

DTS8765neo Dynamic Parameter Power Semiconductor Test System

→ Customizable modular design

→ Very low DC Link Inductance

→ Expandable for static AND dynamic tests



Features

- High Performance: Up to 3,000 V | 20,000 A
- Short test times < 30 ms
- Very low parasitic inductance down to 5 nH due to cable-free testhead contacting
- Customizable modular design e.g. 2,000 V | 10,000 A or 1,500 V | 20,000 A
- Easily expandable for static AND dynamic tests on ONE test station
- Easy to adapt to DUT
- Optimized for high-speed production testing with ready-to-run sequencing software

System Overview

The **DTS8765neo Dynamic Parameter Power Semiconductor Test System** is built for high-speed and precise testing of medium to high-power semiconductor components, such as diodes, MOSFETs, and IGBTs, across a wide voltage range. Designed by VX Instruments, this system supports a comprehensive suite of dynamic parameter tests “Safe operating area” and includes a modular PXI platform with an open interface, allowing for additional testing options, including DUT-specific resistor networks and temperature sensors. It can be easily expanded to perform dynamic as well as static tests on one test station. Its innovative testhead features an application-specific board for adapting DUTs, which enables a cable-free contacting and thus a very low parasitic inductance.

- **Cost-efficient testing:** Fast, high-volume multi-station capability lowers test costs
- **Very low parasitic inductance** down to 5 nH due to cable-free testhead contacting
- **Modular flexibility:** Easily configurable according to testing requirements

Target DUTs include

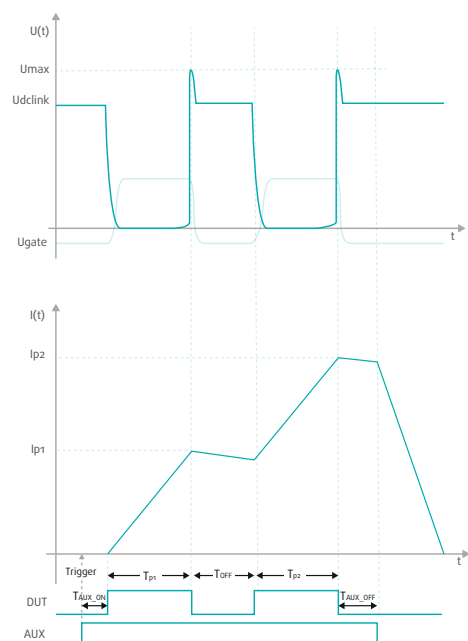
- IGBTs
- MOSFETs (Wide bandgap: SiC & GaN)
- Diodes

Test Levels

- Module
- Discrete
- KGD
- Laboratory / Characterization

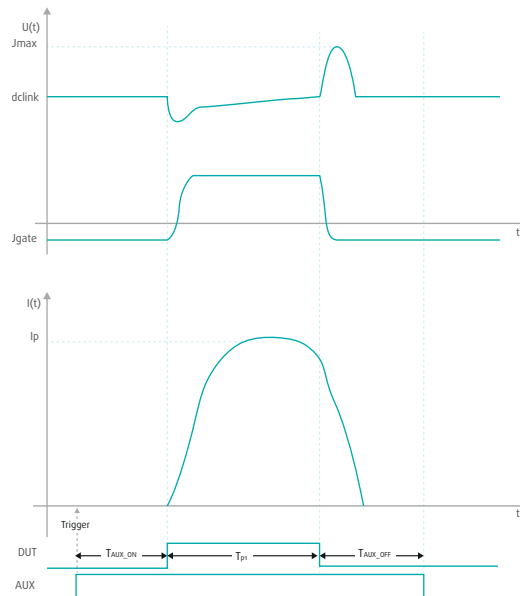
Measurement Parameters

- **MOSFET:** According to IEC60747-8 standards
- **IGBT:** According to IEC60747-9 standards
- **RBSOA & FBSOA**
 - E_ON
 - E_OFF
 - E_RR
 - I_{max_pulse_x}
 - U_{dsm}_{max_pulse_x} (Highside Switch)
 - U_{gs}_{max_pulse_x} (Highside Switch)
 - U_{dsm}_{max_pulse_x} (Lowside Switch)
 - U_{gs}_{max_pulse_x} (Lowside Switch)
 - du/dt
 - di/dt



■ SCSOA

- E_ON (Highside Switch)
- E_OFF (Lowside Switch)
- I_{max}
- U_{dsmax} (Highside Switch)
- U_{gsmax} (Highside Switch)
- U_{dsmax} (Lowside Switch)
- U_{gsmax} (Lowside Switch)



Key Features

- Sensing to DUT ensures low noise levels
- Low power consumption with reduced thermal effects on DUT and connections
- The innovative testhead allows high-side measurements with exceptional precision and very low parasitic inductance
- Flexibility
 - Compatible with all sequencers
 - Tool-free product changeover allows quick and easy transitions to different DUTs, enabling mixed-product lines with no setup time required.
- High Performance
 - High Bandwidth capability
 - Minimal inductance enables operation close to product limits. Low stray inductance down to 5 nH, even without a snubber network
- Product Safety
 - Emergency shutdown ensures protection of contacting and test systems, with shutdown capability up to 10 kA in less than 200 ns
 - Adjustable current limitation provides additional protection for contacting
 - Bypass current path
- Cost Reduction and Flexibility
 - Integrated static pre-tests reduce costs and increase flexibility.
 - Cost-effective solution with applications for new DUT
- Gate driver interchangeable depending on requirements (also 3rd party instruments)

Additional Features

- Easily expandable to conduct dynamic and static tests on one test platform
- Multisite and multistation test capability
- Expandable measurement equipment options via PXI(e)
- Optional static parameter & dynamic parameter tests (e.g. Idss, Igss, avalanche, multi-pulse)

Benefits

- **High Performance:** Short test times, minimal inductance, wide bandwidth
- **Time-saving:** Dynamic and static tests combined on a single station significantly reduce index time
- **Highly Flexible:** Modular design to adapt to customer requirements, fast integration times, easy maintainability, high common part rate for spare parts
- **Easy re-use:** Designed for re-use of major instruments/components
- **Compact:** Saves valuable floorspace
- **Cost efficient:** Best price/performance ratio
- **Handler independent:** Short integration times for new DUTs and machine suppliers

Test System Main Components

DTS8765 Controller Unit

- 19" 2HE (PXCe4012 / PXCe4112)
- 2x PXDe7214 Digitizer (Ugs, Udshigh, Udslow, Ids)
- PXI5121 State machine (FPGA Logic) / DIO
- PXIe3110 CPU
- PXSe3300 Expansion card Power supply 12 V



DTS8765 Power Unit

- Charging capacitor bank
- Contact check

Standardized contacting Unit

- Contacting via needle adapter
- Manual or automated contacting
- Quick adaption to new products
- Quick changeover between productions
- Very easy to maintain

Testhead Unit

DTS8765

- | | |
|------------------------------|------------------------------|
| - Frontend control-board | - Current probe for IDS |
| - Capacitor Bank | - Sense-Matrix for UGSDUTx |
| - DUT gatedriver | - Sense-Matrix for UGSDUTx |
| - Differential probe for UDS | - Overcurrent cut-off device |
| - Differential probe for UGS | - Active Discharge unit |