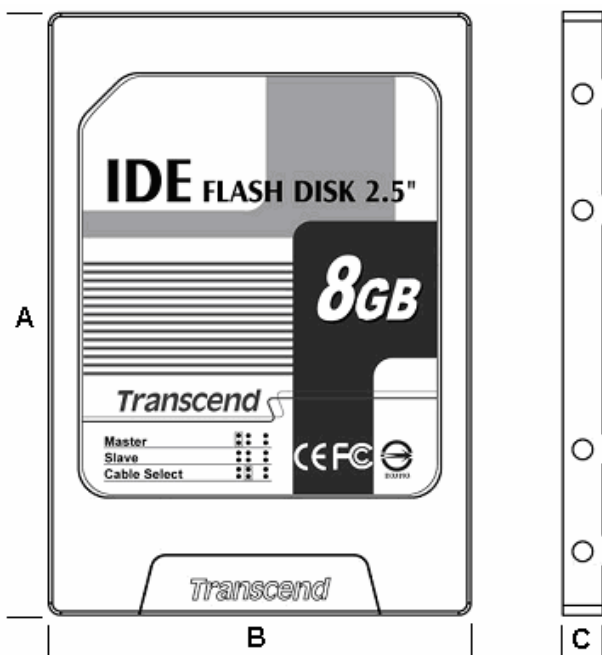


Description

Ideal for use in harsh environments. Transcend's 2.5" IDE Flash Disks are the best choice for your specialized industrial computer equipment.

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 6 and Ultra DMA Mode 4
- Auto Standby and Sleep Mode supported
- 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

Specifications

Physical Specification		
Form Factor	2.5-inch HDD	
Storage Capacities	2 GB to 8 GB	
Dimensions (mm)	Length	100.0 0 ± 0.40
	Width	69.85 ± 0.20
	Height	7.40 ± 0.15
Weight	80 g	
Connector	44-Pin standard IDE/ATA connector (Pitch 2.0 mm)	

Power Requirements			
Input Voltage		DC 5V ± 5 %	
Power Consumption (@25°C)	Mode	TYP (mA)	MAX (mA)
	Write	118	133.4
	Read	148	158.6
	Standby	21.8	88.0
	Sleep	17.3	20.6

* Note: Base on TS8GIFD25

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

Reliability	
Data Reliability	Built-in 4 symbol correction ECC (per 512 bytes Sector)
Data Retention	10 years
Connector Durability	10,000 times
MTBF	5,200,000 hours

TS2GIFD25 / TS4GIFD25 / TS8GIFD25

2.5" IDE FLASH DISK

Interface Specification	
Jumper Settings	Master/Slave/Cable-select Settings
Drivers	No Device Driver Required
ATA Compatibility	ATA/ATAPI 5
	PIO Modes 0 - 6
	UDMA Modes 0 - 4

Performance						
Model P/N	Capacity	Read	Write	Random Read	Random Write	Burst R/W Rate
TS2GIFD25	2GB	26.5 MB/s	11.5 MB/s	23.0 MB/s	2.7 MB/s	66.7 MB/s
TS4GIFD25	4GB	26.0 MB/s	11.0 MB/s	22.0 MB/s	2.2 MB/s	66.7 MB/s
TS8GIFD25	8GB	20.4 MB/s	11.0 MB/s	17.6 MB/s	2.9 MB/s	66.7 MB/s

* Note: 25 °C, GIGABYTE GA-81945GZME-RH, 512MB RAM, IDE interface support UDMA4, Windows® 2000 Version 5.00.2195 SP4, benchmark utility HDBENCH (version 3.4003), copied file 100MB

Actual Capacity				
Model P/N	Capacity	Cylinder	Head	Sector
TS2GIFD25	2GB	3954	16	63
TS4GIFD25	4GB	7889	16	63
TS8GIFD25	8GB	15778	16	63

