

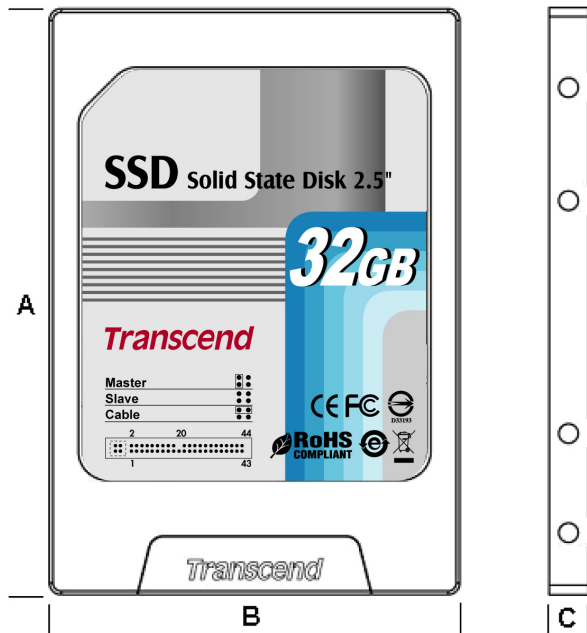
TS8GSSD25-S TS16GSSD25-S TS32GSSD25-M

2.5" Solid State Disk

Description

Due to smaller size (fit the standard dimensions of 2.5" IDE 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 IDE standard (44-Pin, pitch = 2.00 mm)
- 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
- Supports up to PIO Mode 4 and Ultra DMA Mode 4
- Lower Power Consumption
- Shock resistance

Dimensions

Side	Millimeters	Inches
A	100.00 ± 0.40	3.937 ± 0.016
B	69.85 ± 0.20	2.750 ± 0.008
C	7.40 ± 0.15	0.292 ± 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	7.40 ± 0.15
Input Voltage	5V ± 5%	
Weight	80 g	
Connector	44-Pin standard IDE/ATA connector (Pitch 2.0 mm)	

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

Power Requirements			
Input Voltage		5V ± 10%	
TS32GSSD25-M Power Consumption (DC 5V @25°C)	Mode	TYP (mA)	MAX (mA)
	Write	78.0	112.8
	Read	57.7	78.2
	Standby	1.5	3.2
TS16GSSD25-S Power Consumption (DC 5V @25°C)	Mode	TYP (mA)	MAX (mA)
	Write	57.8	112.4
	Read	55.8	104.7
	Standby	1.9	3.3
TS8GSSD25-S Power Consumption (DC 5V @25°C)	Mode	TYP (mA)	MAX (mA)
	Write	51.8	98.4
	Read	47.3	91.2
	Standby	1.1	3.0

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Reliability	
Data Reliability	Built-in 4 symbol/page correction ECC
Data Retention	10 years
Connector Durability	10,000 times
MTBF	3,600,000 hours

Interface Specification	
Jumper Settings	Master/Slave/Cable-select Settings
Drivers	No Device Driver Required
ATA Compatibility	ATA/ATAPI 4
	PIO Modes 0 - 4
	UDMA Modes 0 - 4

Performance					
Model P/N	Mode	Read (KB/s)	Write (KB/s)	Random Read (KB/s)	Random Write (KB/s)
TS32GSSD25-M	UDMA	25593	8725	24728	1667
	PIO	5147	3563	5238	1180
TS16GSSD25-S	UDMA	30908	26310	29915	4380
	PIO	5314	4504	5276	1870
TS8GSSD25-S	UDMA	31653	26418	30759	4790
	PIO	5306	4451	5268	1921

* Note : 25 °C, according to 44 pin to 40 pin IDE transferring cable test on ASUS M2N-MX, 1GB RAM, IDE interface support UDMA4, Windows® XP Version 2002 SP2, benchmark utility HDBENCH (version 3.4006), copied file 100MB

Actual Capacity					
Model P/N	Capacity	C/H/S	Capacity (BIOS)	DOS Format (Bytes)	Windows Format (Bytes)
TS8GSSD25-S	8GB	15798/16/63	8153 MB	8,136,822,784	8,136,826,880
TS16GSSD25-S	16GB	33704/15/63	16308 MB	16,290,889,728	16,290,897,920
TS32GSSD25-M	32GB	65535/15/63	31710 MB	31,692,423,168	31,692,439,552

* Note: FAT32 format

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Regulations	
Compliance	CE, FCC and BSMI

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

* Note: 24-hours chamber test on AIMB-740, 256MB RAM, Windows® XP Version 2002 SP2.

