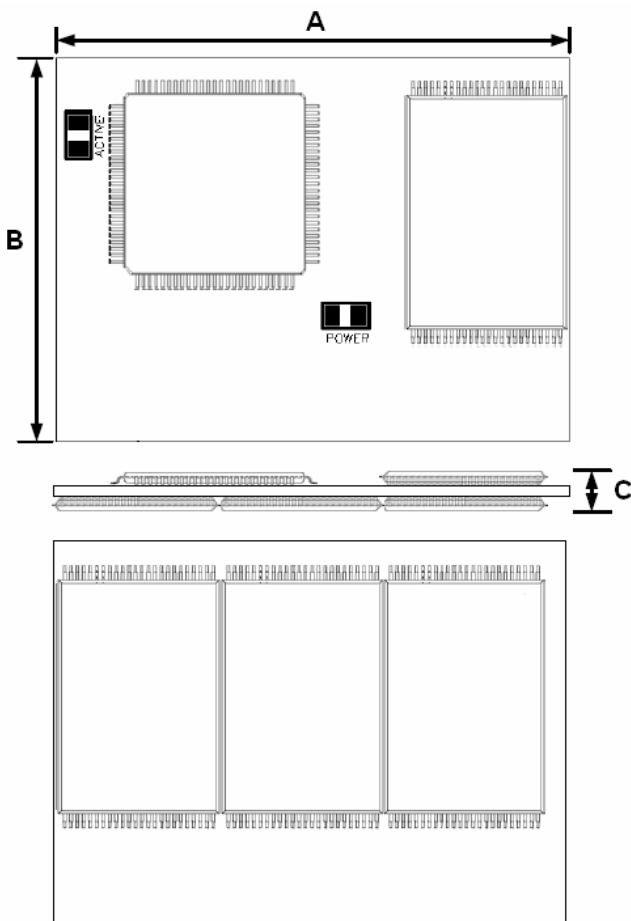


TS2GIFD10 / TS4GIFD10 / TS8GIFD10 TS2GIFD10M / TS4GIFD10M / TS8GIFD10M 1" IDE FLASH DISK

Description

The 1-inch IDE Flash Disk is small in size, has a huge capacity and low power consumption making it perfect for use as a mobile storage solution in devices such as, Mobile Phones, PDA and GPS systems. This guide is written to provide general installation and handling information, please use it in conjunction with the Owner's Manual for your device or system.

Placement



Features

- RoHS compliant
- Fully compatible with 1.0-inch hard drive form factor and interface (35-Pin FPC ZIF connector)
- 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 Sleep and Power-Down Mode supported
- LED indicates usage status
- Lower Power Consumption
- Shock resistance

Dimensions

Side	Millimeters	Inches
A	40.00 ± 0.30	1.575 ± 0.012
B	30.00 ± 0.20	1.181 ± 0.008
C	3.50 ± 0.50	0.138 ± 0.020

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Specifications

Physical Specification		
Form Factor		1-inch HDD
Storage Capacities		2 GB to 8 GB
Dimensions (mm)	Length	30.0 0 ± 0.20
	Width	40.00 ± 0.30
	Height	3.50 ± 0.50
Weight		6 g
Connector		0.3 mm pitch 35-Pin Zero Insertion Force (ZIF) connector (P-ATA)

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

Regulations	
Compliance	CE, FCC and BSMI

Power Requirements			
Input Voltage		DC 3.3V ± 5% or 5V ± 10%	
Power Consumption (DC 3.3V @25°C)	Mode	TYP (mA)	MAX (mA)
	Write	95.9	101.5
	Read	87.4	99.9
	Standby	63.9	66.7
	Sleep	1.50	1.89
Power Consumption (DC 5V @25°C)	Mode	TYP (mA)	MAX (mA)
	Write	108.9	116.6
	Read	94.4	109.1
	Standby	66.8	76.6
	Sleep	9.2	12.6

* Note: Base on TS8GIFD10M

TS2GIFD10 / TS4GIFD10 / TS8GIFD10 TS2GIFD10M / TS4GIFD10M / TS8GIFD10M 1" IDE FLASH DISK

Reliability	
Data Reliability	Built-in 4 symbol correction ECC (per 512 bytes Sector)
Data Retention	10 years
Connector Durability	10,000 times
MTBF	4,600,000 hours

Interface Specification	
Jumper Settings	No Jumper Setting (Default: Master mode)
Drivers	No Device Driver Required
ATA Compatibility	ATA/ATAPI 5
	* PIO Modes 0 - 6
	Ultra DMA Modes 0 - 4

* Note: There is no -IOCS16 signal support and all Data Transfer is 16-bits in width.

