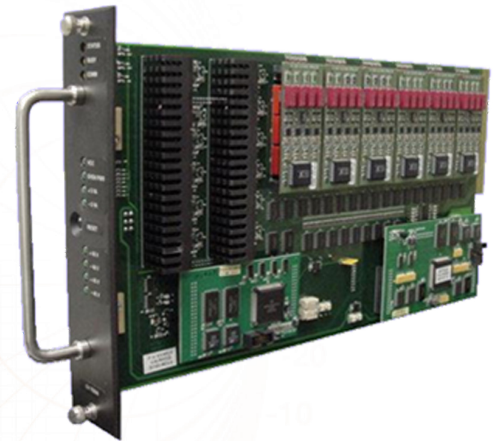


MTTDDB

Multi-Terminal TDDB
12 V / 50 mA



DATA SHEET

Cascade Microtech's Multi-Terminal Time Dependent Dielectric Breakdown Module (MTTDDB) is designed for testing TDDB, SILC (Stress Induced Leakage Current), HCI (Hot Carrier Injection) and BTI (Bias Temperature Instability) gate oxide degradation on multi-terminal MOSFET structures.

Dedicated, high-accuracy 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 characterization measurements 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 experiment time.

With an intuitive, full-featured test suite, experiment data 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
3 and 4 terminal characterization - stresses gate and drain terminals
Package and wafer-level testing in same system
Accurate source/measurement system
Full-featured test suite, including TDDB, SILC, HCI and BTI

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

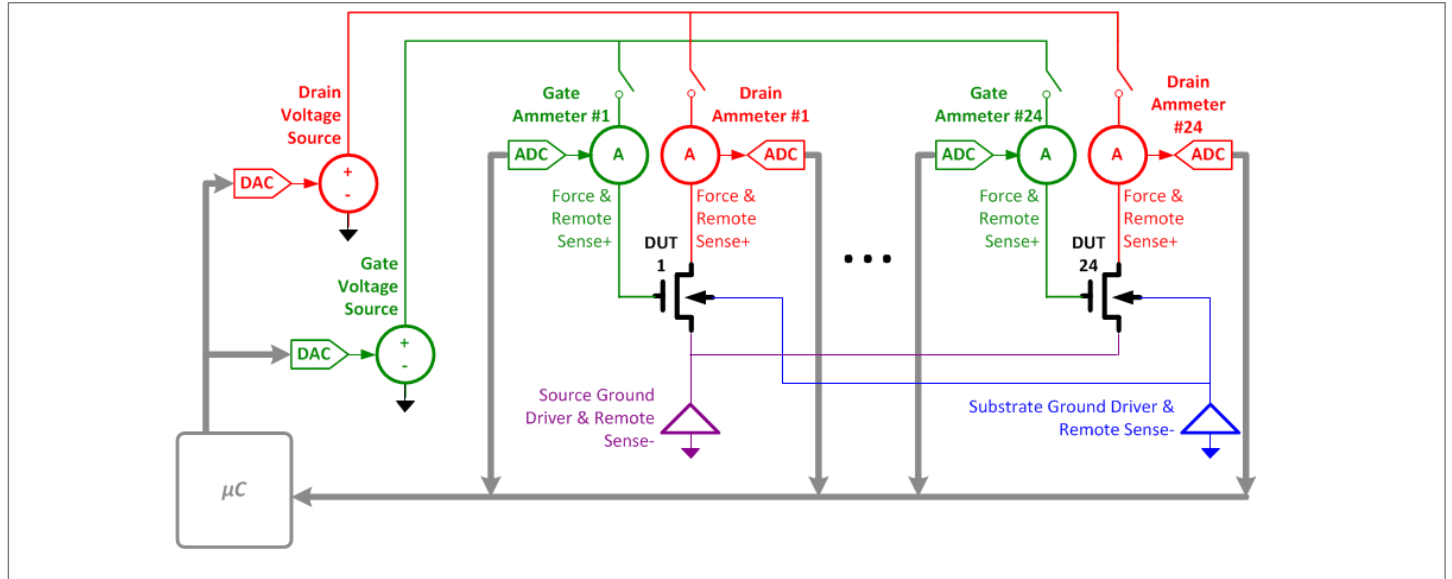
Industry's best package-level test throughput with 1164
Highly parallel wafer-level reliability testing with 1164 or Symphony

MEASUREMENT CAPABILITIES

During characterization, the system can measure:

Parametrics	I _g at up to 3 use condition voltages, V _t (extrapolated, ASTM, fixed-current/linear, fixed-current/saturation), I _{dLin} , I _{dSat} , I _{dOff} , gmMaxLin and gmMaxSat
Characterization curves	I _d vs. V _{gs} at up to 5 V _{ds} values, I _g vs. V _{gs} at up to 5 V _{ds} values, gmLin vs. V _{gs} and gmSat vs. V _{gs}

BLOCK DIAGRAM



MTTDDB module continuously measures all 24 DUTs with 48 independent ammeters.

SPECIFICATIONS

Parameter	SMU Specification	Ammeter Specification
Capacity	Up to 24 DUTs	Up to 24 DUTs
Maximum voltage	±12 V	-
Source resolution	100 µV (2 V - 12 V) 16 µV (below 2 V)	-
Source accuracy	0.1 % ± 2.5 mV (2 V - 12 V) 0.1 % ± 1.9 mV (below 2 V)	-
Maximum current	±50 mA per DUT total (Combined Gate and Drain)	±50 mA per DUT (Gate) ±50 mA per DUT (Drain)
Measure resolution	50 µV (2 V - 12 V) 8 µV (below 2 V)	200 nA (500 µA - 50 mA) 2 nA (5 µA - 500 µA) 20 pA (50 nA - 5 µA) 200 fA (below 50 nA)
Measure accuracy	0.1% ± 2.5 mV (2V - 12V) 0.1% ± 1.9 mV (below 2V)	±0.1 % ± 2 µA (500 µA - 50 mA) ±0.1 % ± 20 nA (5 µA - 500 µA) ±0.1 % ± 200 pA (50 nA - 5 µA) ±0.1 % ± 20 pA (below 50 nA)
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	Up to ± 12 V
Current measurement range	50 μ A - 50 mA
DUT power range	Up to 2 W per package

REGULATORY COMPLIANCE

Certification	CE, SEMI S2
---------------	-------------

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.

© Copyright 2015 Cascade Microtech, Inc.
All rights reserved. Cascade Microtech is a registered trademark, and Symphony is a trademark of Cascade Microtech, Inc. All other trademarks are the property of their respective owners.

Data subject to change without notice.

Cascade Microtech, Inc.
Corporate Headquarters
toll free: +1-800-550-3279
phone: +1-503-601-1000
email: cmi_sales@cmicro.com

Germany
phone: +49-35240-73-333
email: cmg_sales@cmicro.com

Japan
phone: +81-3-5615-5150
email: cmj_sales@cmicro.com

China
phone: +86-21-3330-3188
email: cmc_sales@cmicro.com

Singapore
phone: +65-6873-7482
email: cms_sales@cmicro.com

Taiwan
phone: +886-3-5722810
email: cmt_sales@cmicro.com

MTTDDB-DS-0715

MTTDDB

www.cascademicrotech.com