Vibration	
Operating	3.0G, 5 - 800Hz
Non-Operating	3.0G, 5 - 800Hz

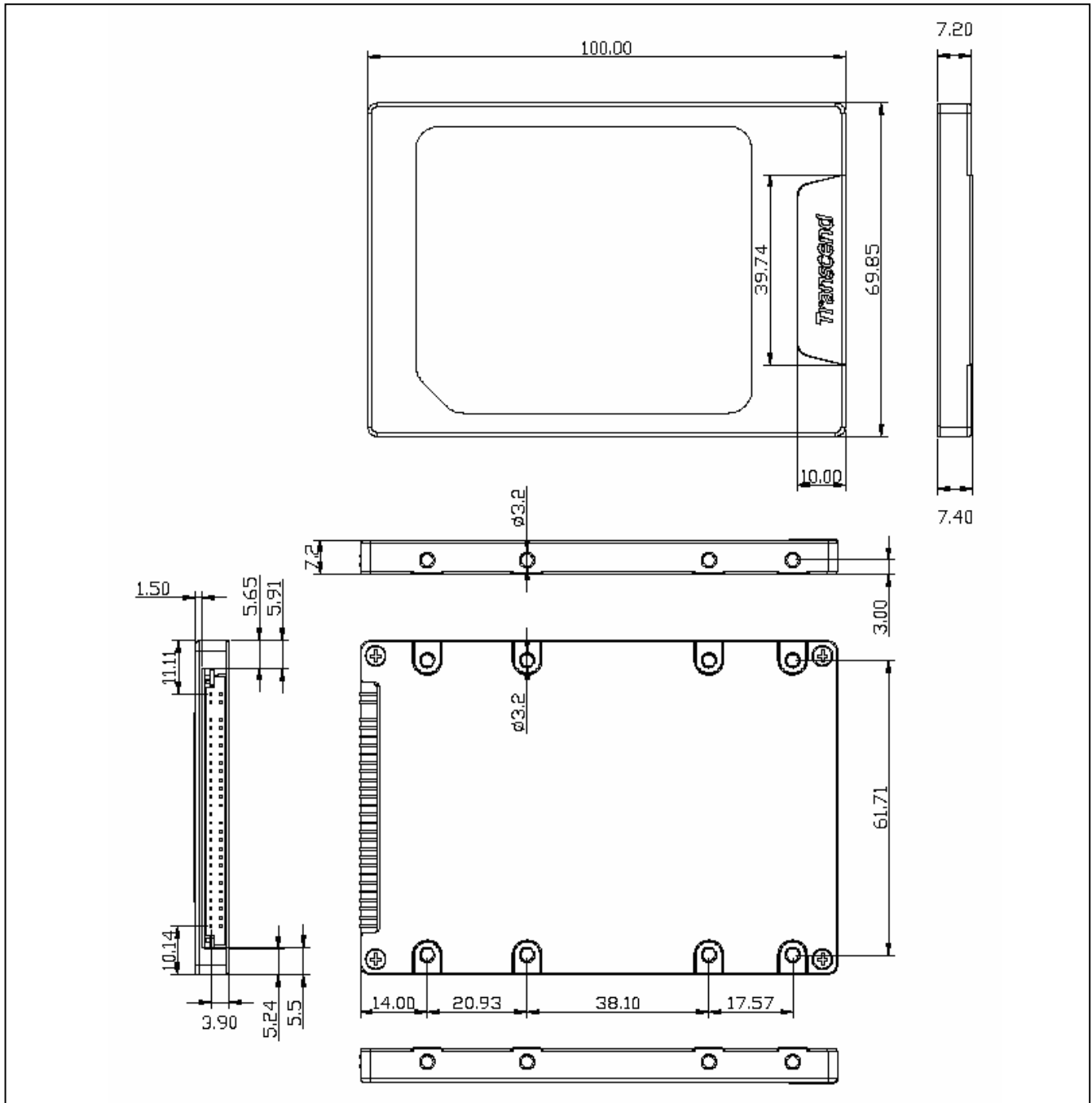
Shock	
Operating	1500G, 0.5ms
Non-Operating	1500G, 0.5ms

