TH530 Series

Semiconductor Device Avalanche Energy Tester (UIS)

The TH530 series measures the Unclamped Inductive Switching (UIS) capability of MOSFETs, IGBTs and diodes. Testing requires an inductive load — Techmize offers the TH530-01 programmable inductive load box as an optional accessory, or a suitable external inductor can be used. With an inductive load connected, the TH530 applies a controlled inductive energy pulse to the device under test and captures the resulting avalanche voltage and current waveforms, showing whether the device can safely absorb and withstand the energy released by a switched inductive load. Four models cover single- and dual-channel testing at 100 A and 200 A peak current, all rated to 2500 V avalanche voltage.

TH530 mainframe: 350(W) × 122(H) × 425(D) mm · approx. 50 kg · shown with the optional TH530-01 programmable inductive load box



- **Single- or dual-channel** testing of N/P-channel or combined devices (MOSFET, IGBT, diodes)
- Avalanche voltage up to **2500 V**, peak current up to **200 A**
- Single-pulse avalanche (EAS), repetitive avalanche energy (EAR) and repetitive-pulse-to-failure (RPF) test modes
- High-speed calibrated DAC for improved test accuracy
- Drain/source contact-resistance check (<20 Ω) with front-panel LED error indication
- Configurable bipolar gate drive voltage for N- and P-channel, depletion- and enhancement-mode DUTs
- Optional pre-/post-avalanche leakage testing to confirm DUT condition
- High-precision voltage/current waveform capture with avalanche-duration measurement
- 7" capacitive touchscreen with English UI; up to 4 most recent test waveforms stored for review
- External oscilloscope trigger output for synchronised, time-accurate avalanche visualisation

Four models, one platform

TH530-25100A

Single-channel · 100 A tier

Avalanche voltage	2500 V
Peak current	100 A
Channels	1

TH530-25100B

Dual-channel · 100 A tier

Avalanche voltage	2500 V
Peak current	100 A
Channels	2

TH530-25200A

Single-channel · 200 A tier

Avalanche voltage	2500 V
Peak current	200 A
Channels	1

TH530-25200B

Dual-channel · 200 A tier

Avalanche voltage	2500 V
Peak current	200 A
Channels	2

Dual-channel models (TH530-25100B / TH530-25200B) test two DUTs independently, each with its own gate drive and drain/source connections, and support the HANDLER 15-bin interface for automated sorting. Testing requires an inductive load, set via the optional TH530-01 programmable inductive load box (0.01–159.9 mH) or a suitable external inductor.

Applications

Power semiconductor R&D and manufacturing

Evaluate the avalanche withstand capability of power devices, confirming they survive the high-voltage spikes produced when an inductive load switches off. Examples: IGBTs, MOSFETs, power diodes.

Power supply design and verification

Verify that power devices can withstand the avalanche energy caused by primary inductance and high current without damage under abnormal conditions such as an output short circuit. Examples: switching power supplies, inverters.

New energy vehicles and industrial drives

Confirm devices can handle the inrush currents and voltage spikes produced by inductive loads during motor start-up or locked-rotor conditions. Examples: motor controllers, frequency converters, servo drives.

Technical specifications

Parameter	TH530-25100A	TH530-25100B	TH530-25200A	TH530-25200B
Avalanche voltage	2500 V			
Peak current	100 A		200 A	
Channels	1	2	1	2
Output energy limit	1 mJ to 0.00495 × V_{DD}^2 mJ			
Load inductance range[1]	0.01–159.9 mH via TH530-01 — 0.01–10.0 mH in 0.01 mH steps, 0.02–159.9 mH in 0.1 mH steps			
Current sensor type	Hall-effect sensor			
Peak current range	0.1–200 A, 0.1 A step			
Drain voltage range	±(10–150) V (N or P channel), 0.1 V step			
Rated voltage range (BV_{DSS})	5–2500 V, 1 V step			
Gate turn-on voltage range	±(2–28) V (N or P channel), 0.1 V step			
Gate turn-off voltage range	0–28 V, 0.1 V step — gate turn-on + turn-off voltage sum must not exceed 30 V			
Leakage testing (pre-/post-avalanche)	2 V to (set drain voltage − 2) V; fault reported above 1.0 mA, max. 8.0 mA			
Gate conditions	Gate drive resistance 25 Ω · Gate voltage accuracy (−28 V±0.5 V) to (28 V±0.5 V) · Gate pulse time <1 ms			
AC voltage input	105–125 VAC or 210–250 VAC, 50/60 Hz, selectable			
Waveform capture	DUT voltage and current waveforms captured and displayed on-screen; up to 4 most recent tests stored			
Device types	N- and P-channel MOSFET, IGBT, diodes			
Dimensions (TH530 mainframe)	350(W) × 122(H) × 425(D) mm			
Weight (TH530 mainframe)	approx. 50 kg			

[1] An inductive load is required for testing. Techmize offers the TH530-01 programmable inductive load box as an optional accessory (0.01–159.9 mH); a suitable external inductor may also be used.

Interfaces

RS232 (SCPI)	LAN	USB Host	Handler	GPIB
standard	standard	standard	standard	optional

RS232 uses SCPI command syntax; the MODBUS protocol is not supported. LAN supports both remote test control and real-time waveform viewing via host-computer software. HANDLER interface offers 15-bin or 4-bin output for automated sorting (15-bin recommended for dual-channel models). RS232, LAN and GPIB carry the same command set but cannot be used simultaneously. GPIB is an optional, separately fitted interface module.

Standard accessories

Item	Description
—	EU power cable (Schuko, CEE 7/7)

Accessories (ordered separately)

Item	Description
TH530-01	Programmable inductive load box, 0.01–159.9 mH — optional
TH26092B	Inductor load-box control cable
TH530-A58	Gate connection cable
TH530-A59	Drain/source connection cable
TH530-Manual Test Socket	Manual test fixture box (MOSFET TO-247, diodes)

An inductive load is required for testing — TH530-01 is offered as an optional accessory, or a suitable external inductor may be used. More fixtures available on request — ask your Techmize contact or authorized distributor.

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