Performance						
Model P/N	Capacity	Read	Write	Random Read	Random Write	Burst R/W Rate
TS2GIFD10	2GB	25.5 MB/s	12.2 MB/s	24.7 MB/s	1.8 MB/s	66.7 MB/s
TS4GIFD10	4GB	25.0 MB/s	11.8 MB/s	24.2 MB/s	1.5 MB/s	66.7 MB/s
TS8GIFD10	8GB	20.0 MB/s	9.7 MB/s	19.2 MB/s	1.2 MB/s	66.7 MB/s
TS2GIFD10M*	2GB	23.7 MB/s	3.8 MB/s	22.5 MB/s	474 KB/s	66.7 MB/s
TS4GIFD10M	4GB	23.3 MB/s	4.3 MB/s	22.5 MB/s	466 KB/s	66.7 MB/s
TS8GIFD10M	8GB	23.0 MB/s	4.4 MB/s	22.5 MB/s	530 KB/s	66.7 MB/s

* Note 1: 25 °C, according to transferring board test on GA-81945GZME-RH, 512MB RAM, IDE interface support UDMA5, Windows® 2000 Version 5.00.2195 SP4, benchmark utility HDBENCH (v3.4003), copied file 100MB.

* Note 2: TS2GIFD10M / TS4GIFD10M / TS8GIFD10M are MLC Flash.

TS2GIFD10 / TS4GIFD10 / TS8GIFD10
TS2GIFD10M / TS4GIFD10M / TS8GIFD10M 1" IDE FLASH DISK

Actual Capacity					
Model P/N	Capacity	C/H/S	Capacity (BIOS)	DOS Format (Bytes)	Windows Format (Bytes)
TS2GIFD10	2GB	3954/16/63	2040 MB	2,039,283,712	2,035,585,024
TS4GIFD10	4GB	7889/16/63	4071 MB	4,062,969,856	4,063,978,048
TS8GIFD10	8GB	15778/16/63	8143 MB	8,118,878,208	8,118,894,592
TS2GIFD10M	2GB	3954/16/63	2040 MB	2,039,283,712	2,035,585,024
TS4GIFD10M	4GB	7889/16/63	4071 MB	4,062,969,856	4,063,978,048
TS8GIFD10M	8GB	15778/16/63	8143 MB	8,118,878,208	8,118,894,592

* Note: 2GB is FAT format. 4GB and 8GB are FAT32 format.

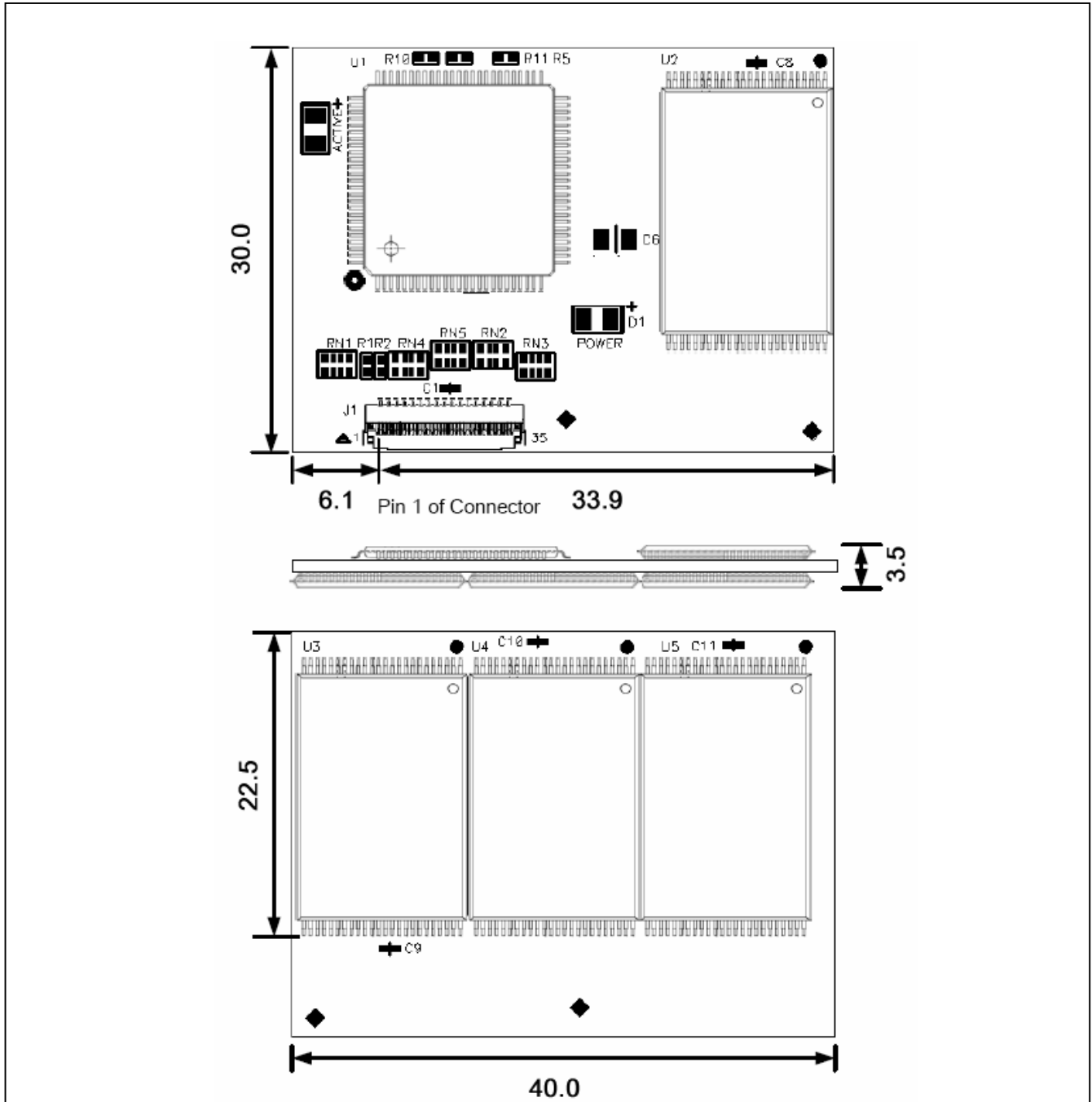
Humidity	
Operating Humidity (Non condensation)	5% to 95%
Storage Humidity (Non condensation)	5% to 95%

