

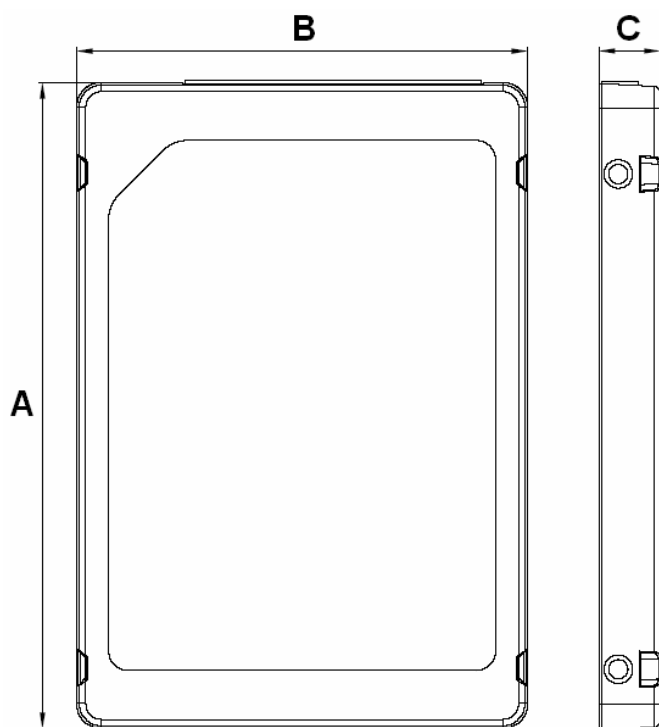
TS8GSSD25S-S TS16GSSD25S-S TS32GSSD25S-M

2.5" Solid State Disk

Description

Due to smaller size (fit the standard dimensions of 2.5" SATA Hard Disk Drives), huge capacity, high speed, and low power consumption, Solid State Disk is perfect replacement storage device for PCs, Laptops, gaming systems, and handheld devices.

Placement



Features

- RoHS compliant
- Fully compatible with devices and OS that support the SATA 1.0a 1.5Gbps standard
- Non-volatile Flash Memory for outstanding data retention
- Built-in ECC (Error Correction Code) functionality and wear-leveling algorithm ensures highly reliable of data transfer
- Lower Power Consumption
- Shock resistance

Dimensions

Side	Millimeters	Inches
A	100.00 $\pm$ 0.40	3.937 $\pm$ 0.016
B	69.85 $\pm$ 0.20	2.750 $\pm$ 0.008
C	9.50 $\pm$ 0.15	0.374 $\pm$ 0.004

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Specifications

Physical Specification		
Form Factor		2.5-inch HDD
Storage Capacities		8 GB to 32 GB
Dimensions (mm)	Length	100.0 0 ± 0.40
	Width	69.85 ± 0.20
	Height	9.50 ± 0.15
Input Voltage		5V ± 5%
Weight		48 g
Connector		SATA 7+15 pins combo connector

Environmental Specifications	
Operating Temperature	0 °C to 70 °C
Storage Temperature	- 40 °C to 85 °C

Power Requirements			
Input Voltage		5V ± 10%	
TS32GSSD25S-M Power Consumption (DC 5V @25°C)	Mode	TYP (mA)	MAX (mA)
	Write	207.3	236.1
	Read	160.8	202.6
	Standby	115.3	116.9
TS16GSSD25S-S Power Consumption (DC 5V @25°C)	Mode	TYP (mA)	MAX (mA)
	Write	205.4	232.4
	Read	160.5	206.5
	Standby	115.1	117.0
TS8GSSD25S-S Power Consumption (DC 5V @25°C)	Mode	TYP (mA)	MAX (mA)
	Write	200.8	225.6
	Read	153.8	192.8
	Standby	116.3	117.2

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Reliability	
Data Reliability	Built-in 4 symbol/page correction ECC
Data Retention	10 years
MTBF	1,200,000 hours

Performance				
Model P/N	Read (KB/s)	Write (KB/s)	Random Read (KB/s)	Random Write (KB/s)
TS32GSSD25S-M	26003	13566	25296	2518
TS16GSSD25S-S	30467	28611	29383	7497
TS8GSSD25S-S	30331	28491	29374	7346

* Note : 25 °C , according to 7+15 pins combo connector test on ASUS M2N-MX, 1GB RAM, Windows® XP Version 2002 SP2, benchmark utility HDBENCH (version 3.4006), copied file 100MB.

