SATA II 3Gb/s SATA Flash Module

- Super slim thickness of 10.85mm
- Fully compatible with devices and OS that support the SATA II 3Gb/s standard
- Non-volatile Flash Memory for outstanding data retention
- Built-in ECC (Error Correction Code) functionality and wear-leveling algorithm ensures reliable data transfer
- Support TRIM and NCQ command
- Support hardware purge and write protect function.
- Shock resistance

STM500 Benefits

Transcend's STM500 is a SATA II 3Gb/s SSD device built with high performance, quality Flash Memory assembled on a printed circuit board. It features cutting-edge technology to enhance product life and data retention. Designed with multitasking power users in mind, the STM500 is capable of running many demanding system applications, including specialized multimedia computing and advanced gaming. As a result, the STM500 is the ultimate performance upgrade for various applications, such as PCs, Laptops, gaming systems, and handheld devices.

Wear-Leveling algorithm

The controller supports static/dynamic wear leveling. When the host writes data, the controller will find and use the block with the lowest erase count among the free blocks. This is known as dynamic wear leveling. When the free blocks' erase count is higher than a threshold value plus data blocks', it will activate the static wear leveling, replacing the not so frequently used user blocks with the high erase count free blocks.

High-End Applications

The STM500 boasts a super slim thickness of just 10.85mm to address the size limitations of today's modern applications, and other thin and light form factor devices. The slim STM500 uses 7pin SATA connector and is backwards compatible with SATA I (1.5Gbps) connection options. STM500 not only provides resistance from shock and vibration, but also offers hardware purge and write protect function.

Hardware Purge and Write Protect

The STM500 has built in hardware trigger for quick data erase and write protect of user specified area. These features may be enabled by simply connecting a switch to the designated pins.

Placement
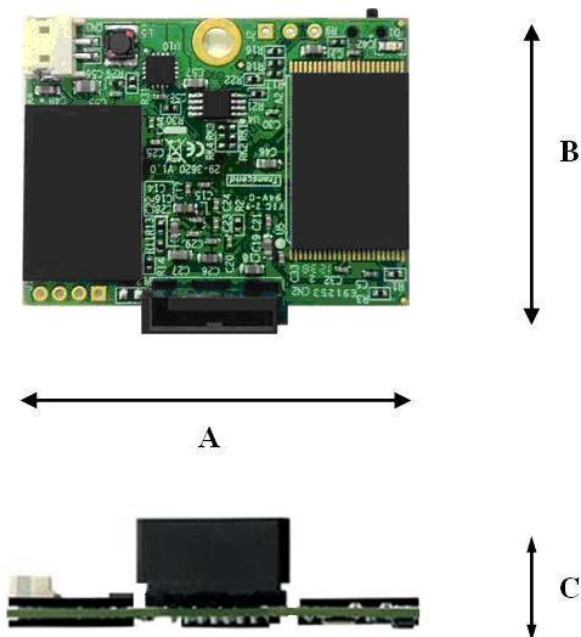
Dimensions

Side	Millimeters	Inches
A	40±0.3	1.57±0.012
B	30±0.2	1.18±0.008
C	10.85±0.15	0.42±0.005

Specifications

Environmental Specifications	
Operating Temperature	0 ℃ to 70 ℃ (- 40 ℃ to 85 ℃ is optional)
Storage Temperature	- 40 ℃ to 85 ℃
Humidity — Operating	0% to 95% (Non-condensing)
Humidity — Non-Operating	0% to 95% (Non-condensing)

Physical Specification	
Form Factor	SATA Flash Module
Storage Capacities	512 MB to 64 GB
Input Voltage	5V ± 5%
Weight	8g
Connector	Signal: SATA 7 pins female connector. Power: 2Pin 1.5mm pitch wafer connector

Performance

Model P/N	Sequential Read*	Sequential Write*	Random Read (4KB QD32)*	Random Write (4KB QD32)*	IOPS Random Read (4KB QD32)**	IOPS Random Write (4KB QD32)**
TS512MSTM500	29 MB/s	9.6 MB/s	17.58 MB/s	0.2 MB/s	4452	43.6
TS1GSTM500	29 MB/s	9.7 MB/s	17.47 MB/s	0.29 MB/s	4456	46.96
TS2GSTM500	32 MB/s	17.8 MB/s	17.3 MB/s	0.08 MB/s	4428	20.4
TS4GSTM500	63 MB/s	35.6 MB/s	16.73 MB/s	0.13 MB/s	4280	32.2
TS8GSTM500	130 MB/s	66 MB/s	16.95 MB/s	0.17 MB/s	4295	41.9
TS16GSTM500	122 MB/s	119.5 MB/s	17.07 MB/s	0.32 MB/s	4355	80.4
TS32GSTM500	132 MB/s	128 MB/s	19 MB/s	0.53 MB/s	4755	127
TS64GSTM500	128 MB/s	123.3 MB/s	17.26 MB/s	0.77 MB/s	4375	188.4

Note: Maximum transfer speed recorded

* 25 ℃, test on ASUS P5Q-Pro, 2GB, Windows® XP Version SP3 with AHCI mode, benchmark utility CrystalDiskMark (version 3.0), copied file 1000MB, unit MB/s

** Random read/write performance based on IOmeter2006 with 4K file size and queue depth of 32, unit IOPs

*** The recorded performance is obtained while the SSD is not operating as an OS disk

Power Requirements		
Input Voltage		5V ± 5% @25℃
Mode P/N / Power Consumption		Typical (mA)
TS512MSTM500	Read	145
	Write	147
	Idle	139
TS1GSTM500	Read	151
	Write	155
	Idle	145
TS2GSTM500	Read	147
	Write	148
	Idle	134
TS4GSTM500	Read	164
	Write	168
	Idle	137
TS8GSTM500	Read	201
	Write	206
	Idle	143
TS16GSTM500	Read	236
	Write	296
	Idle	166
TS32GSTM500	Read	238
	Write	309
	Idle	168
TS64GSTM500	Read	238
	Write	314
	Idle	169

Reliability	
Data Reliability	Supports BCH ECC 16/24 bits in 1024 bytes
MTBF	1,000,000 hours

Vibration	
Operating	3.0G(peak-to-peak), 5 - 800Hz
Non-Operating	5.0G(peak-to-peak), 5 - 800Hz

Note: Reference to the IEC 60068-2-6 Testing procedures; Operating-Sine wave, 5-800Hz/1 oct., 1.5mm, 3g, 0.5 hr./axis, total 1.5 hrs.

Shock	
Operating	1500G, 0.5ms
Non-Operating	1500G, 0.5ms