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You can read the recommendations in the user guide, the technical guide or the installation guide for TRANSCEND TS4GSDHC4. You'll find the answers to all your questions on the TRANSCEND TS4GSDHC4 in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

User manual TRANSCEND TS4GSDHC4
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Ver 1.0

SDHC Card series

4-16GB High Capacity Secure Digital Card

Description

Transcend High Capacity SD Card series are specifically designed to meet the High Capacity, High Definition Audio and Video requirement for the latest Digital Cameras, DV Recorders, Mobile Phones, etc.. The new defined Speed Class enables the host to support AV applications to perform real time recording to the SD memory card.

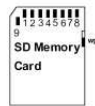
Features

- RoHS compliant product.
- Card Lid material: PC+ABS
- Operating Voltage: 2.7 ~ 3.6V
- Operating Temperature: -25 ~ 85°C
- Durability: 10,000 insertion/removal cycles
- Compatible with SD Specification Ver. 2.0
- Comply with SD File System Specification Ver. 2.0
- Mechanical Write Protection Switch
- Supports Speed Class Specification up to Class 4
- Supports Copy Protection for Recorded Media (CPRM) for SD-Audio
- Form Factor: 24mm x 32mm x 2.1mm

Placement



Front



Back

Pin Definition

Pin No.	Name	Type	SD Mode		SPI Mode	
			Description	Name	Type	Description
1	CD/DAT	I/O/PP	Card Detect/Data Line [Bit3]	CS	I	Chip Select (neg true)
2	CMD	PP	Command/Response	DI	I	Data In
3	V _{SS1}	S	Supply voltage ground	VSS	S	Supply voltage ground
4	V _{DD}	S	Supply voltage	VDD	S	Supply voltage
5	CLK	I	Clock	SCLK	I	Clock
6	V _{SS2}	S	Supply voltage ground	VSS2	S	Supply voltage ground
7	DAT0	I/O/PP	Data Line [Bit0]	DO	O/PP	Data Out
8	DAT1	I/O/PP	Data Line [Bit1]	RSV		
9	DAT2	I/O/PP	Data Line [Bit2]	RSV		

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Manual abstract:

0 SDHC Card series Description Transcend High Capacity SD Card series are specifically designed to meet the High Capacity, High Definition Audio and Video requirement for the latest Digital Cameras, DV Recorders, Mobile Phones, etc., The new defined Speed Class enables the host to support AV applications to perform real time recording to the SD memory card. 4~16GB High Capacity Secure Digital Card Features RoHS compliant product. Card Lid material: PC+ ABS Operating Voltage: 2.7 ~ 3.6V Operating Temperature: -25 ~ 85° C Durability: 10,000 insertion/removal cycles Compatible with SD Specification Ver. 2.0 Comply with SD File System Specification Ver. 2.0 Mechanical Write Protection Switch Supports Speed Class Specification up to Class 4 Supports Copy Protection for Recorded Media Placement · (CPRM)for SD-Audio · Form Factor: 24mm x 32mm x 2.

1mm Front Back Pin Definition Pin No. @@@@ · Before first command: Maximum 15 mA · During initialization: Maximum 100 mA · Operation in Default Mode: Maximum 100 mA · Operation in High Speed Mode: Maximum 200 mA · Operation with other functions: Maximum 500 mA. · Bus Signal Line Load The total capacitance CL the CLK line of the SD Memory Card bus is the sum of the bus master capacitance CHOST, the bus capacitance CBUS itself and the capacitance CCARD of each card connected to this line: $CL = CHOST + CBUS + *CCARD$ Where N is the number of connected cards. Parameter Pull-up resistance Bus signal line capacitance Symbol RCMD RDAT CL Min. 10 Max.

100 40 Unit k pF Remark To prevent bus floating 1 card CHOST+CBUS shall not exceed 30 pF Transcend Information Inc. 3 Ver 1.0 SDHC Card series Single card capacitance Maximum signal line inductance Pull-up resistance inside card (pin1) RDAT3 10 CCARD 4~16GB High Capacity Secure Digital Card 10 16 90 pF nH k fPP 20 MHz May be used for card detection Note that the total capacitance of CMD and DAT lines will be consist of CHOST, CBUS and one CCARD only because they are connected separately to the SD Memory Card host. Host should consider total bus capacitance for each signal as the sum of CHOST, CBUS, and CCARD, these parameters are defined by per signal. The host can determine CHOST and CBUS so that total bus capacitance is less than the card estimated capacitance load (CL=40 pF).

@@@@95° C Moisture and corrosion Operation: 25° / 95% rel. humidity C Storage: 40° / 93% rel. hum./500h C Salt Water Spray: 3% NaCl/35C; 24h acc. @10N 0.15N.m or +/-2.5 deg 1.5m free fall No warp page; no mold skin; complete form; no cavities surface smoothness <= -0.1 mm/cm² within contour; no cracks; no pollution (fat, oil dust, etc.

