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

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TS256M~2GUSD

microSD Memory Card

Description

Transcend microSD card series are non-volatile, which means no external power is required to retain the information stored on it. Besides, it is also a solid-state device that without moving parts to skip or break down. Based on original NAND flash chip, Transcend microSD can offer an incredible combination of fast data transfer, great flexibility, excellent security and incredibly small size.

Features

- ROHS compliant product.
- Operating Voltage: 2.7 ~ 3.6V
- Operating Temperature: -25 ~ 85°C
- Durability: 10,000 insertion/removal cycles
- Fully compatible with SD card spec. v1.1
- Comply with SD Association File System Specification
- Mechanical Write Protection Switch with microSD adapter
- SD Host allows MultiMediaCard upward compatibility
- Form Factor: 11mm x 15mm x 1mm

Placement



Front

Back

Pin Definition

Pin No.	SD Mode			SPI Mode		
	Name	Type	Description	Name	Type	Description
1	DAT2	I/O/PP	Data Line [Bit2]	RSV		Reserved
2	CD/DAT3	I/O/PP	Card Detect / Data Line [Bit3]	CS	I	Chip Select
3	CMD	PP	Command / Response	DI	I	Data In
4	V _{DD}	S	Supply voltage	V _{DD}	S	Supply voltage
5	CLK	I	Clock	SCLK	I	Clock
6	V _{SS}	S	Supply voltage ground	V _{SS}	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		Reserved

S: Power Supply; I:Input; O:Output; PP:Push-Pull

Transcend Information Inc.



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Manual abstract:

Besides, it is also a solid-state device that without moving parts to skip or break down. Based on original NAND flash chip, Transcend microSD can offer an incredible combination of fast data transfer, great flexibility, excellent security and incredibly small size. microSD Memory Card Features · ROHS compliant product. · Operating Voltage: 2.7 ~ 3.6V · Operating Temperature: -25 ~ 85°C · Durability: 10,000 insertion/removal cycles · Fully compatible with SD card spec. v1.1 · Comply with SD Association File System Specification · Mechanical Write Protection Switch with microSD adapter · SD Host allows MultiMediaCard upward compatibility · Form Factor: 11mm x 15mm x 1mm Placement 12345678 Front Pin Definition Back SD Mode Pin No. Name 1 2 3 4 5 6 7 DAT2 CD/DAT3 CMD VDD CLK VSS DAT0 DAT1 Type I/O/PP I/O/PP PP S I S I/O/PP I/O/PP Description Data Line [Bit2] Card Detect / Data Line [Bit3] Command / Response Supply voltage Clock Supply voltage ground Data Line [Bit0] Data Line [Bit1] Name RSV CS DI VDD SPI Mode Type Reserved I I S I S O/PP Chip Select Data In Supply voltage Description SCLK VSS Clock Supply voltage ground DO RSV Data out Reserved 8 S: Power Supply; I:Input; O:Output; PP:Push-Pull Transcend Information Inc. 1 TS256M~2GUSD Architecture microSD Memory Card Transcend Information Inc. 2 TS256M~2GUSD Bus Operating Conditions · General Parameter Peak voltage on all lines All Inputs Input Leakage Current All Outputs Output Leakage Current -10 10 µA -10 10 µA microSD Memory Card Symbol Min. -0.3 Max. VDD+0.3 Unit V Remark · Power Supply Voltage Parameter Supply voltage Supply voltage specified in OCR register Supply voltage differentials (VSSI, VSS2) Power up time -0.