* Note: 2GB FAT format, 4/8GB FAT32 format

Regulations	
Compliance	CE, FCC and BSMI

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

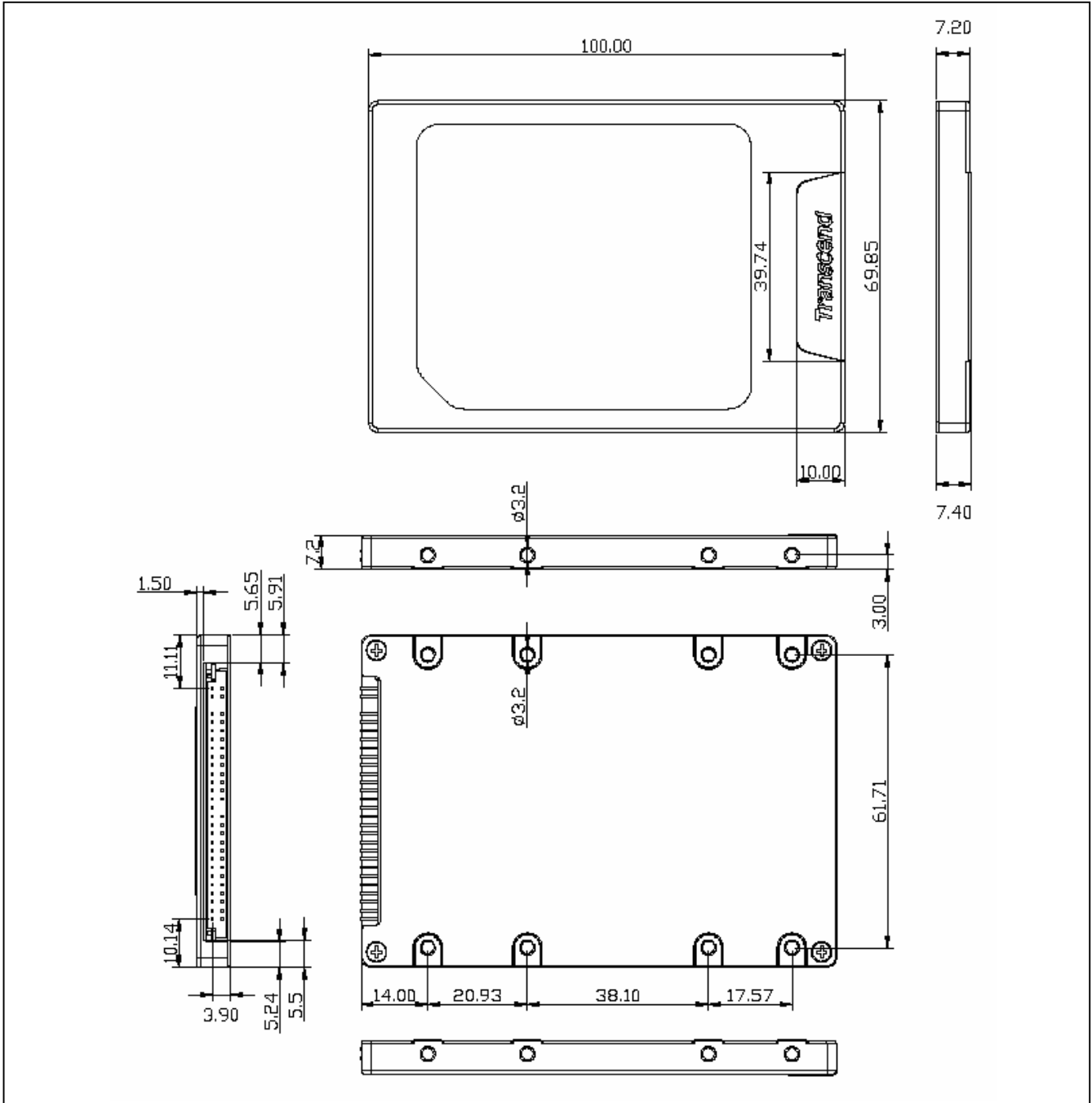
* Note: Reference to the IEC 60068-2-6 Testing procedures; Operating-Sine wave, 5-800Hz/1 oct., 1.5mm, 3g, 0.5 hr./axis, total 1.5 hrs.

