

SuperFlash® Memory Products

High Performance, Low Power Consumption and Superior Reliability

What is SuperFlash?

SuperFlash is an innovative, highly reliable and versatile type of NOR Flash memory invented by Silicon Storage Technology (SST). SuperFlash memory is much more flexible and reliable than competing non-volatile memories. This technology utilizes a split-gate cell architecture which uses a robust thick-oxide process that requires fewer mask steps resulting in a lower-cost nonvolatile memory solution with excellent data retention and higher reliability.

SuperFlash Advantages

- Fast, fixed program and erase times
 - ~ 40 ms vs. more than a minute for 64 Mb
 - Results in improved manufacturing efficiency and lower costs
- No pre-programming or verify required prior to erase
 - Results in significantly lower power consumption
- Superior reliability
 - 100K cycles and 100 years data retention
- Inherent small sector size
 - 4 KB erase sector vs. 64 KB
 - Results in faster re-write operations and contributes to lowering overall power consumption

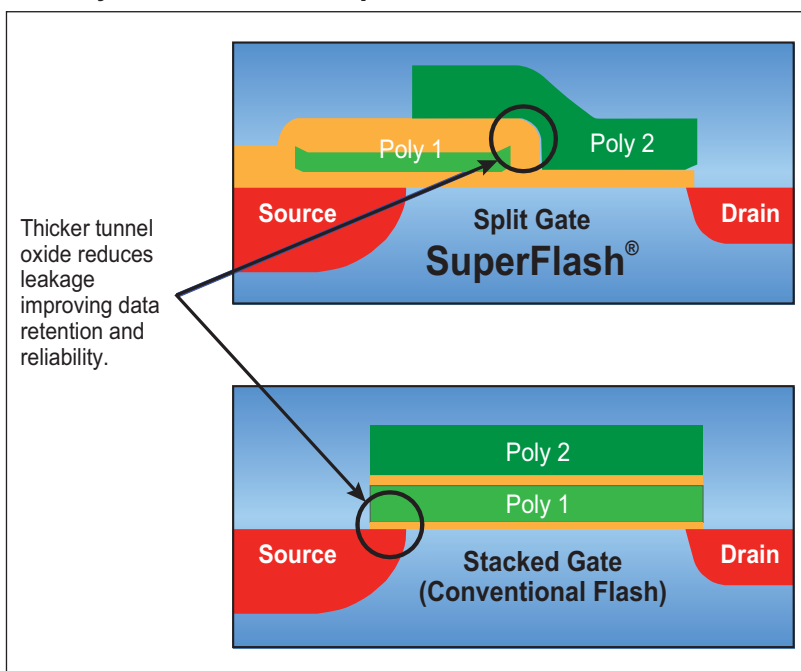
Parallel Flash

- Densities from 512 Kb to 64 Mb
- Operating voltage: 1.8V, 3V and 5V
- HW reset/Boot block/Erase suspend
- Security ID and page read/write on 64 Mb

Serial Flash

- Densities from 512 Kb through 64 Mb
- Voltages available: 1.8V, 2.5V and 3.0V
- Single footprint package up to 32 Mb
- Full SPI protocol compatibility
- Fast AAI programming mode

Memory Cell Structure Comparison



Fast erase performance improves manufacturing efficiency and lowers costs!

Parameter	SST38VF640X 64 Mb		Competitor A 64 Mb		Competitor B 64 Mb	
	Typ	Max	Typ	Max	Typ	Max
Read	–	90 ns	–	90 ns	–	90 ns
Page Read (Word in page after initial access)	–	25 ns	–	25 ns	–	25 ns
Program	7 µs	10 µs	60 µs	–	50 µs	–
Write Buffer Programming (up to 16 words)	28 µs	40 µs	240 µs (200 µs)*	–	240 µs (200 µs)*	–
Erase – Sector (4 KWord)	18 ms	25 ms	N/A	N/A	N/A	N/A
Erase – Block (32 KWord)	18 ms	25 ms	0.5 sec	3.5 sec	0.5 sec	–
Erase – Full Chip	40 ms	50 ms	64 sec	128 sec	64 sec	128 sec

*Must use external 12V supply to achieve numbers inside ().



