NEXFLASH®
Technologies, Inc.

PRELIMINARY
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NX25M640C

NX25M640C 8M-Byte
REMOVABLE SERIAL FLASH MODULE

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FEATURES

- **Serial Flash Module (SFM)**
  - Removable package for Serial Flash Memories
  - 8MB-byte capacity
  - Ideal for small portable/mobile products that store voice, images or data
  - Enables unlimited storage, revision updates and capacity upgrades
- **Small Form Factor**
  - Relatively flat 15mm x 45mm (1.8”x 0.6”) form factor. Less than 15% area of PCMCIA Card
- **Ultra-low Power**
  - Single 3V supply for read, Erase/Write
  - As low as 5 mA @3V, less than 1 µA standby
- **Simple Interface**
  - Supports NX25Fxxx SPI (4-pin)
  - Easily interfaced to Microcontrollers
  - Smart card style self-cleaning connector, only 8-contact pads
  - Device Information Sector allows identification of capacity, voltage and other characteristics
  - Optional electronic serial number
- **Development Support**
  - PC-based Development Kit and Software

DESCRIPTION

The NX25M640C (8MB) Serial Flash Module (SFM) provides the benefits of *NexFlash’s* Serial Flash Memories in an innovative removable package. The NX25M640C SFM is ideal for microcontroller-based applications, small portable and mobile products, and other resource-limited systems that store data, voice, and images. The SFM has a space-efficient form factor of 15mm (0.6”) by 45mm (1.8”) that is easy to handle and transport (see Figure 1). Simple electrical contacts, similar to those used in smart cards, provide for a reliable and cost-effective interface to a surface-mount slide-in connector (commonly used in GSM phones). Up to two Serial Flash Memories can be mounted onto the module which is made of standard FR4 Epoxy Glass PCB material.

The NX25M640C operates at a supply voltage of 3V. Current consumption is as low as 5 mA active and 1 µA standby making them highly suitable for battery operation. Other features of the Serial Flash Module include on-chip SRAM, electronic ID, flexible write protection and insertion/removal detection. *(Note: This document is supplementary to the NX25F640C Serial Flash Memory data sheet.)*

