GRUND TECHNICAL SOLUTIONS

Superior ESD Testing Solutions

PurePulse Human Metal Model Module

PurePulse Foundation

"All Waveform" ESD System

A unified modular system that provides ALL 2-pin ESD testing for packaged parts, bare die, and wafer level devices.

***Expandable* to provide *comprehensive testing* for Compliance to ESD Standards and Engineering Evaluation of design issues and new technologies.**

PurePulse HMM provides convenient testing of devices by applying the system level IEC 61000-4-2 testing pulse to packaged devices, boards and/or subassemblies via a 50 Ω cable.

The controlled impedance path provides reliable and repeatable IEC pulse delivery for component testing.

Using the GTS PurePulse foundation resources, the voltage, pulse stepping and pulse timing can be controlled. The high voltage supply is integrated within the system.

PurePulse HMM makes device testing easy:

- **Simple cable connection to test fixture board**
- **Apply a sequence of stress pulses**
- **Optional Current Monitor to verify and measure stress pulses**
- **Optional Leakage Measurement to automatically detect failure level**
- **By Measuring leakage between pulses**
- **Detect DUT impedance changes due to device heating upon failure**

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PurePulse HMM Advantages

Precise stress testing at device, board, or wafer level
- Highly repeatable IEC 61000-4-2 pulse waveform to DUT
- Direct and controlled constant impedance signal path maintains the initial current spike waveform
- Patented 100 Ω system impedance reduces the effect of device resistance change on applied stress
- 50 Ω cable delivery environment eliminates the electromagnetic noise that is seen in discharge guns
- Waveform verification without an ESD current target

Convenient operation through 50Ω coaxial cable connections
- Flexible and quick connections to test fixture boards or standard GTS test probes
- No need for coupling planes or special test tables

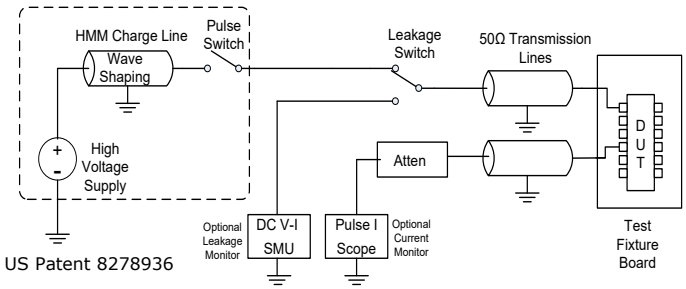
Member of the GTS PurePulse family of products
- Flexible multi-waveform testing supported
- Easy to use graphical interface software
- Maestro control and analysis software
- Compact desktop system

PurePulse system provides
- Intelligent oscilloscope setting optimization with algorithms for noise reduction
- Control of voltage stepping and pulse timing
- Microprocessor based high voltage supply
- Waveform recording and display
- Network capable for data transfer
- Optional automation with probe station and/or flying probes
- Measure DC leakage and/or DC curve tracing with a high resolution Source Measure Unit (SMU) to detect device damage

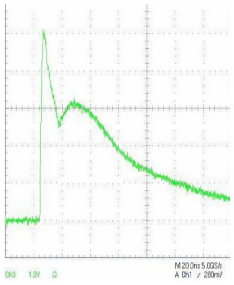
Performance backed by the GTS team with over 50 years of ESD test equipment design experience.

PurePulse Human Metal Model Module

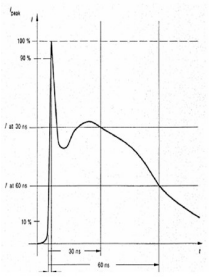
TECHNICAL DETAILS



System Configuration with Leakage and Current Monitoring



Example of Measured DUT Current



IEC 61000-4-2 Standard Waveform

The PurePulse HMM module has been carefully designed to apply stress pulses to ICs in a consistent and reproducible manner. Performance is optimized for packaged devices and sub-assemblies. The system incorporates a patented custom charge line to produce a 50 Ω output pulse that can travel through cables, delivering a fast rise pulse to DUT with minimal distortion in a repeatable manner.

The 50 Ω transmission path is maintained through RF cables, connectors, and microstrip transmission lines that remove impedance variations that degrade pulse quality in discharge gun testing. Peak stress current variations due to reflections are eliminated.

100 Ω system impedance provides stable stress currents even when DUT resistance changes. Current passing through the DUT may be measured directly. PurePulse HMM module is compatible with optional 50Ω wafer probes for wafer testing or DUT testing without test fixtures. The HMM module meets the requirement of the IEC 61000-4-2 and ANSI/ESD 5.6-2009.

SPECIFICATIONS

Pulse Rise Time	0.6 ns to 1 ns
I_{peak}	3.75 A/kV*± 10%
I_{30ns}	2.0 A/kV* ± 10%
I_{60ns}	1.0 A/kV* ± 10%
Voltage Range	*1— 16 kV** (per HMM Standard) *IEC 61000-4-2 equivalent voltage
Maximum Current	60 A peak @ 16kV into a 50 Ω load
Power and Control	Provided through GTS PurePulse platform (all-in-one PC with Maestro software, System Controller for high voltage, Gigabit Switch for PoE and 24V, and Smart Router)
Size and Weight	17.5”(w) x 14.5”(d) x 4” (h), 20 lbs

OPTIONS

Failure Detection	Keithley 2400/2600 series SMUs to detect device failure
Wafer Test Kit	Probes and cables for micropositioners
Pulse Recording	Custom communication/control drivers for user’s oscilloscope

It’s not how fast you test, it’s how accurately you test fast!

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