

The MiNT Systems' MS7208 Flash Device Test System (FDTS) is a multi-site automatic test system primarily designed for engineering and production in flash device manufacturing.

The MS7208 system can test a wide range of device families including – but not limited to – NAND flash, NOR flash, multi-level flash, multi-die flash, EEPROM, RAM, and mixed-technology memory devices.

Built on the flexible modular ATE platform, the MS7208 can be tailored to test a single device or up to 8 devices simultaneously with one Flash Device Test Module. The parallel testing capability is field-expandable from 1 module to 30 modules (up to 240 devices; higher device count optional), providing great flexibility in configuring the MS7208 to work manually or with any single site or multi-site prober or handler.

The application-specific PC Windows-based test software allows the user to create, edit, and store custom test program flows, which can be used to collect and analyze even the most complex test combinations. Additionally, the network-ready MS7208 is equipped to interface with your factory intranet, providing test results and data analysis to those who need it most. The PC-based controls allow the MS7208 to be incorporated into your network in minutes.

MiNT Systems is dedicated to advancing semiconductor testing technology. We are continuously adding new modules to the ATE family to provide more test functions with higher accuracy and greater flexibility.

Features:

- Tests a wide range of flash device families
- Supports open, short, resistance, and leakage tests
- Supports programming, verify, and erase algorithms
- Advanced precision test system in a bench top portable package
- Multi-die testing
- Single-site and multi-site testing configurations
- Field-expandable test sites
- Flexible pin number configuration
- Windows-based spreadsheet-like programming
- Comprehensive MiNT Test Flow Editor software for fast device test application generation
- Interfaces for any wafer-prober or device handler

Applications:

- DC and functional testing for flash memory devices
- DC testing for any device up to 96 pins per module
- Use as a general test system, a programmer, or an endurance test system



A single MS7208 Flash Device Test Module is capable of testing 1 to 8 devices simultaneously. A complete system can operate 1 to 30 modules for parallel testing of up to 240 devices.

| Index | My Name | Method | Run | Parameters |
|-------|-----------------------|--------------------|-----|---|
| 1 | Pin Continuity | Continuity | Y | Pin |
| 2 | Vcc Continuity | Continuity | Y | Vdd |
| 3 | Signal Leakage (low) | Leakage Current | Y | InputPadLow |
| 4 | Signal Leakage (high) | Leakage Current | Y | InpputPadHi |
| 5 | I/O Leakage (low) | Leakage Current | Y | TriStatePadLow |
| 6 | I/O Leakage (high) | Leakage Current | Y | TriStatePadHi |
| 7 | Power down | Voltages | Y | PowerOff |
| 8 | Power on | Voltages | Y | Vcc=3.30 Vih=3.30 Vci=1.80 Vpp=0.00, Vfl=0.00 |
| 9 | Reset command issued | Reset | Y | |
| 10 | Standby Idd (CMOS) | Standby/Active Idd | Y | SCMOS |

MiNT Test Flow Editor allows the user to generate target device test program effortlessly.

Specifications¹:

Flash Device Test System

Model MS7208

Programmable Device

Power Supply

| | |
|----------------------------|--|
| Number: | 2 per module |
| Voltage Range: | VCC: 0 to 7.5V VCCQ: 0 to 12.5V |
| Accuracy: | VCC: $\pm 30\text{mV}$ VCCQ: $\pm 50\text{mV}$ |
| Resolution: | 12 Bits |
| Current Measurement Range: | Range 1: 0 to 100mA Range 2: 0 to 10mA Range 3: 0 to 1mA |
| Resolution: | 16 Bits |

Programmable Device Pin Logic Level

| | |
|----------------|---|
| Number: | 3 per module |
| Voltage Range: | VIH: 0 to 5V VHH: 0 to 12.5V VIL: -0.25 to +2.5V VO: 0 to 5V |
| Accuracy: | VHI: $\pm 25\text{mV}$ VHH: $\pm 50\text{mV}$ VLO: $\pm 15\text{mV}$ VO: $\pm 25\text{mV}$ |
| Resolution: | 12 Bits |

Open/Short Test Control

| | |
|-----------------------------|--|
| Force Current Ranges: | 4 ranges, Range 1: $\pm 5\text{mA}$ Range 2: $\pm 500\mu\text{A}$ Range 3: $\pm 50\mu\text{A}$ Range 4: $\pm 5\mu\text{A}$ |
| Measure Voltage Range: | -2.5V to +7.5V |
| Force Voltage Range: | -2.5V to +7.5V |
| Measure Current Ranges: | 4 ranges, Range 1: $\pm 5\text{mA}$ Range 2: $\pm 500\mu\text{A}$ Range 3: $\pm 50\mu\text{A}$ Range 4: $\pm 5\mu\text{A}$ |
| Force / Measure Resolution: | 16 Bits |

Leakage Test Control

| | |
|-----------------------------|--|
| Force Voltage Range: | -2.5V to +7.5V |
| Measure Current Ranges: | 4 ranges, Range 1: $\pm 5\text{mA}$ Range 2: $\pm 500\mu\text{A}$ Range 3: $\pm 50\mu\text{A}$ Range 4: $\pm 5\mu\text{A}$ |
| Force / Measure Resolution: | 16 Bits |

Resistance Test Control

| | |
|--------------------------|--|
| Force Current Ranges: | 4 ranges, Range 1: $\pm 5\text{mA}$ Range 2: $\pm 500\mu\text{A}$ Range 3: $\pm 50\mu\text{A}$ Range 4: $\pm 5\mu\text{A}$ |
| Measure Voltage Range: | -2.5V to +7.5V |
| Test Current Resolution: | 16 Bits |

Tester Pin Assignment

| | |
|----------------|---|
| I/O Field: | 32 Bits: I/O0 to I/O31 Voltage: VIH to VIL |
| Address Field: | 32 Bits: A0 to A31 Voltage: VIH to VIL |
| Control Field: | 8 Bits: ALE, CLE, WE/, WP/, and CNT0 to CNT3 Voltage: VHH/VIH to VIL |
| RY/BZ Field: | 8 Bits: RBZ0 to RBZ7 Voltage: VIH to VIL |
| RE Field: | 8 Bits: RE0 to RE7 Voltage: VIH to VIL |

Cycle Time

| | |
|------------------------|--|
| Clock Rate: | 100ns, 150ns, 200ns, 250ns, 300ns, 350ns, 400ns, 450ns |
| WE/ Edge Placement: | 10ns |
| Read Strobe Placement: | 10ns |

Software

| | |
|-----------------------|--|
| System Software: | MS Windows platform, test flow editor, auto calibration, measurement and test control, data logging and analysis tools |
| Application Software: | MiNT Test Flow Application Software |

General

| | |
|------------------------|---|
| Power Requirement: | 115/230V, $\pm 15\%$, 50Hz/60Hz, 150 VA |
| Dimensions: | 15.5" (40mm)W x 2.5" (6mm)H x 13" (33mm)D |
| Weight: | 15lb (7kg) |
| Humidity: | 20% to 80% RH, non-condensing |
| Operating Temperature: | 10°C to 35°C |

Prober/Handler Interface

| | |
|------------------------|----------|
| RS232: | Optional |
| IEEE488 (GPIB): | Optional |
| MCT 24pin Handler I/F: | Optional |

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Representative:

¹ Preliminary specifications subject to change.