Actual Capacity				
Model P/N	Capacity	Cylinder	Head	Sector
TS8GSSD25S-S	8GB	15798	16	63
TS16GSSD25S-S	16GB	33704	15	63
TS32GSSD25S-M	32GB	66298	15	63

* Note: FAT32 format

Regulations	
Compliance	CE, FCC and BSMI

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Humidity	
Operating Humidity (Non condensation)	5% to 95%
Storage Humidity (Non condensation)	5% to 95%

* Note: Reference to the IEC 60068-2-1 and IEC 60068-2-56 Testing procedures; 48-hours chamber test on ASUS M2N-MX, 1GB RAM, Windows® XP Version 2002 SP2.

Vibration	
Operating	3.0G, 5 - 800Hz
Non-Operating	3.0G, 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, 0.8ms
Non-Operating	1500G, 0.8ms

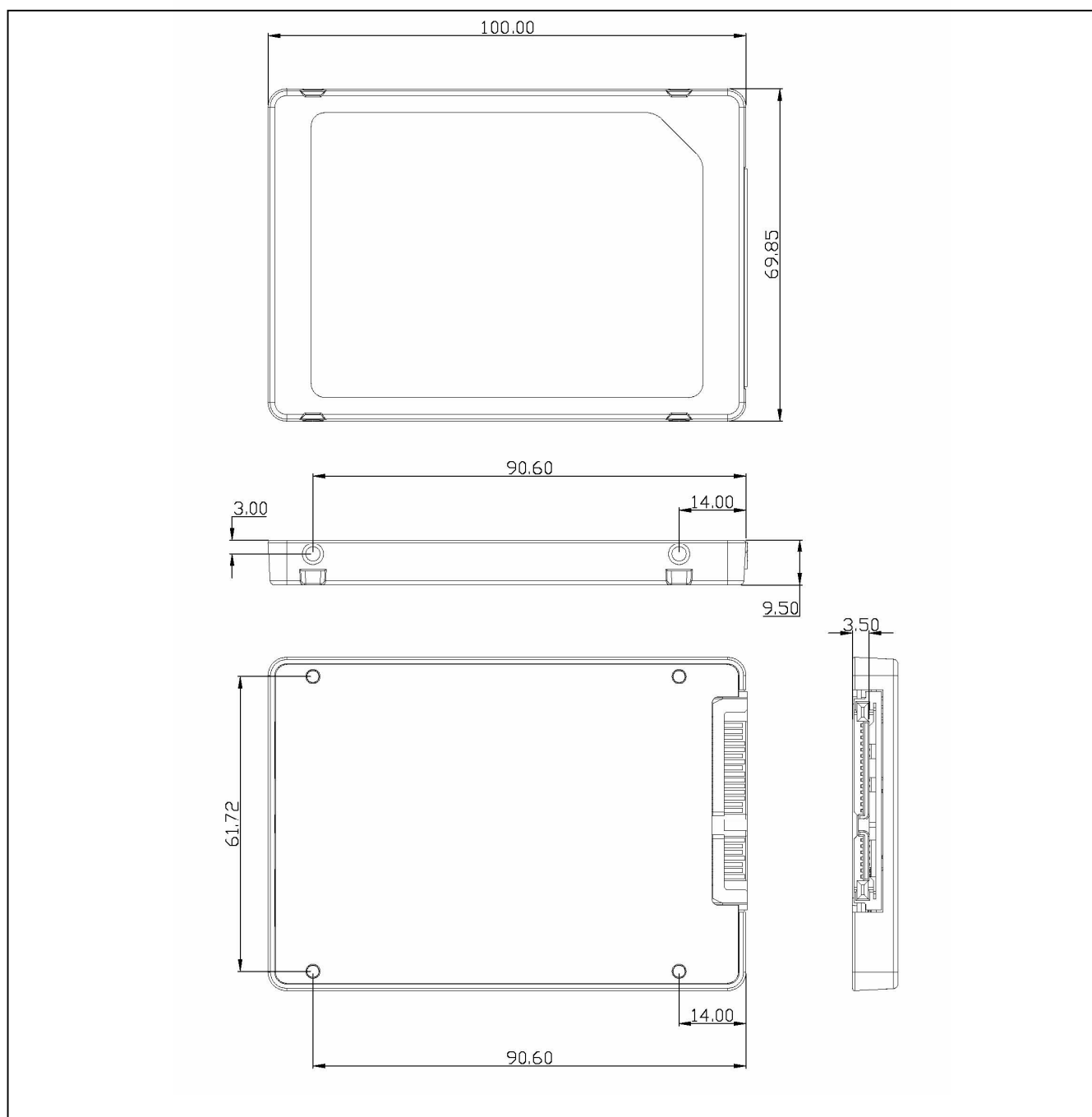
* Note: Reference to the IEC 60068-2-27 Testing procedures; Operating-Half-sine wave, 1500g, 0.8ms, 3 times/dir., total 18 times.

