

ITC75100

unclamped inductive load tester



overview

The ITC75100 is an enhanced unclamped inductive load (UIL) test system that builds on the success of ITC's industry leading ITC55 series of testers by adding additional test and measurement capability.

The ITC75100 performs ruggedness testing of power MOSFETs, IGBTs and diodes that conforms to MIL-STD-750 method 3470 by stressing them to controlled energy levels, accomplished by the devices driving an unclamped inductive load. Improved Test Specifications allow complete control of test parameters.

Included as standard in the ITC75100 are an internal parallel energy path (crowbar) and an external gate drive and voltage measurement POD.

The crowbar can be set to trigger in the event of a device under test (DUT) going into avalanche fail. If the crowbar fires then all the remaining energy will pass through the parallel energy path and not into the DUT. In a package test this prevents the die being completely destroyed so that failure analysis can be performed and protects the handler or socket contacts from being damaged. In a wafer probe application it limits the damage to the die so that there is no debris scattered across the wafer and it protects the probe card. This same crowbar can be utilized as a driver to reduce DUT current pulse-widths to minimize high current stress on DUT fixtures and handler contacts.

Safety features

- Test time-out
- Excessive leakage shutdown
- External safety lockout
- Two parallel connected Manual Start push buttons
- Device currents are constantly monitored. Testing is terminated if currents exceed or fail to reach programmable levels in a specified or calculated time

features

- High-speed, calibrated 16-bit DACs for higher test accuracy
- Single and Dual N/P-channel or combination device testing
- Front panel touch-screen tablet for standalone operation and test specification entry with screen-specific help
- Calibrated current and voltage waveform capture
- Self test on power up of all operating voltages to ensure accurate measurements and results
- Capable of testing devices up to 2500V Avalanche rating
- High-Speed, Solid-State 200A Switch with fault detection
- Pre and Post Avalanche Leakage
- Port 1 and Port 2 Test Results Screens
- New Kelvin detection circuit
- Crowbar circuitry to protect DUT and probe card/contactors
- Calibration program
- Bipolar Gate drive (30Volt maximum differential)
- GPIB interface for remote control
- High-speed Serial I/O interface
- Up to 15 DUT bins for standalone operation
- Front and rear parallel connected Serial I/O RS-232 connectors
- Scope Trigger Output
- Multipulse operation with up to 1,000,000 Avalanche tests
- Measurement POD with local gate drive
- Programmable Clamp (option)

tests performed

- Real-time Kelvin testing of device socket and/or contacts
- DC zero gate bias Drain-to-Source leakage test (for shorts)
- Drain-to-Source open/intermittent conductivity test (wire bonds)
- Avalanche duration test (latch-up of parasitic transistor)
- Pre-avalanche and Post-avalanche leakage surge test
- Bipolar Gate Drive allows testing of Depletion and Enhancement Mode DUTs
- RBSOA with programmable clamp

self-test modes

- Self-test when power is applied
- Self-test before first DUT is tested

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ITC75100 POD Features

- Rds on/Vds on/Vce on testing
- Vf testing
- Works with the 75x00 Series of UIS testers
- 400A avalanche current
- Up to 2500 avalanche volts
- Test specs and parameters are stored in the tester
- GPIB testing control
- Bipolar 30V On/Off Isolated Gate drive
- Programmable Gate Resistor (1 to 255 Ohms)
- Isolated Pod signals
- No external power supply
- Measurements referenced to the DUT's Source lead
- Kelvin contacts measure and reported in Ohms
- Kelvin contact resistance limits
- Programmable Time Delays and Pulse Width after avalanche
- High resolution Vds sensing
- Converts tester's Force/Force to true Force/Sense connections

ITC75100 RBSOA (Option)

- Split variable clamp
- Range: 500V to 2000V programmable in 10 volt steps.
- Split Clamp:
 - Main Module: 4 x 500V stages - can be configured in series for up to 2000V operation or in parallel for up to 200A operation
 - Auxilliary module: Must be as close to DUT as possible (within 2 inches)
 - Maximum second pulse width 100uS, depending on inductor and current settings
- Voltage/Current ranges:
 - 500V/200A
 - 1000V/100A
 - 1500V/50A
 - 2000V/50A
- Main Module: Internal energy dissipation circuit
- Additional specifications see ITC75100 data and specification sheets.

available interfaces

- Serial communication and control interface
- IEEE 488 GPIB control interface
- 15 bin handler control interface for improved sorting of failures for process control analysis

additional options

- All ITC Inductor Boxes
- ITC55-RSF Output Selector Box allows the ITC75100 Testers to test various configurations of MOSFETs, IGBTs, and dual and single diodes without having to replacing the DUT fixture up to 1500V avalanche voltage.
- ITC55HVD1 (High Voltage Diode Interface Box) - The ITC55HVD1 is a high voltage avalanche interface adapter box option for testing diodes using the ITC75100 at voltages up to 2500v.
- MTSDGEN Generic Test Socket may be used with the ITC75100 tester to provide a convenient method of manual avalanche testing for single or dual devices.
- ITC Multiplexers - Dual and Quad

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