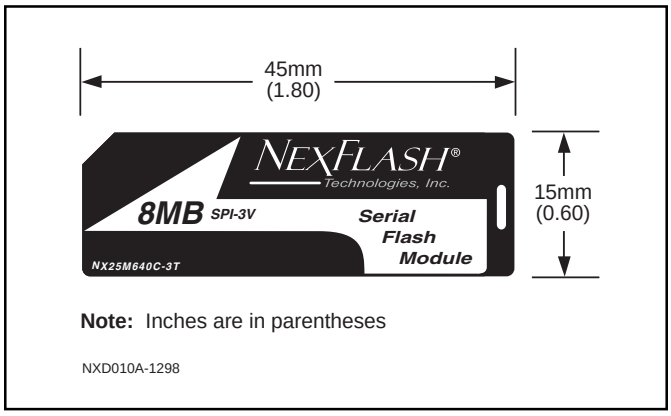

Figure 1. Serial Flash Module

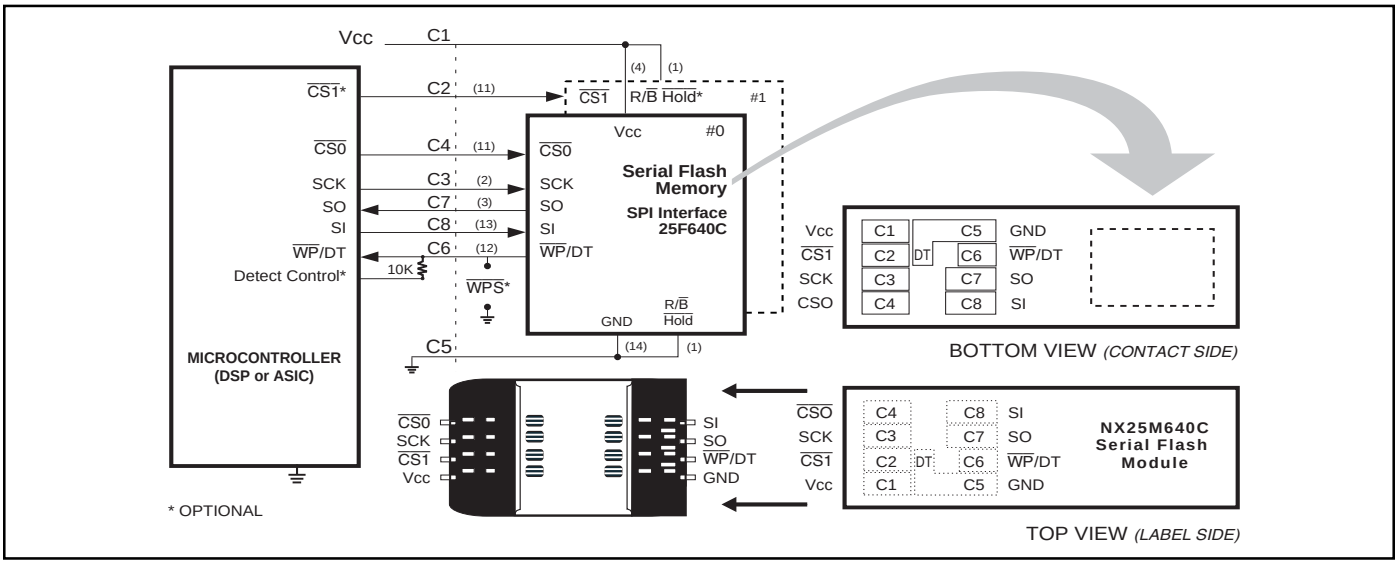

Figure 2. Typical interface for Serial Flash Module with SPI Interface using NX25F640C Series Devices.
Equivalent pin numbers for TSOP (Type II) are listed in parentheses. SPI contact assignments are shown for Bottom and Top Views of Serial Flash Module and Top View of the ITT Cannon Slide-insertion Connector (Model CCM-03-3504).

Pin Descriptions

Note: *See NX25F640C Data Sheets for further information*

Power Supply Pins (Vcc and Gnd)
Supply source for 5V or 3V. Contact layout allows for the module to be inserted and removed while power is applied ("hot-socketing") without damaging the module's memory device.

Serial Data Input (SI)
The SPI bus Serial Data Input (SI) provides a means for commands or data to be written to (shifted into) the device.

Serial Data Output (SO)
The SPI bus Serial Data Output (SO) provides a means for data to be read from (shifted out of) the device. When the device is deselected ($\overline{CS}$=1) SO pin is in a high-impedance state.

Serial Clock (SCK)
All commands and data written to the Serial Input (SI) are clocked relative to the rising edge of Serial Clock (SCK). All data read from the Serial Data Output (SO) is clocked relative to the falling edge of SCK.

Chip Selects ($\overline{CS0}$ and $\overline{CS1}$)
Chip select inputs are asserted low. $\overline{CS0}$ selects device location 0, which is on the contact side of the module. $\overline{CS1}$ selects device location 1, which is located on the opposite side of module from device #0. $\overline{CS1}$ is only used when a module has two serial flash memories. Contact NexFlash for more information regarding two Serial Flash Memories on a single module.

Write Protect/Detect ($\overline{WP}$/DT)
The Write Protect/Detect pin is an optional dual function pin.

Write Protect ($\overline{WP}$)
Used as a Write Protect Input ($\overline{WP}$), when $\overline{WP}$ is asserted (active low) the entire flash memory array is Write Protected. $\overline{WP}$ can be controlled by the interface or as an optionally available contact pad directly on the module.

Detect (DT)
Using a pull-up resistor, a card detect (DT) can provide a low to high or high to low transition when the module is inserted or removed. The pulse is best used in conjunction with an interrupt input of a microcontroller or processor.

R/$\overline{B}$ $\overline{Hold}$
The Ready/Busy-Hold pin function is not available for use with the SFM. This pin must be set to "No Connect" in the NX25Fxxx configuration register.

