

CurveTracer CT-3100/3200

For High-Power Semiconductor Device Characterization



DATA SHEET

Emerging energy standards and increasing power consumption demand additional performance capabilities. As such, pressure has been placed on manufacturers to rapidly design, develop and characterize new power devices to develop innovative chipset designs to provide more efficiency. Characterization requires measuring performance across an entire operating region, often hundreds of amperes and thousands of volts. High-performance requirements have created the need for innovations in curve tracer technology – tools that have long been the industry-standard for power device characterization, but that no longer meet today's stringent characterization requirements.

CT-3100/3200 Curve Tracers are manufactured by Iwatsu Test Instruments Corporation exclusively for Cascade Microtech to address the obsolescence of these measurement tools, and to provide versatile wafer-level measurement for the growing power device market. The CT-3100/3200 Curve Tracers are designed specifically for measuring different types of high-power semiconductor devices such as IGBTs, super-junction MOSFETs, diodes and thyristors. Complementary to existing SMU-based instruments, they provide fast, accurate characterization up to 3,000 V, 400 A, 4,000 W peak power and support a leakage mode with cursor resolution of 1 pA. With a built-in USB port and a LAN interface for remote control, seamless data is now possible, enhancing measurement productivity.

On-wafer characterization shortens the design cycle and provides device manufacturers with faster time-to-market. Cascade Microtech also provides seamless integration with its Tesla on-wafer power device characterization system for a fully-integrated solution that will meet both current and emerging requirements.

FEATURES / BENEFITS

High-voltage and current sourcing (3,000 V, 400 A)	Wide power range for devices characterization (up to 390 W in high-voltage mode and up to 4,000 W in high-current mode)
AC, rectified sine, DC, leakage mode	Serving variety of application needs
TRACE and WAVE viewing mode	Intuitive high-current pulse device characterization
1 pA cursor resolution	Low-leakage DC measurements
Graphical configuration block diagram	Simple and fast device measurement set-up
Up to 20 measurement steps simultaneously	Efficient and fast device characterization
USB, LAN interface	Easy data acquisition and full remote control
Safety Interlock	Protect operator from electrical shock

SPECIFICATIONS CT-3100/3200

Collector Supply

Collector supply mode	High-voltage mode: AC, +/- rectified sine, +/- DC, +/- leakage
Max. peak power consumption selection	120 mW, 1.2 W, 12 W, 120 W, 390 W (390 W can be selected excluding max. peak voltage at 3,000 V range)
High-voltage mode	Max. peak (peak pulse) current 75 mA at max. peak voltage 3,000 V (2,500 V at AC) Max. peak (peak pulse) current 750 mA at max. peak voltage 300 V Max. peak (peak pulse) current 7.5 A at max. peak voltage 30 V
Looping compensation	Hardware: Stray capacitance compensation between Collector and GND Software: Yes
Maximum data points	20 to 1,000 points per trace

Step Generator

Current mode	Amplitude range: 50 nA to 200 mA at 1-2-5 step Maximum current: 10 times of STEP AMPLITUDE setting Offset: +/- 10 times of STEP AMPLITUDE testing
Voltage mode	Amplitude range: 50 mA to 2 V at 1-2-5 step Maximum current: 10 times of STEP AMPLITUDE setting Offset: +/- 10 times of STEP AMPLITUDE testing
Step rate	Staircase waveform: 2 times of 50 Hz or 60 Hz (50 Hz or 60 Hz at AC mode)
Pulse steps	Pulse width variable from 50 μ s to 400 μ s at 10 μ s resolution (measurement points can be set)
Number of steps	0 to 20 steps

AUX Output

Range	OFF, variable from - 40 V to + 40 V at 100 mV step
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Vertical Axis

Collector current	High-voltage mode: 1 μ A/div to 2 A/div (20 steps) at 1-2-5 step
Emitter current at LEAKAGE mode	1 nA/div to 2 mA/div (20 steps) at 1-2-5 step

Horizontal Axis

Collector voltage	High-voltage mode: 50 mA/div to 500 A/div (13 steps) at 1-2-5 step
Base/emitter voltage	50 mV/div to 5 V/div (7 steps) at 1-2-5 step

SPECIFICATIONS FOR HIGH-CURRENT MODULE (AVAILABLE WITH CT-3200)

Collector Supply

Collector supply mode	Pulse
Max. peak power consumption selection	400 W, 4,000 W
High-current mode (for pulse only)	Max. peak current 400 A at max. peak voltage 40 V
Pulse width / measurement points	Variable from 50 μ s to 400 μ s at 10 μ s resolution (measurement points can be set)

Step Generator

Step rate - Pulse	Variable from 80 ms to 1,000 ms (lowest frequency limited by max. peak power consumption setting)
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Vertical Axis

Collector current	100 mA/div to 50 A/div (9 steps) at 1-2-5 step
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Horizontal Axis

Collector voltage	50 mA/div to 5 V/div (7 steps) at 1-2-5 step
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GENERAL SPECIFICATIONS

CT-3100/3200

Operating conditions	10°C to 35°C
Display	8.4 inch color TFT-LCD (SVGA 800 x 600 pixels)
Data save/recall	Internal memory: 256 setups and four REF waveforms External: USB port to transfer measurement data and display screen
USB port	1 port (USB 1.1)
Remote control	LAN: 1 port (100 BASE-TX)
AC power supply/power consumption	AC 90 V – AC 264 V single phase, 45 Hz to 66 Hz, 500 VA

PHYSICAL DIMENSIONS

CT-3100

CT-3200

Dimensions	424 mm (W) x 555 mm (D) x 221 mm (H)	424 mm (W) x 555 mm (D) x 354 mm (H)
Weight	30 kg without accessories	45 kg without accessories

ORDERING INFORMATION

Part Number	Description
153-221	Curve Tracer, CT-3100
153-222	Curve Tracer, CT-3200
154-584	CS-301 (Fixture S), CS-500 (blank test adapter), operation manual, power cable
154-585	CS-30 (Fixture M), CS-500 (blank test adapter), wire set, operation manual, power cable
151-260	Interface assembly for Tesla and Curve Tracers (See Cascade Microtech's Tesla specification sheet for more details)

REGULATORY COMPLIANCE

Certification	UL, CE
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WARRANTY

Warranty*	12 months
Service contracts	Single and multi-year programs available to suit your needs

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

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Data subject to change without notice

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

Germany
phone: +49-89-9090195-0
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