) minimum 1000 Cycles(@Slide force 0.4N to 5N) Minimum moving force of WP witch 40gf (Ensures that the WP switch will not slide while it is inserted to the connector.) Transcend Information Inc. 10 Ver 1.0 SDHC Card series Register Information 4~16GB High Capacity Secure Digital Card Within the card interface six registers are defined: OCR, CID, CSD, RCA, DSR and SCR. These can be accessed only by corresponding commands (see Chapter 4.7). The OCR, CID, CSD and SCR registers carry the card/content specific information, while the RCA and DSR registers are configuration registers storing actual configuration parameters. 1. OCR register @Additionally, this register includes status information bits.

One status bit is set if the card power up procedure has been finished. @The OCR register shall be implemented by the cards. @Additionally, this register includes 2 more status information bits. @@0 indicates that the card is Standard Capacity SD Memory Card. The Card Capacity status bit is valid after the card power up procedure is completed and the card power up status bit is set to 1.

The Host shall read this status bit to identify a Standard or High Capacity SD Memory Card. The OCR register shall be implemented by the cards. Transcend Information Inc. 11 Ver 1.0 SDHC Card series 4~16GB High Capacity Secure Digital Card OCR Register Definition 1) This bit is valid only when the card power up status bit is set.

2) This bit is set to LOW if the card has not finished the power up routine. The supported voltage range is coded as shown in Table 5-1. A voltage range is not supported if the corresponding bit value is set to LOW. As long as the card is busy, the corresponding bit (31) is set to LOW. 2. CID Register The Card Identification (CID) register is 128 bits wide. @@@@The "m" field [11:8] is the month code. 1 = January. The "y" field [19:12] is the year code. 0 = 2000.

@@@@CSD Version 2.0 is applied to only the High Capacity SD Memory Card. @The fixe. · WP_GRP_ENABLE This field is fixed to 0. @Write timeout can be calculated by multiplying the read access time and R2W_FACTOR. However, the host should not use this factor and should use 250 ms for write timeout · WRITE_BL_LEN This field is fixed to 9h, which indicates WRITE_BL_LEN=512 Byte. · WRITE_BL_PARTIAL This field is fixed to 0, which indicates partial block read is inhibited and only unit of block access is allowed. · FILE_FORMAT_GRP Transcend Information Inc. 17 Ver 1.0 SDHC Card series This field is set to 0.

Host should not use this field. 4~16GB High Capacity Secure Digital Card · COPY Defines if the contents is original (= '0') or has been copied (= '1'). @The default value is '0', i.e. @This bit can be set and reset.

The default value is '0', i.e. not write protected. · FILE_FORMAT This field is set to 0. @The default corresponds to the initial CSD contents. @A '+' entry indicates that the CSD field affects the commands of the related command class. Transcend Information Inc. 18 Ver 1.0 SDHC Card series 4~16GB High Capacity Secure Digital Card 4. RCA Register The writable 16-bit relative card address register carries the card address that is published by the card during the card identification. This address is used for the addressed host-card communication after the card identification procedure. The default value of the RCA register is 0x0000. The value0x0000 is reserved to set all cards into the Stand-by State with CMD7. 5. DSR Register (Optional) The 16-bit driver stage register is described in detail in Chapter 6.

5. It can be optionally used to improve the bus performance for extended operating conditions (depending on parameters like bus length, transfer rate or number of cards). The CSD register carries the information about the DSR register usage. @The size of SCR register is 64 bit. @SD_SPEC 0 1 2 3-15 Physical Layer Specification Version Number Version 1.0-1.01 Version 1.10 Version 2.00 reserved Physical Layer Specification Version · DATA_STAT_AFTER_ERASE Transcend Information Inc.



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0 SDHC Card series 4~16GB High Capacity Secure Digital Card Defines the data status after erase, whether it is '0' or '1' (the status is card vendor dependent). · SD_SECURITY Describes the security algorithm supported by the card. SD Supported Security Algorithm Note that it is mandatory for a regular writable SD Memory Card to support Security Protocol. For ROM (Read Only) and OTP (One Time Programmable) types of the SD Memory Card, the security feature is optional. In the case of Standard Capacity SD Memory Card, this field shall be set to 2 (Version 1.01). In the case of High Capacity SD Memory Card, this field shall be set to 3 (Version 2.00). · SD_BUS_WIDTHS Describes all the DAT bus widths that are supported by this card. Since SD Memory Card shall support at least the two bus modes 1bit or 4bit width then any SD Card shall set at least bits 0 and 2 (SD_BUS_WIDTH="0101").

Transcend Information Inc. 21 Ver 1.0 SDHC Card series Mechanical Dimension 4~16GB High Capacity Secure Digital Card Transcend Information Inc. 22 Ver 1.0 SDHC Card series 4~16GB High Capacity Secure Digital Card Transcend Information Inc. 23 Ver 1.0 SDHC Card series 4~16GB High Capacity Secure Digital Card Transcend Information Inc. 24 .



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