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

* Note: Reference to the IEC 60068-2-27 Testing procedures; Operating-Half-sine wave, 1500g, 0.5ms, 3 times/dir., total 18 times.

Package Dimensions

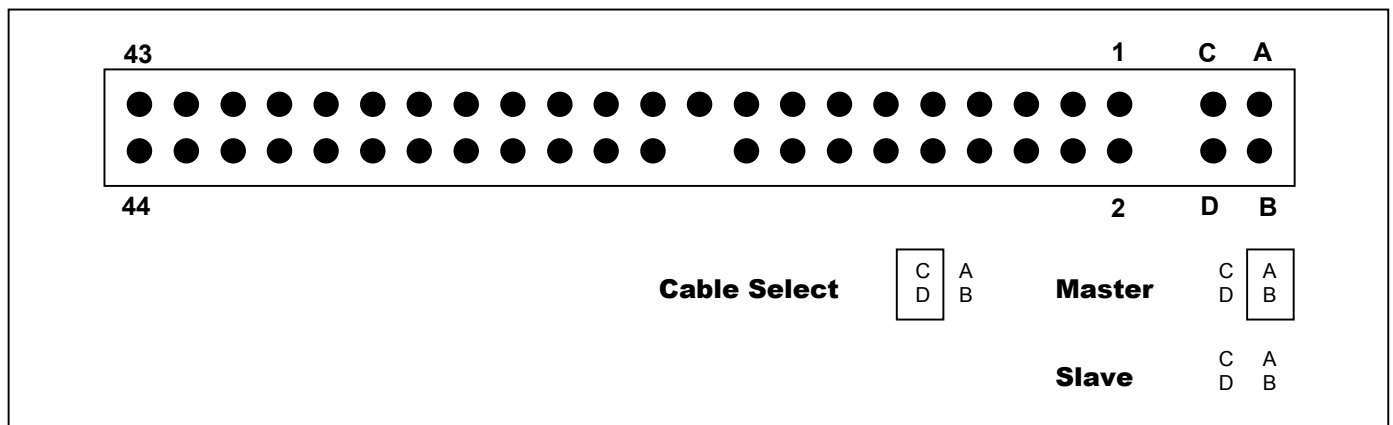
Below figure illustrates the Transcend 2.5" IDE Flash Disk. All dimensions are in mm



