NEXFLASH ®
Technologies, Inc.

Serial Flash Overview

Serial Flash Storage Solutions for Resource-Limited Systems

Capacity Options · Ultra-Low Power · Pin Efficient · High Performance · Low System Overhead · Space Saving

NexFlash Serial Flash Products

NexFlash's products provide "media-storage" (data, voice, image) solutions for resource-limited systems. They are ideal for systems that are constrained by power, available pins, space, performance, or hardware and firmware resources. *NexFlash*'s Serial Flash products are suitable for a variety of applications, including portable/mobile products and controller-based systems. *NexFlash*'s Serial Flash products include:

• Serial Flash Memories
• Serial Flash Modules
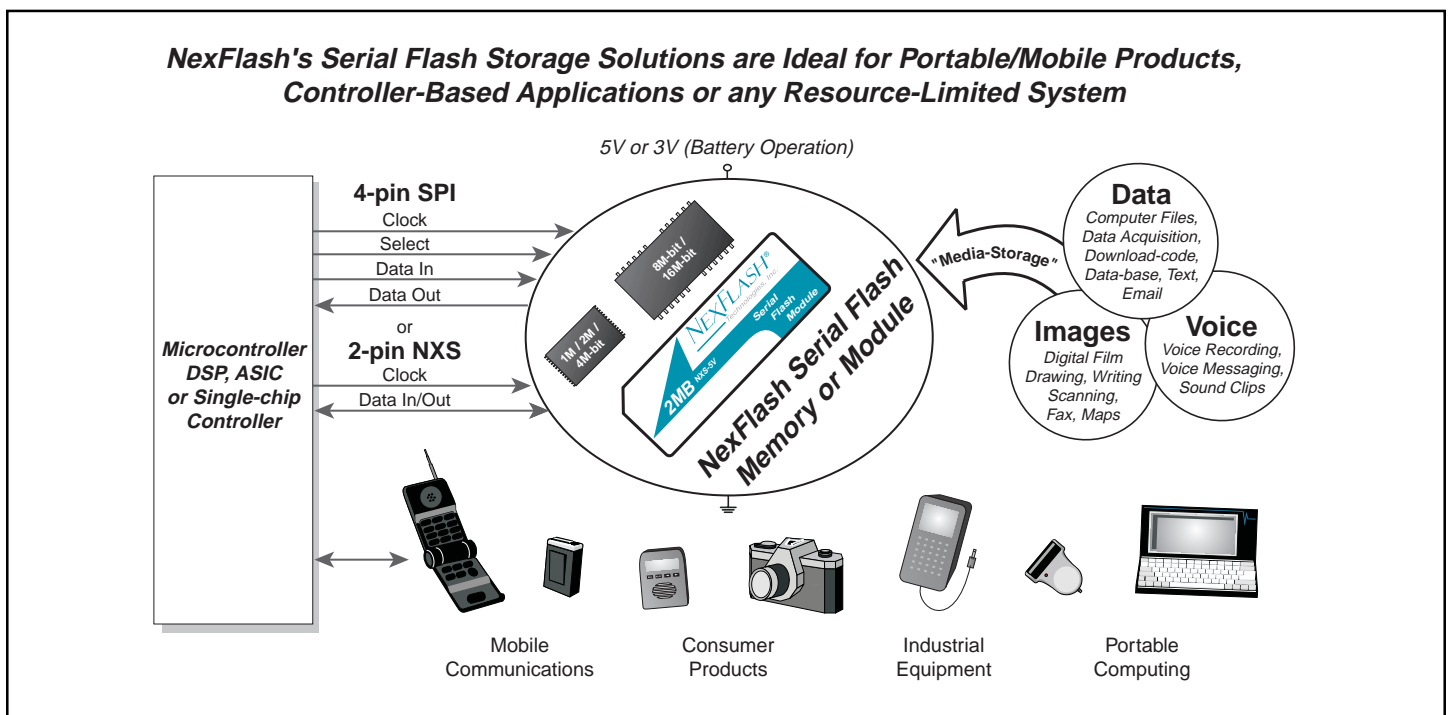• Serial Flash Development Tools & Accessories