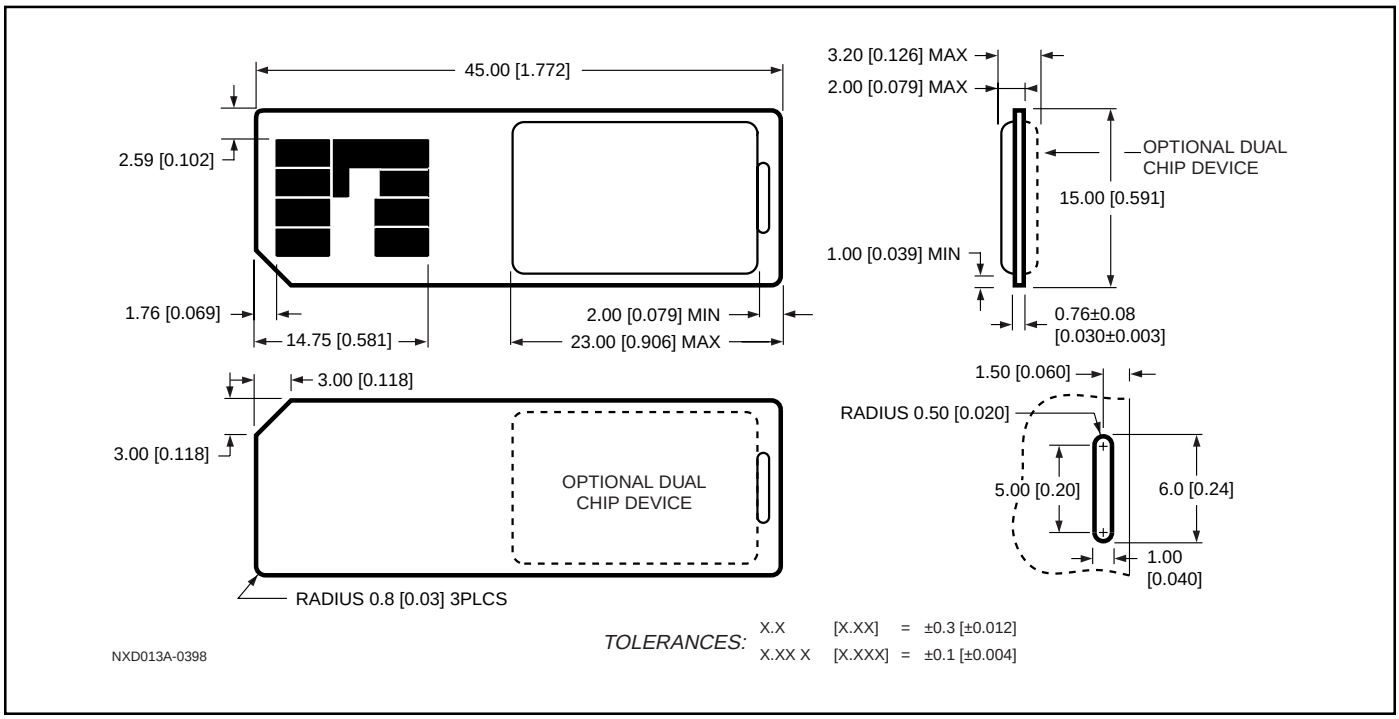

Figure 4. Serial Flash Module Package Dimensions (Inches are in parentheses)

ABSOLUTE MAXIMUM RATINGS (1, 2)

Symbol	Parameter	Conditions	Range	Unit
V_{CC}	Supply Voltage		0 to 7.0	V
V_{IN}, V_{OUT}	Voltage Applied to Any Pin	Relative to Ground	–0.5 to V_{CC} + 0.5	V
EDC	Electro-static Discharge: Contact to Insulating or Conductive Plate.	JEIDA 4.1 Specification	±4,500	V
T_{ST}	Storage Temperature		–40 to +85	°C

Note:
1. This device has been designed and tested for the specified operation ranges. Proper operation outside of these levels is not guaranteed. Exposure beyond absolute maximum ratings (listed above) may cause permanent damage.
2. Proper care and handling of the Serial Flash Module is mandatory to ensure reliable operation. Avoid bending or subjecting the module to sudden impact. Avoid directly touching the connectors to protect from damage caused by static discharge. *NexFlash* cannot accept and hereby disclaims liability for any damage to the modules, including data corruption that may occur due to mishandling.

OPERATING RANGES

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{CC}	Supply Voltage		2.7	3.0	3.6	V
T_A	Ambient Temperature, Operating	Commercial	0	—	+55	°C
		Industrial[2]	–40	—	+85	°C
IRO	Mechanical Insertion and Removal Cycles[1]	Office Environment Using ITT Cannon Connector CCM03-3504	5,000	10,000	—	Cycles

Note:
1. Tested on a sample basis or specified via design or characterization data.
2. Contact NexFlash for availability industrial grade devices.

AC and DC ELECTRICAL CHARACTERISTICS

See associated NX25F640C Serial Flash Memory Data Sheet

ORDERING INFORMATION

Size	Order Part No.	Package
8M-Byte	NX25M640C-3T	SPI, SFM, TSOP, 2.7-3.6V
8M-Byte	NX25M640C-3T-R	SPI, SFM, TSOP, 2.7-3.6V, ≤ 64 Restricted Sectors

Note: To order SFM's without labels contact *NexFlash's* Serial Flash Marketing Department.

PRELIMINARY DESIGNATION

The “Preliminary” designation on an *NexFlash* data sheet indicates that the product is not fully characterized. The specifications are subject to change and are not guaranteed. *NexFlash* or an authorized sales representative should be consulted for current information before using this product.

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(b) the user assumes all such risks; and

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