3 0.3 250 V ms From 0v to VDD Min. Symbol VDD Min. 2.0 Max. 3.6 Unit V Remark CMD0, 15,55,ACMD41 commands Except CMD0, 15,55, ACMD41 commands Note. @@@@is required for MultiMediaCard compatibility.) Clock low time Clock high time Clock rise time Clock fall time Inputs CMD, DAT (referenced to CLK) Input set-up time Input hold time Outputs CMD, DAT (referenced to CLK) Output Delay time Symbol fPP fOD Min 0 0 Max. 25 400 Unit MHz KHz Remark CL 100 pF, (7 cards) CL 250 pF, (21 cards) CL 100 pF, (7 cards) CL 250 pF, (21 cards) CL 100 pF, (7 cards) CL 250 pF, (21 cards) CL 100 pF, (7 cards) CL 250 pF, (21 cards) CL 25 pF, (1 cards) CL 25 pF, (1 cards) CL 25 pF, (1 cards) tISU tIH tODLY 5 5 5 0 Transcend Information Inc. TS256M~2GUSD · Bus Timing (High-speed Mode) microSD Memory Card Parameter Clock frequency Data Transfer Mode Clock low time Clock high time Clock rise time Clock fall time Inputs CMD, DAT (referenced to CLK) Input set-up time Input hold time Outputs CMD, DAT (referenced to CLK) Output Delay time during Data Transfer Mode Output Hold time 1 Symbol fPP tWL tWH tTLH tTHL tISU tIH tODLY tOH Min 0 7 7 Max. 50 Unit MHz ns ns Remark CCARD 10 pF, (1 card) CCARD 10 pF, (1 card) CCARD 10 pF, (1 card) CCARD 10 pF, (1 card) CCARD 10 pF, (1 card) CCARD 10 pF, (1 card) CCARD 10 pF, (1 card) CL 40 pF, (1 card) CL 40 pF, (1 card) (1 card) Clock CLK (All values are referred to min (VIH) and max (VIL)) 3 3 6 2 14 2.5 40 ns ns ns ns ns ns ns pF Total System capacitance for each line CL 1) In order to satisfy severe timing, host shall drive only one card. Transcend Information Inc. 6 TS256M~2GUSD Reliability and Durability Temperature Operation: -25°C / 85°C (Target spec) Storage: -40°C (168h) / 85°C (500h) Junction temperature: max.

95°C microSD Memory Card Moisture and corrosion Operation: 25°C / 95% rel. humidity Storage: 40°C / 93% rel. hum./500h Salt Water Spray: 3% NaCl/35C; 24h acc. MIL STD Method 1009 10000 mating cycles 10N 0.10N*m , +/- 2.5deg max 1.5m free fall UV: 254nm, 15Ws/cm² according to ISO 7816-1 No warpage; no mold skin; complete form; no cavities surface smoothness <= -0.1 mm/cm² within contour; no cracks; no pollution (fat, oil dust, etc.) Durability Bending Torque Drop test UV light exposure Visual inspection Shape and form Above technical information is based on standard data and tested to be reliable.

@@@@@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 The 32-bit operation conditions register stores the VDD voltage profile of the card. In addition, this register includes a status information bit. @@@@@@The structure of the CID register is defined in the following paragraphs: ·

MID An 8 bit binary number that identifies the card manufacturer. The MID number is controlled, defined and allocated to a SD Memory Card manufacturer by the SD Group. This procedure is established to ensure uniqueness of the CID register. · OID A 2 ASCII string characters that identifies the card OEM and/or the card contents (when used as a distribution media either on ROM or FLASH cards). The OID number is controlled, defined and allocated to a SD Memory Card manufacturer by the SD Group. This procedure is established to ensure uniqueness of the CID register.

· PNM The product name is a string, 5 ASCII characters long. · PRV The product revision is composed of two Binary Coded Decimal (BCD) digits, four bits each, representing an "n.m" revision number. The "n" is the most significant nibble and "m" is the least significant nibble. As an example, the PRV binary value field for product revision "6.2" will be: 0110 0010 · PSN The Serial Number is 32 bits of binary number. · MDT Transcend Information Inc. 9 TS256M~2GUSD microSD Memory Card The manufacturing date composed of two hexadecimal digits, one is 8 bit representing the year(y) and the other is four bits representing the month(m). The "m" field [11:8] is the month code. 1 = January.

The "y" field [19:12] is the year code. 0 = 2000. As an example, the binary value of the Date field for production date "April 2001" will be: 00000001 0100. ·

CRC CRC7 checksum (7 bits). 3. CSD Register The Card-Specific Data register provides information on how to access the card contents. @@@@@@The unit for NSAC is 100 clock cycles. @@@@@It has to be computed by the host for the actual clock rate. @@@@@@It means that smaller blocks can be used as well. The minimum block size will be one byte.

· WRITE_BLK_MISALIGN Defines if the data block to be written by a multiple of the read access time.



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· *WRITE_BLOCK_LEN* Write Block Length of 512 bytes is always supported. The default value is '0', i.e. not permanently write protected.

· *TMP_WRITE_PROTECT* Temporarily protects the whole card content from being overwritten or erased (all write and erase commands for this card are temporarily disabled). This bit can be set and reset. The default value is '0', i.e. not write protected.

· *FILE_FORMAT* Indicates the file format on the card. This field is read-only for ROM. The following formats are defined:

- *CRC* The CRC field carries the check sum for the CSD contents. The checksum has to be recalculated by the host for any CSD modification.
- *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 value 0x0000 is reserved to set all cards into the Stand-by State with CMD7.
- *DSR Register (Optional)* The 16-bit driver stage register is described in detail in Chapter 6.

5. *SCR Register* microSD Memory Card cards). The SCR provides information on SD Memory Card's special features that were configured int.



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