NexFlash Technology

NexFlash's products are manufactured using the company's patented NexFLASH technology. This state-of-the-art technology implements a true EEPROM array in a NOR architecture (EE-NOR) using a single transistor per cell instead of the two transistors required by ordinary EEPROMs. The technology is ideal for manufacturing high density non-volatile memories that quickly read and write at low voltage using minimal power. It also enables the use of small DOS-sized sectors that auto-erase before each write, greatly simplifying the programming process. The technology supports up to 100K write cycles and 10-year data retention. The NexFlash Technology can also be licensed for use in embedded applications. Contact *NexFlash* for more information.
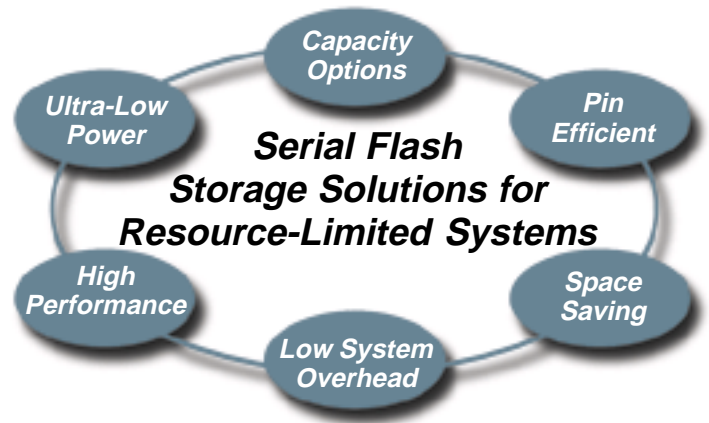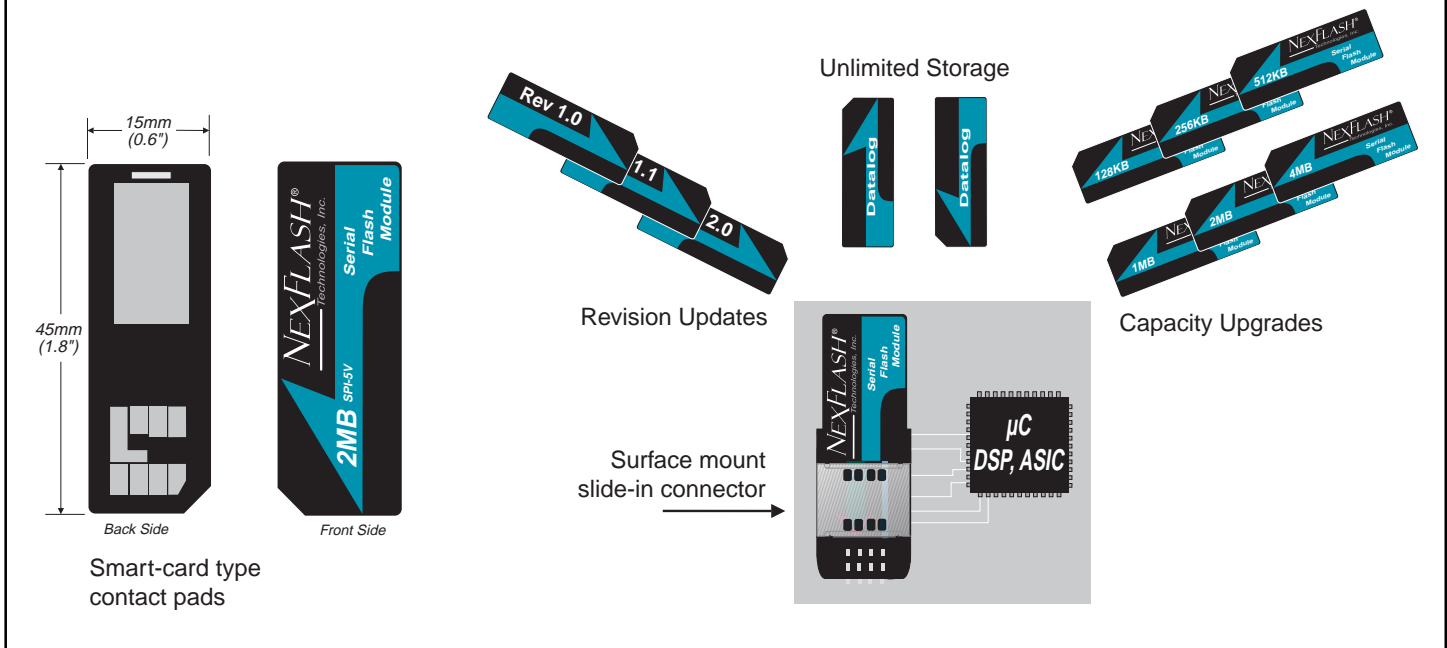
Serial Flash Memories

The NexFlash family of Serial Flash memories are designed for storage applications that incorporate microcontrollers, ASICs, or other single chip processors. Devices are offered in 1 to 16 megabit densities and are easily accessed through the popular 4-pin Serial Peripheral Interface (SPI) or 2-pin NXS interface. The devices operate using a single 2.7-3.6V or 4.5-5.5V supply with current as low as 5 mA active and 1 µA standby, making them ideal for battery-powered applications. Quick and efficient programming allows for transfer rates up to 200KB/S and clocks rates up to 16 MHz. On-chip byte-addressable SRAM is provided for data-stream buffering, read-modify-writes, or as additional variable space to off-load RAM-limited microcontrollers. These features, as well as write protection, electronic ID, and DOS-compatible sectors, help minimize hardware and firmware overhead, reducing overall costs.