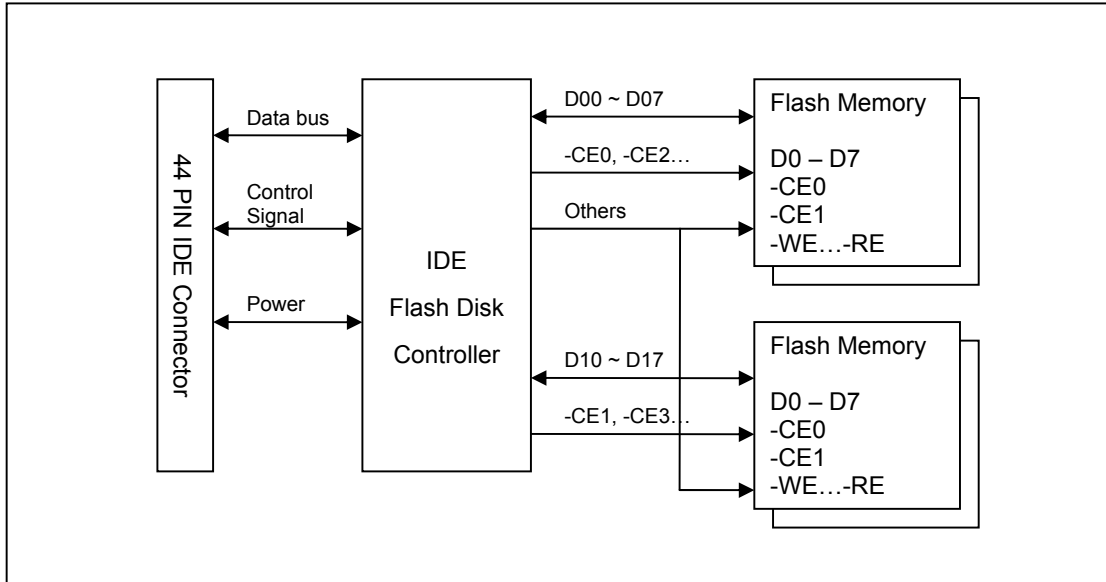
Pin Assignments

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



Block Diagram



Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Power Supply Voltage	V _{CC}	-0.3 to 5.5	V
Input Voltage	V _{IN}	-0.3 to V _{CC} +0.3	V
Output Voltage	V _{OUT}	-0.3 to V _{CC} +0.3	V
Power Supply for Host I/O	V _{CCQ}	-0.6 to 6.0	V
Input Voltage for Host I/O	V _{IN_Host}	-0.3 to V _{CCQ} +0.3	V
Output Voltage for Host IO	V _{OUT_Host}	-0.3 to V _{CCQ} +0.3	V
Soldering Temperature	T _{SOLDER}	260	°C
Storage Temperature	T _{STG}	-55 to 150	°C
Operating Temperature	T _{OPR}	0 to 70	°C
Operating Temperature (Industrial grade)	T _{OPRI}	-40 to 85	°C

DC Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input Leakage Current	I_{IL}	No pull-up or pull-down	-1	-	1	μA
Tri-State Leakage Current	I_{OZ}		-1	-	1	μA
Input Capacitance*3	C_{IN}	$V_{IN}=0V$, $f=1MHz$			15	pF
Output Capacitance*3	C_{OUT}	$V_{OUT}=0V$, $f=1MHz$			15	pF
Input Low Voltage	V_{IL}	CMOS*1			$0.2 \cdot V_{CC}$	V
Input High Voltage	V_{IH}	CMOS*1	2.0			V
Host I/F Input Low Voltage	V_{ILQ}	TTL *2			0.8	V
Host I/F Input High Voltage	V_{IHQ}	TTL *2	2.0			V
Schmitt trigger negative going threshold voltage	V_{t-}	CMOS *1	0.9			V
		V_{CCQ} *2	0.8			V
Schmitt trigger positive going threshold voltage	V_{t+}	CMOS *1			2.5	V
		V_{CCQ} *2			2.0	V
Schmitt trigger negative going threshold voltage	V_{t-}	V_{CC} *1	0.9			V
Schmitt trigger positive going threshold voltage	V_{t+}	V_{CC} *1			2.5	V
Output Low Voltage	V_{OL}	$I_{OL}=4,8mA$			0.4	V
Output High Voltage	V_{OH}	$I_{OH}=4,8mA$	$V_{CC}-0.8$			V
Host I/F Output Low Voltage	V_{OLQ}	$I_{OL}=4,8mA$			0.4	V
Host I/F Output high Voltage	V_{OHQ}	$I_{OH}=4,8mA$	$V_{CCQ}-0.8$			V
Input Pull-up/down resistance	R_t	$V_{IL}=0V$ or $V_{IH}=V_{CC}$		75		K Ω
Active Current	I_{ACT}			70	97	mA
Standby Current	I_{STB}			0.7	4.8	mA
Power Regulator						
Regulator Output Voltage	V_{RO}	$I_{load}=150mA$	3.15	3.3	3.45	V
Regulator Standby Current	I_{RSTB}				160	μA
Regulator Output Current	I_{RLOAD}				150	mA
RC Oscillator						
OSC frequency	f_{OSC}	$R_{ext}=39K\Omega$	83	85	87	MHz
Low Voltage Detector						
Rise Release Voltage	V_{RR}			2.89		V
Power Low Detect Voltage	V_{DET}		2.5	2.6	2.7	V

Note: 1. For the pins, which were driven by V_{CC} .
 2. For the host interface pins only, when $V_{CCQ} = 4.5V$ to $5.5V$
 3. This parameter is sampled and not 100% tested.

