

# ***NTS5700 Flash Memory Endurance Cycling System***



- **3 Environmental Chambers**
  - Chamber 1 Ambient to +150°C
  - Chamber 2 Ambient to +150°C
  - Chamber 3 -55°C to +150°C
- **12 Independent Zone Controllers**
- **4 Electrical Zones per Chamber**
- **Disable and Service any Slot During Operation**
- **Algorithmic Pattern Generator**
- **4 Calibrated DUT Power Supplies**
- **DUT Supply Over Current Monitor**
- **Calibrated Pin Driver/Receiver Levels**
- **C++ Test Language**

## **NTS5700 APPLICATIONS**

- Program / Erase Endurance Cycling
- Measure Vt Levels and Shifts
- Generate Vt Histogram Plots
- Determine Endurance at Hot/Cold Temperatures
- Detect Cell Disturb Phenomenon
- DC Stress
- Temperature Stress
- Qualify A New Flash Device
- Qualify A New Fabrication Process
- Qualify A New Fabrication Plane
- Qualify A New package
- Optimize A Flash Device Design
- Fabrication Process Monitor
- Competitor Evaluation Tool

# NTS5700 Cycling System Specification

## □ DUT Power Supplies

V1	0~6 V @ 10A 1mV Res. I measure 0~10A
V2	0~12 V @ 5A 1mV Res. I measure 0~5A
V3	±12 V @ 2A 1mV Res. I measure ±2A
V4	±12 V @ 2A 1mV Res. I measure ±2A
Current Monitor	Over Current Monitor Shuts Down Supplies

## □ Pin Driver/Receiver Levels

Vih Data	0~6 V 1mV Res. 1mA/Channel Drive
Vih Address & Ctl	0~6 V 1mV Res. 1mA/Channel Drive
Vil	-1V ~ +1V 1mV Res. 1mA/Channel Drive
Vsf	-2V to +12V
Vout	0~6 V 1mV Res.
Vth	0~6 V 1mV Res.
DC Tests	Opens, Shorts, Leakage

## □ Signal Resources

Address	32
Data	64 Address/Data Multiplexing Arranged as 1,2,4,8,16,32 or 64 bits
CE (chip enable)	72 Maskable to Disable any Device
Row Select	16
Control Lines	16 bi-directional
Additional Ctl lines	32 Multiplexed with Address
Option Board Lines	32 Channels available from Option Board

## □ Special Error Handling

AFC	Fail Bit Counter up to 4 Gig Errors
ECR	Error Catch RAM, 2K Deep

## □ Computers / Software

Host	PC Windows XP Pro
Driver Embedded uC	Novtek Embedded Supervisor
Test Program	C++ with Novtek Function Library
PG	Novtek APG Language
Bit Map Display	Novtek BitView (Option Upgrade)
Maintenance	Diagnostics, Calibration Programs
Communications	Ethernet RS232/USB for Calibration Kit

## □ Devices Supported

Devices Types	Flash, MRAM, EEPROM, All NVM
Device Architecture	NOR, NAND, SPI, I <sup>2</sup> C, Custom Parallel or Serial Device Interface Methods, Engineering Test Vehicles, Embedded NVM
Socket Board Capacity	72 Typical Up to 256 for Serial Devices Limited by Socket Size

## □ Pattern Generator

Method	Algorithmic Pattern Generator	
Timers	2, Down Count, 1uS to 16 Seconds	
Loop Counter	4, 32 Bit Loop Counters	
Cycle Time	100nS ~ 100uS, 10nS Res.	
Address Scrambler	Yes	
Formatting	Address	Drive Only
	Data	Drive Only
	Row Enable	True or Surround by False
	CE	True or Surround by False
	Ctl	True, Surround by False, Start Only, Stop Only