NexFlash's Serial Flash Storage Solutions are Ideal for Portable/Mobile Products, Controller-Based Applications or any Resource-Limited System

5V or 3V (Battery Operation)

4-pin SPI
Clock
Select
Data In
Data Out
or
2-pin NXS
Clock
Data In/Out

Microcontroller DSP, ASIC or Single-chip Controller

8M-bit / 16M-bit
1M / 2M / 4M-bit
2MB NXS/5V
NEXFLASH® Serial Flash Module

NexFlash Serial Flash Memory or Module

"Media-Storage"

Data
Computer Files, Data Acquisition, Download-code, Data-base, Text, Email

Images
Digital Film Drawing, Writing Scanning, Fax, Maps

Voice
Voice Recording, Voice Messaging, Sound Clips

Mobile Communications · Consumer Products · Industrial Equipment · Portable Computing

Removable Serial Flash Modules are Space Efficient and Cost Effective with a Simple Interface

Serial Flash Modules

Serial Flash Modules provide all the benefits of *NexFlash* Serial Flash Memories in an innovative removable package. Space efficient, cost effective and simple to interface to, Serial Flash Modules offer a storage solution for systems that cannot handle the high overhead of complex Flash cards. Serial Flash Modules are ideal for small portable/mobile products, microcontroller based applications, or any resource-limited system. They enhance system flexibility by enabling unlimited storage, convenient field/factory updates and capacity upgrades.

With a form factor of only 15mm (0.6") by 45mm (1.8"), Serial Flash Modules offer the smallest easily-handled removable Flash storage solution available. Simple electrical contacts, similar to those used in smart cards, assure a reliable data interface. Serial Flash modules are designed for use with a small surface-mount slide-in connector that provides a convenient, cost effective and reliable connection. Each module can support up to two *NexFlash* Serial Flash memories for capacities from 128KB to 4MB. Other features include insertion and removal detection, electronic ID, and flexible write protection.

Serial Flash Development Tools & Accessories

NexFlash Serial Flash Development Tools offer a design solution for the "resource-limited engineering team." Serial Flash Development Kits (SFK's) are useful tools for learning about and designing with *NexFlash*'s SPI and NXS Serial Flash products. The SFK includes a circuit board that plugs into a PC parallel port and supports 3V and 5V Serial Flash memories and modules.

Software support for the SFK includes a well documented set of working C-code examples for commands in the data sheet. Several utilities are also provided for interrogating the device, as well as for reading and writing the device to or from a file. In addition to those provided with the SFK, other software and accessories are available from *NexFlash*. Contact *NexFlash* Sales and Marketing for further information.

Device[1]	Density	Org	Voltage	ICC (stby)[2]
Serial Flash Memories				
NX2xF011	1M-bit	512 x 264B	3V,5V	5mA(<1µA)
NX2xF021	2M-bit	1K x 264B	3V,5V	5mA(<1µA)
NX2xF041	4M-bit	2K x 264B	3V,5V	5mA(<1µA)
NX2xF080	8M-bit	2K x 536B	3V,5V	5mA(<1µA)
NX2xF160	16M-bit	4K x 536B	3V,5V	10mA(<1µA)
Serial Flash Modules (SFMs)				
NX2xM011	128KB	512 x 264B	3V,5V	5mA(<1µA)
NX2xM021	256KB	1K x 264B	3V,5V	5mA(<1µA)
NX2xM041	512KB	2K x 264B	3V,5V	5mA(<1µA)
NX2xM080	1MB	2K x 536B	3V,5V	5mA(<1µA)
NX2xM160	2MB	4K x 536B	3V,5V	10mA(<1µA)
NX2xM160(T2)[3]	4MB	4K x 536B	3V,5V	10mA(<1µA)

Notes:
1. x = 25 for 4-pin SPI interface, or x = 26 for 2-pin NXS interface
2. ICC typ @3V
3. T2 = 2 Chip SFM
Contact NexFlash for specific product availability