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Package Dimensions

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



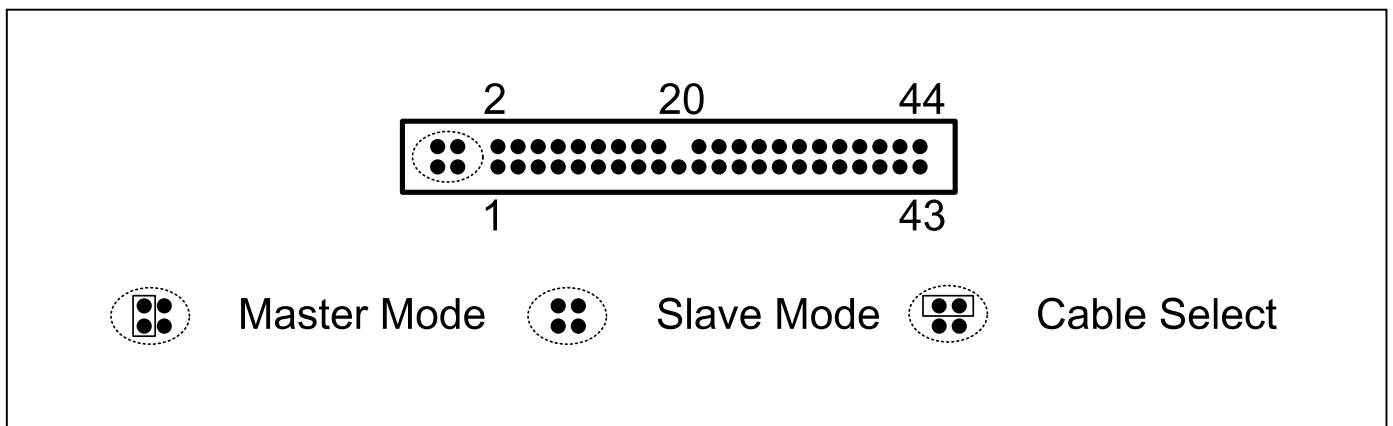
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Pin Assignments

Pin No.	Pin Name	Pin No.	Pin Name
01	-RESET	02	GND
03	DD7	04	DD8
05	DD6	06	DD9
07	DD5	08	DD10
09	DD4	10	DD11
11	DD3	12	DD12
13	DD2	14	DD13
15	DD1	16	DD14
17	DD0	18	DD15
19	GND	20	KEY-PIN (OPEN)
21	DMARQ	22	GND
23	-DIOW : STOP	24	GND
25	-DIOR : -HDMARDY : HSTROBE	26	GND
27	IORDY : DDMARDY : DSTROBE	28	CSEL
29	-DMACK	30	GND
31	INTRQ	32	IOCS16B
33	DA1	34	-PDIAG : -CBLID
35	DA0	36	DA2
37	-CS0	38	-CS1
39	-DASP	40	GND
41	VCC	42	VCC
43	GND	44	NC (No Connect)

