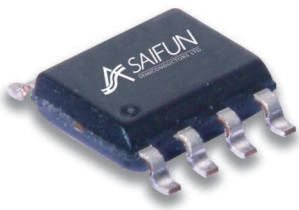


# Saifun's SA25F Family of SPI Serial Flash Memory Devices

Take your designs to a higher level with the power of Saifun NROM™ memory



Real Size:



**Saifun's SA25F family of SPI devices provides small-sized, cost-effective, low-power and high-performance Serial Flash memory chips for today's market needs. Using the patented Saifun NROM™ technology, the SA25F devices contain two bits per cell, which ensures minimal die size and maximal growth within the same package with increasing densities.**

## Fastest Access Times

The SA25F family sets the industry speed record for serial non-volatile memories:

- The 512Kb to 2Mb devices run at 25 MHz (as compared to the industry standard of 20 MHz)
- The 4Mb to 32Mb devices run at over 40 MHz (as compared to the industry's current best speed of 33 MHz)

## Minimal System Cost

System cost is affected by both footprint and package cost. Saifun's 512Kb to 16Mb SPI Serial Flash devices have the same small footprint as the industry standard's 8-pin narrow SOIC packages (the 512Kb to 4Mb devices are available in 8-pin narrow SOIC packages; the 512Kb to 16Mb devices in leadless MLF packages).

The devices' small footprint saves board space and reduces system overhead cost. This enables to be added new features and capabilities to your products simply and easily, without costly, time-consuming redesigns.

## Easy Migration

The Saifun 512Kb to 2Mb SPI Serial Flash devices have the industry's smallest Erase Block (a 256-byte Page Erase, as compared to the standard 256Kb Sector Erase). This unique Page Erase feature, taken together with Saifun NROM technology and the devices' small footprint, gives a clear migration path from low-density SPI EEPROMs (2Kb to 256Kb) to the higher-density (512Kb to 16Mb) SA25F family.

## Reduced Power Consumption

Saifun NROM technology uses far less power in system standby mode than any other SPI

device on the market, which makes the SA25F family ideal for portable applications.

## Greater Reliability

Saifun NROM technology has high immunity to point defects, and enables more than 100,000 cycles of endurance and over 20 years of retention. In traditional Flash technologies, insulator point defects may increase over time as a result of repeated program/erase cycles. This may eventually lead to leakage pass-through that causes the cell's entire charge to drain out. With NROM technology, however, as charge is stored in localized states, a defect that causes one charge to leak does not imply leakage of any other charges in its vicinity.

## Added Value for All Applications

The SA25F family of devices addresses various target markets:

### Communications

- Fax and Answering Machines
- Smart Cellular phones with E-mail, PDA
- DSL/Cable modem, Routers and Network interface cards
- Bluetooth

### Computers

- Graphic and SCSI cards
- Network cards and Hard-Disk drives
- Printers

### Consumer Applications

- Digital TVs, Remote Controls, Set-Top boxes
- DVD drive, VCD player, Audio MP3 players
- Electronic Toys
- Camcorders and Cameras



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## Key Features

### Small Footprint

- 8-pin narrow SOIC package and low-profile MLF leadless package

### Operating Voltage

- Full voltage range, from 2.7 to 3.6 V, with Read, Program and Erase operations
- Serial Interface Architecture
- SPI Compatible, both Mode 0 and Mode 3

### Program

- Page Program (up to 256 bytes) in 8ms (typ)
- Page Erase (256 bytes) in 3ms (typ)
- Sector Erase (512 Kb) in 0.5s (typ)
- Bulk Erase (2 Mb) in 2s (typ)

### Low Standby Current

- 1  $\mu$ A (maximum)

### Endurance

- Greater than 100,000 erase/program cycles per sector

### Retention

- More than 20 years

### Device ID

- Electronic signature

### Memory Protection

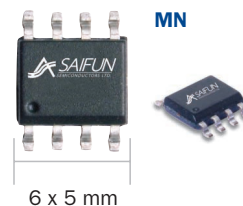
- Write Protect pin and Write Disable instructions are available for both hardware and software data protection
- Block Write Protection: Protect Quarter, Half or Entire Array

## The SA25F Family of Products

Device	Density	Clock Frequency	Packages
SA25F005	512 Kb, 2x256 Kb sectors	25 MHz	MN (soic8 150"), MLF, PDIP8
SA25F010	1 Mb, 4x256 Kb sectors	25 MHz	MN (soic8 150"), MLF, PDIP8
SA25F020	2 Mb, 4x512 Kb sectors	25 MHz	MN (soic8 150"), MLF, PDIP8
SA25F040*	4 Mb, 8x512 Kb sectors	40 MHz	MN (soic8 150"), MLF, PDIP8
SA25F080*	8 Mb, 16x512 Kb sectors	40 MHz	MW (soic8 200"), MLF, PDIP8
SA25F160**	16 Mb, 32x512 Kb sectors	40 MHz	MW (soic8 200"), MLF, PDIP8
SA25F320**	32 Mb		MW (soic8 200"), MLF, PDIP8

\* Planned for Q1 CY04

\*\* Planned for Q4 CY04



MLF	mm
Body Width	6.2
Body Length	5.0
Body Thickness	0.85
Pitch	1.27

MN (soic8 150")	mm
Body Width	4.0
Body Length	5.0
Body Thickness	1.56
Pitch	1.27

**FOR ADDITIONAL INFORMATION, VISIT OUR WEB SITE AT [WWW.SAIFUN.COM](http://WWW.SAIFUN.COM), AND GET ON THE FAST MIGRATION PATH TO HIGHER DENSITIES WITH SPI SERIAL FLASH!**

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