BGA



Micro BGA



PLCC



PDIP



TSOP



WSON



SOIC



XFBGA



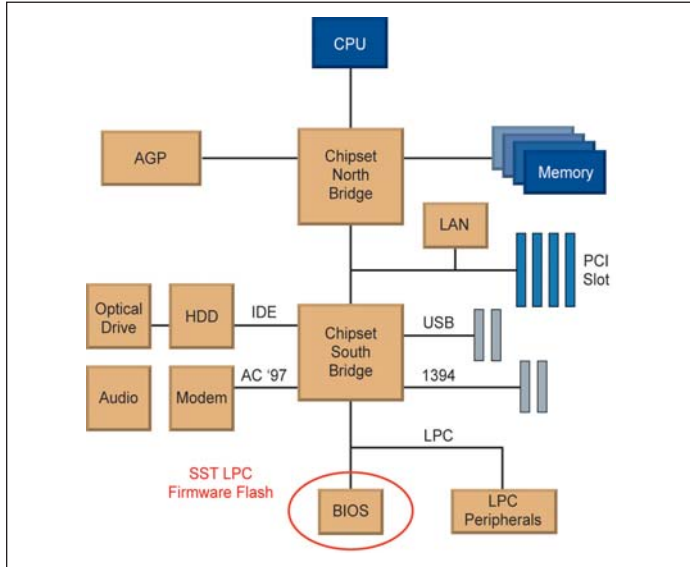
MICROCHIP

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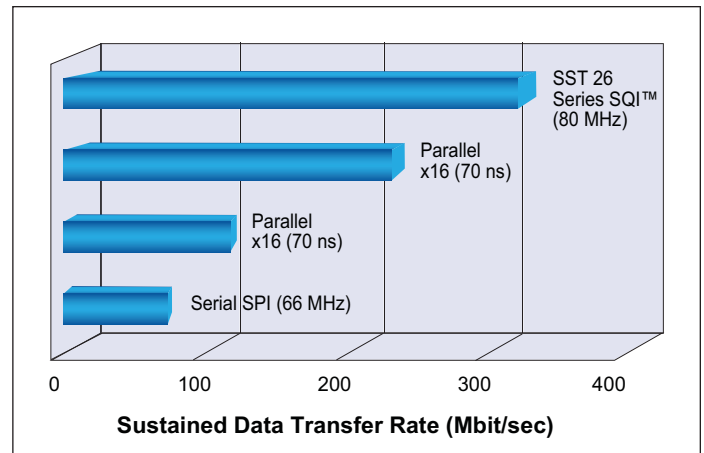
Serial Quad-I/O (SQI™) Flash

SQI Flash memory boosts performance while maintaining the compact form factor of standard serial flash memory.

- 4-bit multiplexed I/O serial protocol
- Operating frequency up to 80 MHz
- > 300 Mb/sec sustained Read
- Operating Voltage: 3.0V and 1.8V
- Density: 16 Mb to 64 Mb
- Software Parameter & Individual Block Locking
- Security ID



Flash Performance Comparison



Microchip is the sole remaining supplier of 8 Mb and 16 Mb Firmware Flash

These SuperFlash memory devices are compliant with the Intel Low Pin Count (LPC) Interface Specification and are intended to store system BIOS in applications such as PCs, graphic cards, set-top boxes, network boards and other embedded CPU applications

- FWH devices (49LF008A and 49LF016C) devices incorporate Intel's proprietary FWH interface protocol used in the Intel 8XX Series Hub Architecture chipsets
- LPC Flash devices (49LF080A and 49LF160C) comply with the standard Intel Low Pin Count (LPC) Interface Specification 1.1

Voltage	Density	Parallel	SPI (Serial)	SQI™ (Quad-Bit)	FWH/LPC
1.8V	512 Kbit		25WF512		
	1 Mbit		25WF010		
	2 Mbit		25WF020		
	4 Mbit	39WF400B	25WF040		
	8 Mbit	39WF800B	25WF080	26WF080B	
	16 Mbit	39WF160X		26WF016B	
	32 Mbit			26WF032B	
	64 Mbit			26WF064B	
3V	512 Kbit		25VF512A		
	1 Mbit	39VF010	25VF010A		
	2 Mbit	39VF020, 39VF200A	25VF020B		
	4 Mbit	39VF040, 39VF400A	25VF040B		
	8 Mbit	39VF80XC	25VF080B		49LF008B, 49LF080B
	16 Mbit	39VF160XC, 39VF168X	25VF016B	26VF016, 26VF016B	49LF016C, 49LF160C
	32 Mbit	39VF320XC	25VF032B	26VF032, 26VF032B	
	64 Mbit	39VF640XB, 38VF640X 38VF640XB	25VF064C	26VF064B	
5V	1 Mbit	39SF010A			
	2 Mbit	39SF020A			
	4 Mbit	39SF040			



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