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Package Dimensions

Below figure illustrates the Transcend 2.5" SATA Solid State Disk. All dimensions are in mm.



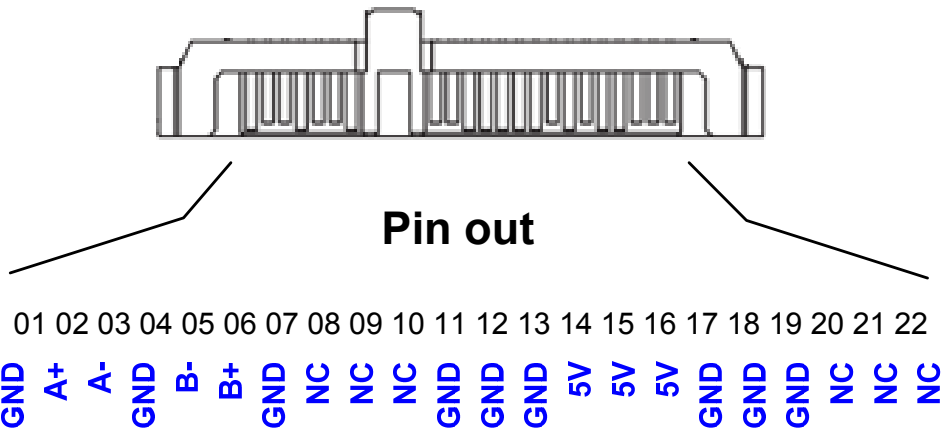
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Pin Assignments

Pin No.	Pin Name	Pin No.	Pin Name
01	GND	02	A+
03	A-	04	GND
05	B-	06	B+
07	GND	08	NC
09	NC	10	NC
11	GND	12	GND
13	GND	14	5V
15	5V	16	5V
17	GND	18	GND
19	GND	20	NC
21	NC	22	NC