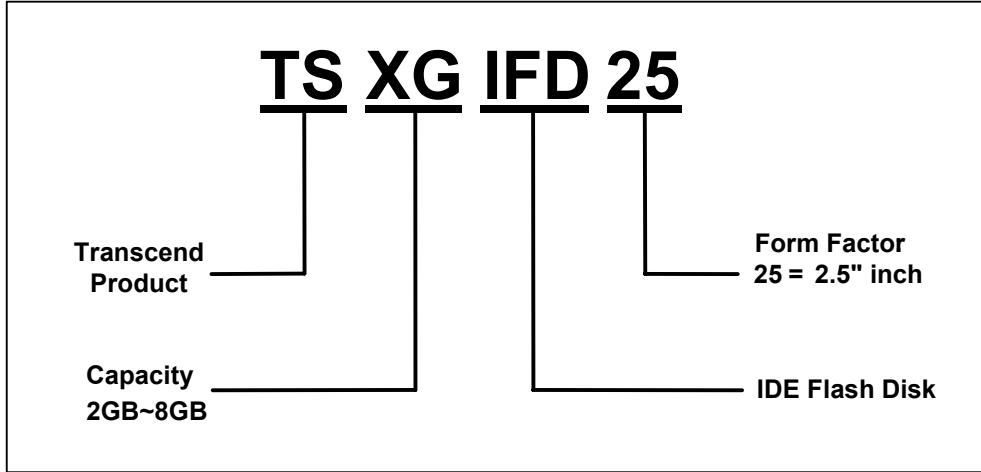
Command Set

The following table summarizes the command defined in the ATAPI-5 specification and lists the commands supported by the TS2/4/8GIFD25.

No.	Command set	Code	FR ¹	SC ¹	SN ¹	CY ¹	DR ¹	HD ¹	LBA ¹
1	CFA Erase Sector(s)	C0h	—	Y	Y	Y	Y	Y	Y
2	CFA Request Extended Error Code	03h	—	—	—	—	Y	—	—
3	CFA Translate Sector	87h	—	Y	Y	Y	Y	Y	Y
4	CFA Write Multiple w/o Erase	CDh	—	Y	Y	Y	Y	Y	Y
5	CFA Write Sector w/o Erase	38h	—	Y	Y	Y	Y	Y	Y
6	Check Power Mode	E5h	—	—	—	—	Y	—	—
7	Execute Device Diagnostic	90h	—	—	—	—	Y	—	—
8	Identify Device	ECh	—	—	—	—	Y	—	—
9	Idle	E3h	—	Y	—	—	Y	—	—
10	Idle Immediate	E1h	—	—	—	—	Y	—	—
11	Initialize Device Parameters	91h	—	Y	—	—	Y	Y	—
12	NOP	00h	—	—	—	—	Y	—	—
13	Read Buffer	E4h	—	—	—	—	Y	—	—
14	Read DMA	C8h	—	Y	Y	Y	Y	Y	Y
15	Read Multiple	C4h	—	Y	Y	Y	Y	Y	Y
16	Read Sector(s)	20h	—	Y	Y	Y	Y	Y	Y
17	Read Verify Sector(s)	40h	—	Y	Y	Y	Y	Y	Y
18	Seek	70h	—	—	Y	Y	Y	Y	Y
19	Set Features	EFh	Y	C	—	—	Y	—	—
20	Set Multiple Mode	C6H	—	Y	—	—	Y	—	—
21	Sleep	E6h	—	—	—	—	Y	—	—
22	Standby	E2h	—	—	—	—	Y	—	—
23	Standby Immediate	E0h	—	—	—	—	Y	—	—
24	Write Buffer	E8h	—	—	—	—	Y	—	—
25	Write DMA	CAh	—	Y	Y	Y	Y	Y	Y
26	Write Multiple	C5h	—	Y	Y	Y	Y	Y	Y
27	Write Sector	30h	—	Y	Y	Y	Y	Y	Y

Note 1: **FR** (Feature Register), **SC** (Sector Count Register), **SN** (Sector Number Register), **CY** (Cylinder Low/High Register), **DR** (Drive bit of Drive/Head Register), **HD** (Head No. bit0-bit3 of Drive/Head Register), **LBA** (Logical Block Address Mode supported). **Y**: Set up; **—**: Not set up; **C**: The register contains command specific data.

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.

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