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

TS2GIFD10 / TS4GIFD10 / TS8GIFD10 TS2GIFD10M / TS4GIFD10M / TS8GIFD10M 1" IDE FLASH DISK

Package Dimensions

Below figure illustrates the Transcend 1" IDE Flash Disk. All dimensions are in mm.

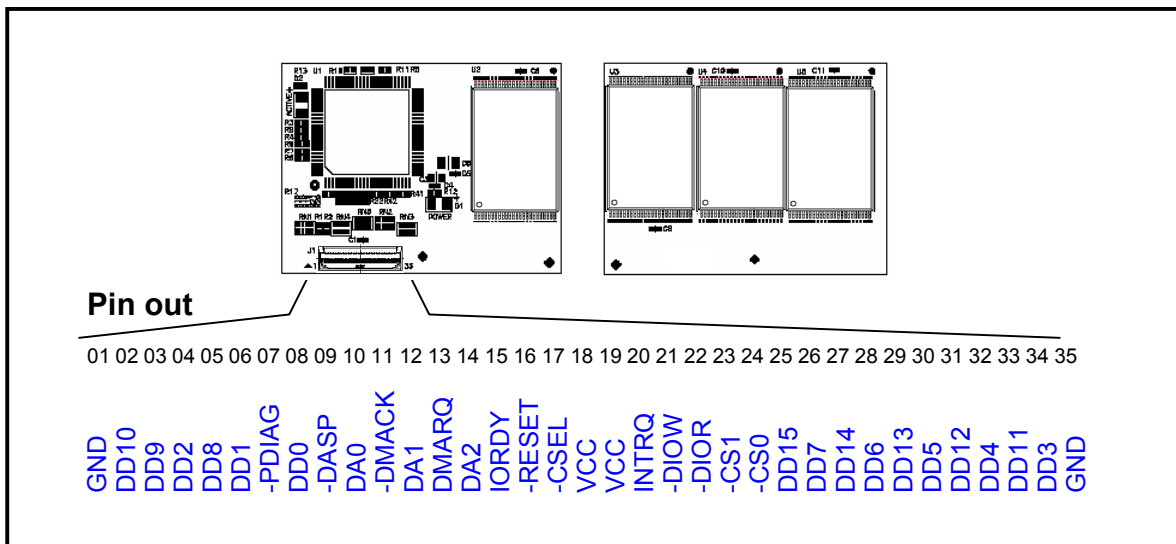


TS2GIFD10 / TS4GIFD10 / TS8GIFD10 TS2GIFD10M / TS4GIFD10M / TS8GIFD10M 1" IDE FLASH DISK

Pin Assignments

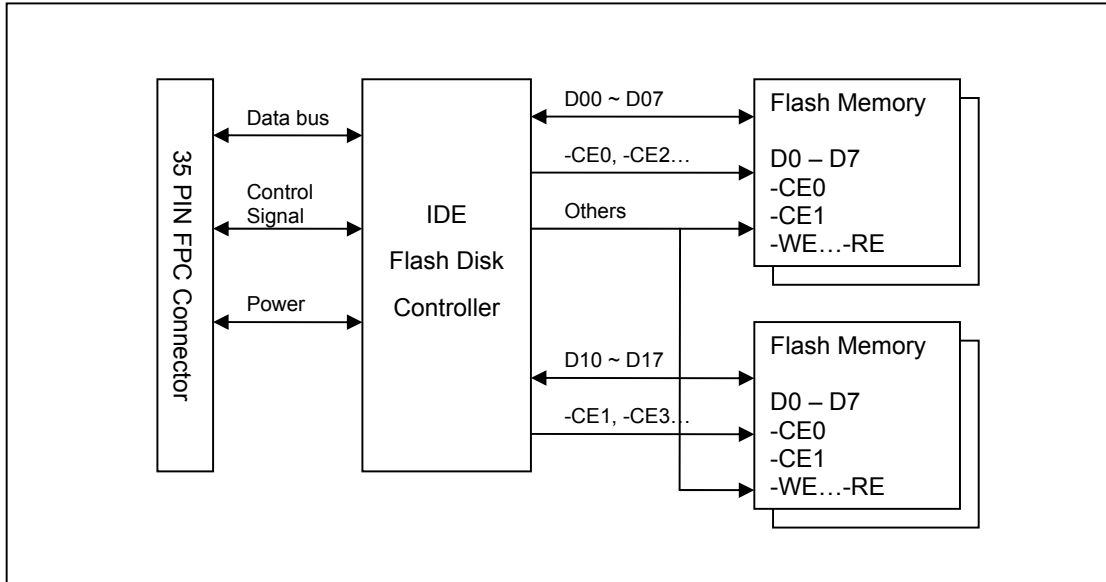
Pin No.	Pin Name	Pin No.	Pin Name
01	GND	02	DD10
03	DD9	04	DD2
05	DD8	06	DD1
07	-PDIAG : -CBLID	08	DD0
09	-DASP	10	DA0
11	-DMACK	12	DA1
13	DMARQ	14	DA2
15	IORDY : DDMARDY : DSTROBE	16	-RESET
17	-CSEL	18	VCC
19	VCC	20	INTRQ
21	-DIOW : STOP	22	-DIOR : -HDMARDY : HSTROBE
23	-CS1	24	-CS0
25	DD15	26	DD7
27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

Pin Layout