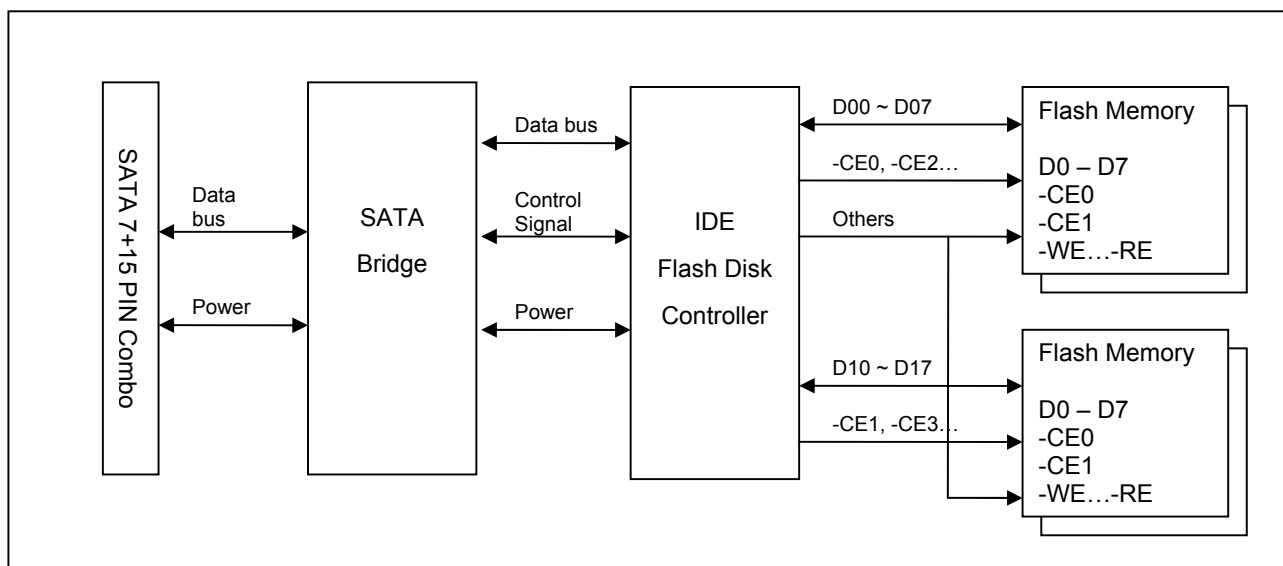
Pin Layout



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Block Diagram



DC Characteristics

Parameter	Symbol	Min.	Max.	Unit	Remark
Supply Voltage	V_{CC}	4.5	5.5	V	
High level output voltage	V_{OH}	$V_{CC}-0.8$		V	
Low level output voltage	V_{OL}		0.8	V	
High level input voltage	V_{IH}	4.0		V	Non-schmitt trigger
		2.92		V	Schmitt trigger ¹
Low level input voltage	V_{IL}		0.8	V	Non-schmitt trigger
			1.70	V	Schmitt trigger ¹
Pull up resistance ²	R_{PU}	50.	73	kOhm	
Pull down resistance	R_{PD}	50	97	kOhm	

1. Include CE1, CE2, HREG, HOE, HIOE, HWE, HIOW pins.

2. Include CE1, CE2, HREG, HOE, HIOE, HWE, HIOW, CSEL(P35), PDIAG, DASP pins.

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Command Set

	Command	Code	FR	SC	SN	CY	DH	LBA	Status	Note
1	Check Power Mode	E5 or 98h	–	–	–	–	Y	–	Support	
2	Execute Drive Diagnostic	90h	–	–	–	–	Y	–	Support	
3	Erase Sector	C0h	–	Y	Y	Y	Y	Y	Support	
4	Flush Cache	E7h	–	–	–	–	Y	–	NOT Support	#4
5	Format Track	50h	–	Y	–	Y	Y	Y	Support	
6	Identify Device	Ech	–	–	–	–	Y	–	Support	
7	Idle	E3h or 97h	–	Y	–	–	Y	–	Support	
8	Idle Immediate	E1h or 95h	–	–	–	–	Y	–	Support	
9	Initialize Drive Parameters	91h	–	Y	–	–	Y	–	Support	
10	Key Management Structure Read	B9 (Feature 0-127)	Y	Y	Y	Y	Y	–	NOT Support	#1
11	Key Management Read Keying Material	B9 (Feature 80)	Y	Y	Y	Y	Y	–	NOT Support	#1
12	Key Management Change Key Management Value	B9 (Feature 81)	Y	Y	Y	Y	Y	–	NOT Support	#1
13	NOP	00h	–	–	–	–	Y	–	Support	
14	Read Buffer	E4h	–	–	–	–	Y	–	Support	
15	Read DMA	C8h	–	Y	Y	Y	Y	Y	Support	
16	Read Long Sector	22h or 23h	–		Y	Y	Y	Y	NOT Support	#3
17	Read Multiple	C4h	–	Y	Y	Y	Y	Y	Support	
18	Read Sector(s)	20h or 21h	–	Y	Y	Y	Y	Y	Support	
19	Read Verify Sector(s)	40h or 41h	–	Y	Y	Y	Y	Y	Support	
20	Recalibrate	1Xh	–	–	–	–	Y	–	Support	
21	Request Sense	03h	–	–	–	–	Y	–	Support	
22	Security Disable Password	F6h	–	–	–	–	Y	–	NOT Support	#2
23	Security Erase Prepare	F3h	–	–	–	–	Y	–	NOT Support	#2
24	Security Erase Unit	F4h	–	–	–	–	Y	–	NOT Support	#2
25	Security Freeze Lock	F5h	–	–	–	–	Y	–	NOT Support	#2