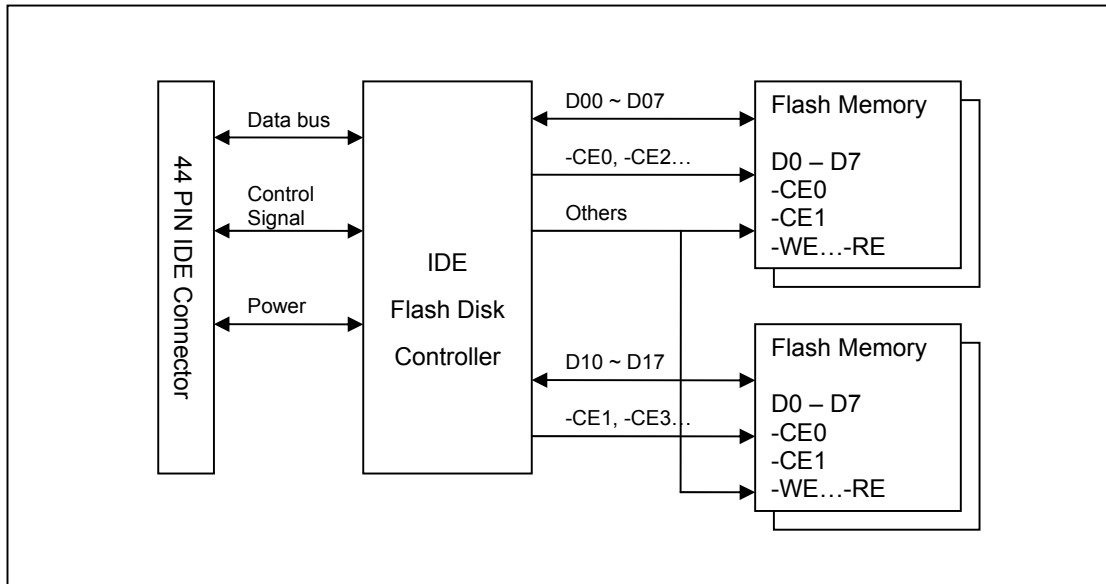
Pin Layout



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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	SM223 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, #5
23	Security Erase Prepare	F3h	-	-	-	-	Y	-	NOT Support	#2, #5
24	Security Erase Unit	F4h	-	-	-	-	Y	-	NOT Support	#2, #5
25	Security Freeze Lock	F5h	-	-	-	-	Y	-	NOT Support	#2, #5

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26	Security Set Password	F1h	-	-	-	-	Y	-	NOT Support	#2, #5
27	Security Unlock	F2h	-	-	-	-	Y	-	NOT Support	#2, #5
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: This commands ais 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: SM223 don't have cache.

#5: Will support by firmware update, it will be available by September, 2007

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

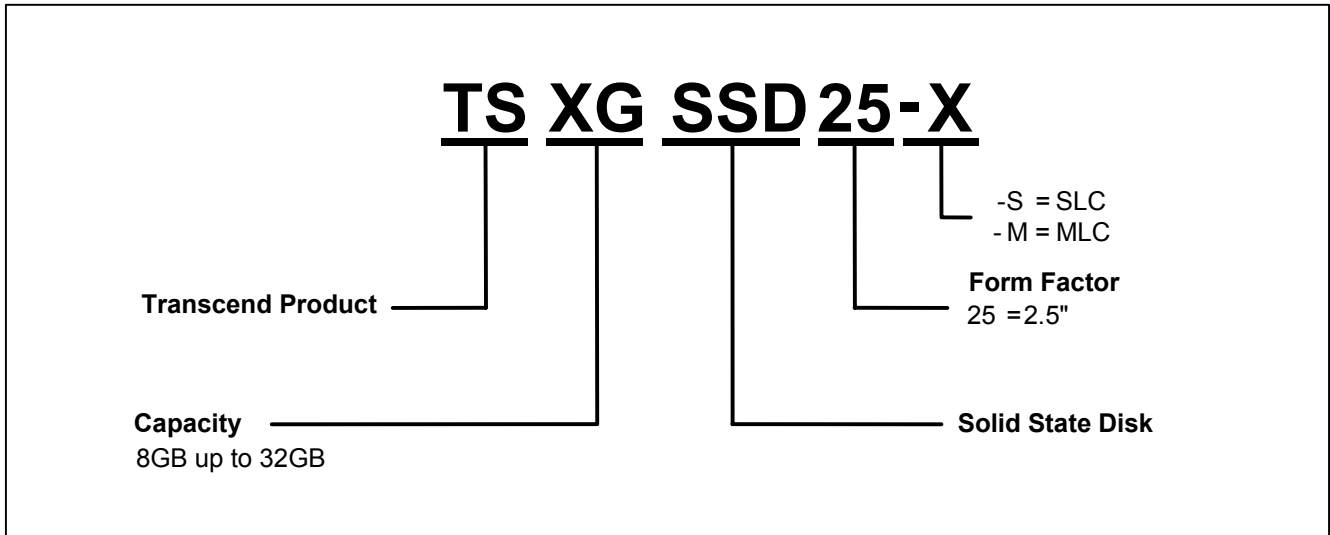
- = Not used for the command

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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