TS2GIFD10 / TS4GIFD10 / TS8GIFD10 TS2GIFD10M / TS4GIFD10M / TS8GIFD10M 1" IDE FLASH DISK

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

TS2GIFD10 / TS4GIFD10 / TS8GIFD10 TS2GIFD10M / TS4GIFD10M / TS8GIFD10M 1" IDE FLASH DISK

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.

TS2GIFD10 / TS4GIFD10 / TS8GIFD10 TS2GIFD10M / TS4GIFD10M / TS8GIFD10M 1" IDE FLASH DISK

Command Set

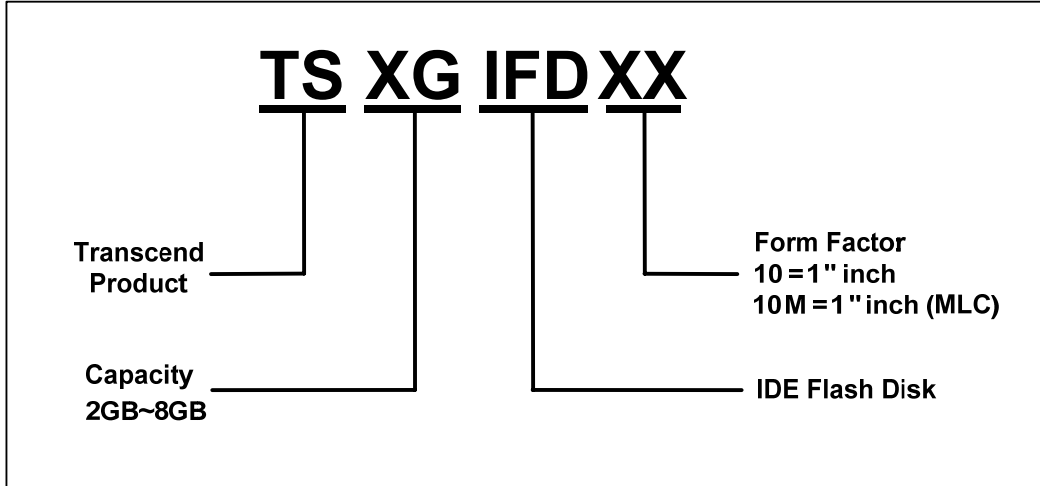
The following table summarizes the command defined in the ATAPI-5 specification and lists the commands supported by the TS2/4/8GIFD10 and TS2/4/8GIFD10M.

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.

TS2GIFD10 / TS4GIFD10 / TS8GIFD10 TS2GIFD10M / TS4GIFD10M / TS8GIFD10M 1" IDE FLASH DISK

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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