

ITC57600

transient voltage suppressor surge tester



overview

The ITC57600 Tester is a programmable current waveform generator that is used to surge, test and measure voltage breakdown on many different device types. These include Transient Voltage Suppressor (TVS) diodes, as well as MOSFET and BIPOLAR Transistors, Zeners, Rectifiers, MOVs, Polyswitches and PTC devices.

The ITC57600 performs compliance testing of transient voltage suppressor diodes to insure conformance to Bellcore, REA and other regulatory specifications.

TVS devices are used to protect sensitive electronic equipment from power line voltage spikes caused by lightning, power line fluctuations, inductive load spikes, and other power line anomalies. For this reason, it is important to quantify the surge operation of these devices in either the forward or reverse direction and to precisely measure and specify the breakdown current and voltage.

operation

Engineering Mode - Operation and control of the ITC57600 is handled by RS-485-based PTNet server software and the EM57600 Engineering Mode Application Software. Test parameters can be created, verified and saved, and test results can be verified using the EM57600. The EM57600 also generates test reports.

Production Mode - Operation and control of the ITC57600 is handled by RS-485-based PTNet server software and the PTNet Production Mode software. The test parameters created by the EM57600 program are used for the tester operating in Production Mode. The Production Mode software controls all of the testers on PTNet and manages test results from each tester in a production environment.

features

- Easily create any current waveform which can be described by an equation or data file
- An intuitive user interface via graphic LCD Touchscreen
- ITC PTNet provides networking capability
- Self-calibration ensures all test measurements are in tolerance
- Front panel BNC jacks allow easy monitoring of the test cycle

waveforms

Waveforms are generated by a precision wave-shaping computer algorithm for the highest possible degree of accuracy. The waveform can be user defined to meet a specific device test requirement, or it can be loaded from the standard library of waveforms that include the following:

The 10 x 1000 μ s and 8 x 20 μ s double exponential waveforms are based on the Bellcore and Rural Electrification Administration Document PE-60 definitions.

- 10 x 1000 μ s, Double Exponential
Ipk = 10 mA up to 750 Amps*
Vpk = 400 Volts
- 8 x 20 μ s, Double Exponential
Ipk = 10 mA up to 750 Amps*
Vpk = 400 Volts
- Pulse
Ipk = 10 mA up to 750 Amps*
Vpk = 400 Volts
Tr = Tf = 10 μ s
Pulse Width up to 100mSec
- One-half Sine Wave
Ipk = 10 mA up to 750 Amps*
Vpk = 400 Volts

*Note: Maximum current rating limited by:
Ipeak x VPeak, at least 25KW-peak power up to a maximum of 128KW, or by the Current Regulator's SOA as defined by the current waveform.

self-test modes

- Self-test when power is applied
- Self-test before first DUT is tested after parameters are downloaded to tester
- Self-test while test data is being uploaded from the tester to the server PC

power up tests

- All power supply voltages are verified
- DUT contact voltages are in the safe zone
- Power supply temperature is safe
- Current Regulator temperature is safe
- ITC57600 top cover is in place
- Power supply high voltage is off
- Communication via PTNet is verified

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theory of operation

The following is an example of a test sequence. Test sequences can be changed to handle any testing requirement.

- After the DUT is tested for Kelvin, a leakage test is performed to verify that the device is correctly installed in the socket and that it has acceptable reverse biased characteristics.
- Next the forward voltage drop (V_f) of the DUT is measured. The DUT is subjected to a user selectable reverse bias surge waveform.
- When the waveform test is completed, the DUT is again measured for leakage and V_f .
- If the DUT fails any portion of the test process, an indicator light on the front panel indicates the DUT's mode of failure. Pass/Fail information is passed to a device handler using a built in optically isolated interface.

In the engineering mode the ITC57600 can perform repetitive or cyclical tests to characterize device performance.

packages

- ITC57600-ECP, Engineering Characterization Package: ITC57600 Tester, Single User PTNet Server Software License, Engineering Mode Application Software EM57600, 1-year of technical support and software updates.

options

- ITC57600-DCP, DC Test and Calibration Package: Keithley 2410C SourceMeter, SourceMeter Software Support, Calibration Software, 1-year of technical support and software updates. Note: The Keithley 2410C SourceMeter improves DC measurement accuracy and provides simple NIST-traceable calibration.
- PTNET-5, Power Test Network Server Software with Production Control Manager: PTNet License for 5 testers, Production Control Application Software for ITC57600 and ITC55100 testers, Software for Handler Interface, Full Binning Support for handler and Virtual Bins, Production Database Support, RS-232 to RS-485 serial port converter, 1-year of technical support and software updates.
- PTNET-5PLUS: PTNet License for 5 Additional Testers

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