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26	Security Set Password	F1h	-	-	-	-	Y	-	NOT Support	#2
27	Security Unlock	F2h	-	-	-	-	Y	-	NOT Support	#2
28	Seek	7Xh	-	-	Y	Y	Y	Y	Support	
29	Set Feature	EFh	Y	-	-	-	Y	-	Support	
30	Set Multiple Mode	C6h	-	Y	-	-	Y	-	Support	
31	Set Sleep Mode	E6h or 99h	-	-	-	-	Y	-	Support	
32	Standby	E2 or 96h	-	-	-	-	Y	-	Support	
33	Standby Immediate	E0 or 94h	-	-	-	-	Y	-	Support	
34	Translate Sector	87h	-	Y	Y	Y	Y	Y	Support	
35	Wear Level	F5h	-	-	-	-	Y	-	Support	
36	Write Buffer	E8h	-	-	-	-	Y	-	Support	
37	Write DMA	CAh	-	Y	Y	Y	Y	Y	Support	
38	Write Long Sector	32h or 33h	-	-	Y	Y	Y	Y	Not Support	#3
39	Write Multiple	C5h	-	Y	Y	Y	Y	Y	Support	
40	Write Multiple w/o Erase	CDh	-	Y	Y	Y	Y	Y	Support	
41	Write Sector(s)	30h or 31h	-	Y	Y	Y	Y	Y	Support	
42	Write Sector(s) w/o Erase	38h	-	Y	Y	Y	Y	Y	Support	
43	Write Verify	3Ch	-	Y	Y	Y	Y	Y	Support	

#1: These commands are optional, depending on the key Management scheme in use.

#2: Use of this command is not recommended by CFA.

#3: Use of this command is not recommended.

#4: Controller don't have cache.

Definitions

FR = Features Register

SC =Sector Count register (00H to FFH, 00H means 256 sectors)

SN = Sector Number register

CY = Cylinder Low/High register

DH = Head No. (0 to 15) of Drive/Head register

LBA = Logic Block Address Mode Support

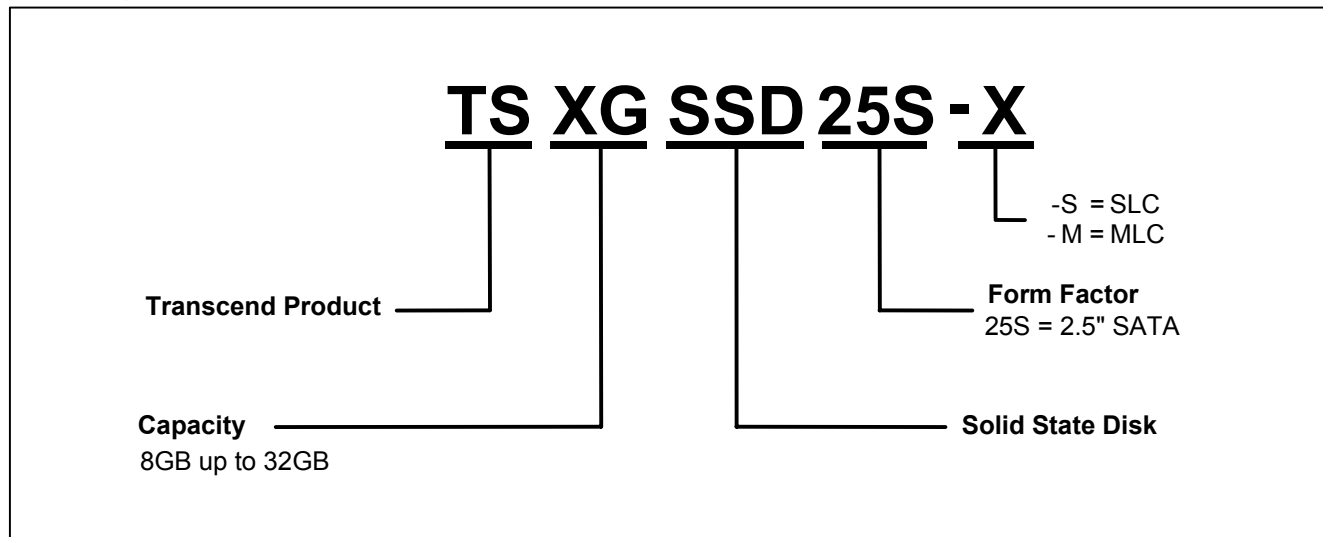
- = Not used for the command

Y = Used for the command

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Ordering Information



The above technical information is based on industry standard data and has been tested to be reliable. However, Transcend makes no warranty, either expressed or implied, as to its accuracy and assumes no liability in connection with the use of this product. Transcend reserves the right to make changes to the specifications at any time without prior notice.

Transcend
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