

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

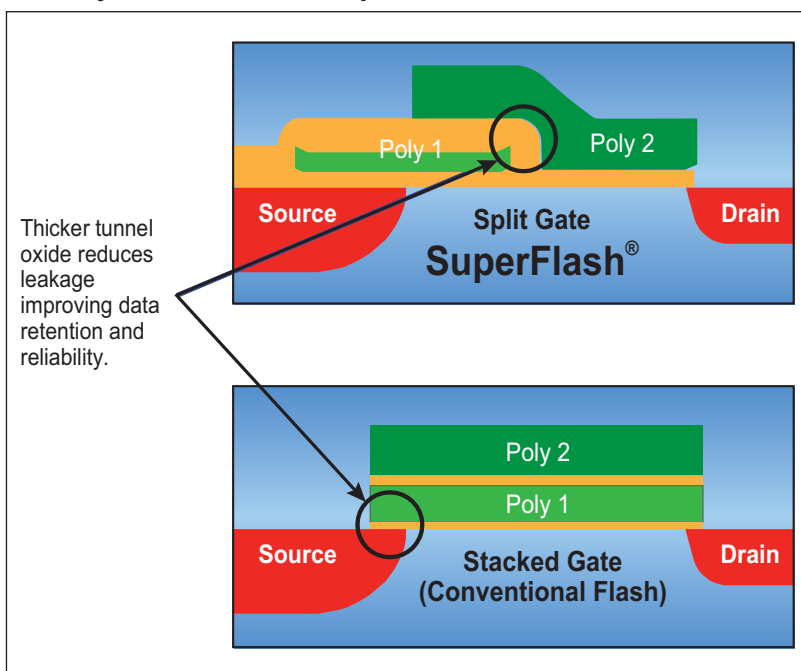
Parallel Flash

- 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



WSOP



SOIC



XFBGA



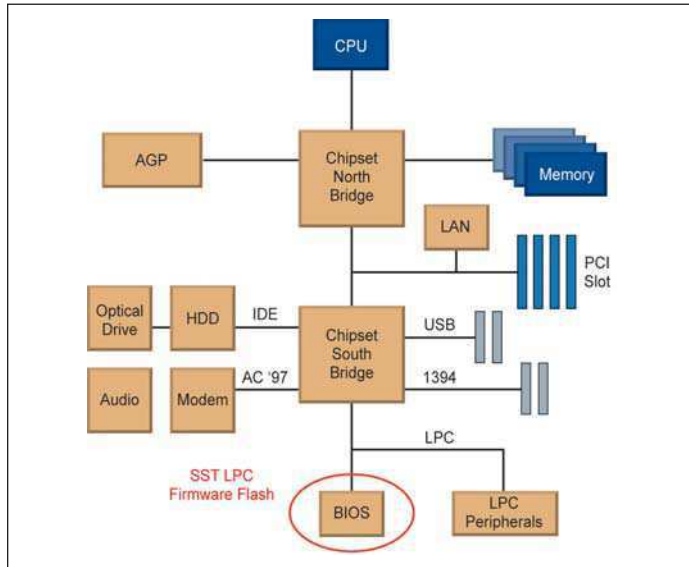
MICROCHIP

Microchip Technology Incorporated

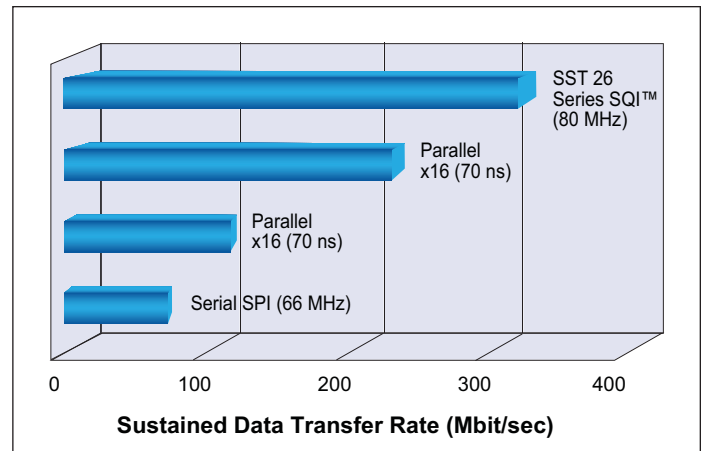
Serial Quad-I/O (SQI™) Flash

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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