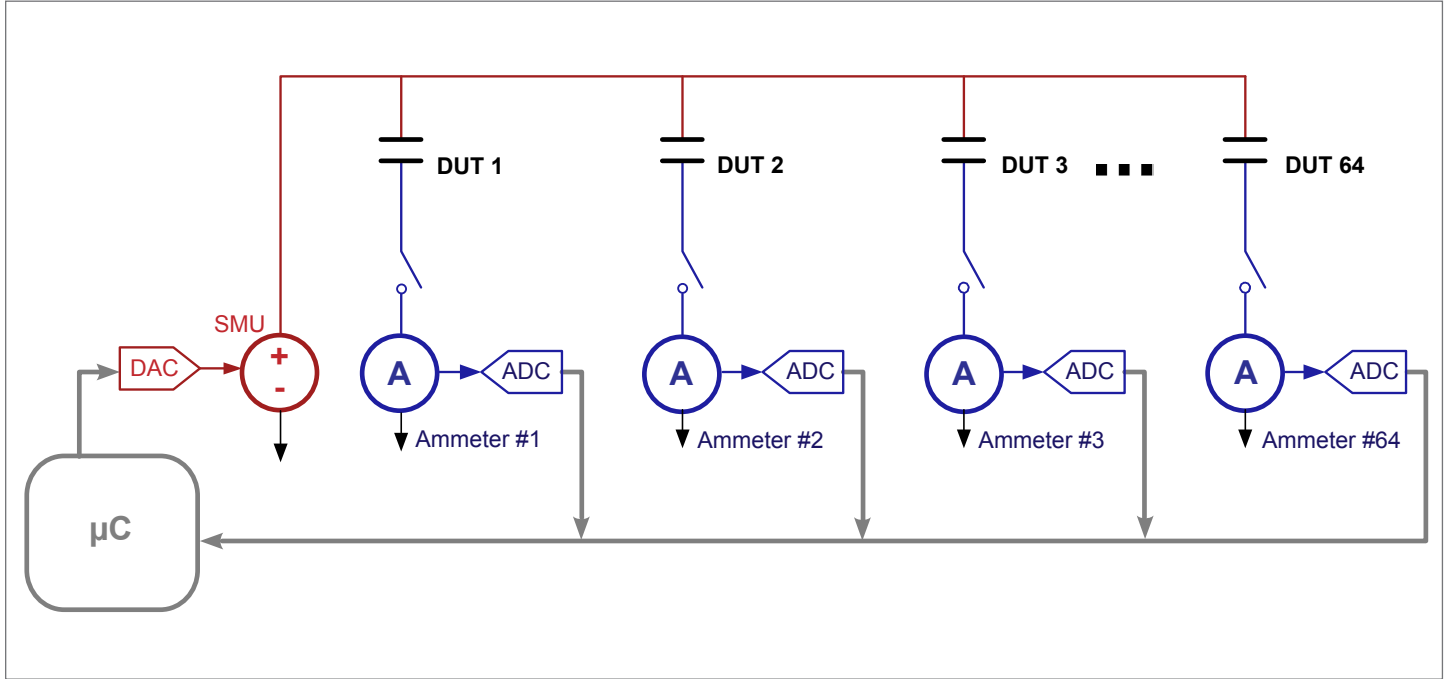
- Dedicated, high-accuracy ammeter for each DUT position — no switching or scanning
- Continuous monitoring — more than 100 samples per second
- Instant capture and detailed recording of leakage current changes

Maximum efficiency

- Industry's best package-level test throughput with 1164
- Highly parallel wafer-level reliability testing with 1164 or Symphony

FULL PARALLEL MEASUREMENT

1 SMU	Voltage source, voltmeter To source and measure voltage for all DUTs in parallel
64 ammeters	One per DUT To continuously monitor DUT leakage current



Full parallel measurement system: dedicated, high-accuracy ammeters, one each per DUT.

SPECIFICATIONS

Parameter	SMU Specification	Ammeter Specification
Capacity	Up to 64 DUTs	Up to 64 DUTs
Maximum voltage	±40 V	-
Source resolution	1.5 mV	-
Source accuracy	0.1 % ± 4.5 mV	-
Maximum current compliance	±200 mA per 64 DUTs	±18 mA per DUT
Maximum current measurement	-	±1 mA per DUT
Measure resolution	160 µV	4 nA (1 µA – 1 mA) 4 pA (below 1 µA)
Measure accuracy	0.1 % ± 2.5 mV	0.2% ± 15 nA (1 µA – 1 mA) 0.1% ± 15 pA (below 1 µA)
Sampling interval	<0.01 sec	<0.01 sec

*Data, design and specification depend on individual process conditions and can vary according to equipment configurations.
Not all specifications may be valid simultaneously.

RECOMMENDED OPERATING RANGE

Voltage set-point range	50 mV ~ 40 V
Current measurement range	100 pA ~ 1 mA
DUT power range	Up to 2 W per package

REGULATORY COMPLIANCE

Certification	CE, SEMI S2
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WARRANTY

Warranty*	Fifteen months from date of delivery or twelve months from date of installation (whichever comes first)
Service contracts	Single- and multi-year programs available to suit your needs

*See Cascade Microtech's Terms and Conditions of Sale for more details.

ORDERING INFORMATION

Consult factory for more detailed specifications, additional options, suitability of configuration for intended usage, part numbers, pricing, and delivery.

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