DATA SHEET

microSD Card

AE56

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1. Introduce the microSD memory Card

The microSD memory Card is a functionally compatible with the SD Memory Card but is smaller in dimensions. The microSD memory Card communication is based on an advance 8-pin interface and the microSD memory Card host interface supports regular SD or miniSD Memory Card Adapter and operate as an SD Memory Card.

2. microSD memory Card Feature

- 64~128MBytes flash memory card.
- microSD Card protocol compatible.
- Targeted for portable and stationary applications for secured (copyrights protected) and non-secured data storage.
- Correction of memory field errors.
- Copyrights Protection Mechanism: Complies with highest security of SDMI standard.
- Card Detection (Insertion / Removal).
- High Performance:
  - Read: 10.0 Mbytes/s~128MB ; 8.85Mbytes/s~64MB
  - Write: 5.02 Mbytes/s~128MB;1.67Mbytes/s~64MB

Note: The performance depends on different test platform with different result.

- The communication channel is described in the table below.

microSD Bus/SPI Bus comparison

microSD memory Card Using SD Bus	microSD memory Card Using SPI Bus
Six-wire communication channel (clock, command, 4 data lines)	Three-wire serial data bus (Clock, dataIn, dataOut) + card specific CS signal(hardwired card selection)
Error-protected data transfer	Optional non protected data transfer mode available
Single or multiple block oriented data transfer	Single or multiple block oriented data transfer

3. Product Specification

3.1 System Environment Specifications

Temperature	Operating: Non-Operating:	0℃ to 70℃ -40℃ to 85℃
Humidity	Operating: Non-Operating:	8% to95%, non-condensing 8% to 95%, non-condensing
Vibration	Operating: Non-Operating:	15 G peak to peak max. 15 G peak to peak max.
Shock	Operating: Non-Operating:	1,000 G max. 1,000 G max.
Altitude (relative to sea level)	Operating: Non-Operating:	80,000 feet max. 80,000 feet max.

3.2 Reliability and Durability Specifications

Durability	10,000 mating cycles
Bending	10N
Torque	0.10N.m .
Drop Test	1.5m free fall
UV Light Exposure	UV: 254nm, 15Ws/cm^2 according to IOS 7816-1
Visual Inspection/Shape and Form	No warp age; no mold slim; complete form; no cavities; surface smoothness≦-0.1 mm/ cm^2 within contour; no cracks; no pollution (oil, dust, etc.)

3.3 System Reliability and Maintenance

MTBF	> 1,000,000 hours
Preventive Maintenance	None
Data Reliability	< 1 non-recoverable error in 10^{14} bits read
Endurance	300,000 write/erase cycles

4. microSD memory Card Interface Description

4.1 General Description of Pins and Registers

The microSD memory Card has eight exposed contacts on one side. The host is connected to the microSD Memory Card using a nine pin connector.

Pin Assignment in microSD Bus Mode Pad Definition

Pin #	Name	Type	miroSD Description
1	DAT2	I/O	Data Lin [Bit2]
2	CD/DAT3	I/O	Card Detect / Data Line[Bit3]
3	CMD	PP	Command / Response
4	VDD	S	Supply voltage
5	CLK	I	Clock
6	Vss	S	Supply voltage ground
7	DAT0	I/O	Data Line [Bit 0]
8	DAT1	I/O	Data Line [Bit 1]

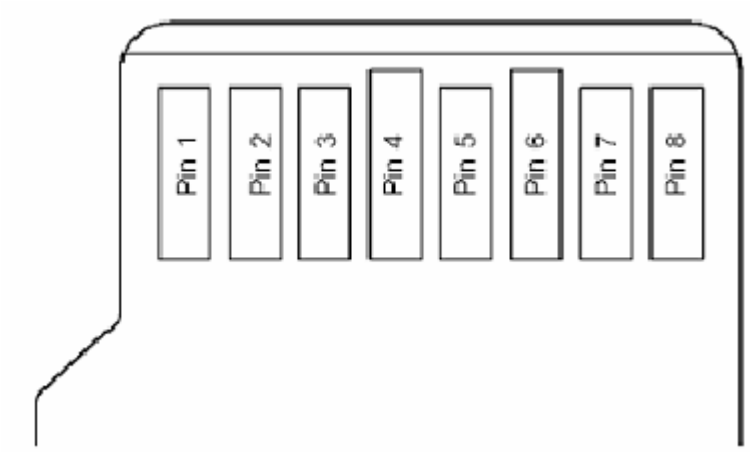
Note:

1. **S=power supply; I=input; O=output using push-pull drivers.**
2. **The extended DAT lines (DAT1-DAT3) are input on power up, They start to operate as DAT lines after the SET_BUS_WIDTH command.The Host shall keep its own DAT1-DAT3 lines in input mode ,as well While they are not used.it is defined so,in order to keep compatibility to MulitMediaCards.**
3. **After power up, this line is input with 50Kohm pull-up (can be used for card detection or SPI mode selection). The pull-up should be disconnected by the user, during regular data transfer, with SET_CLR_CARD_DETECT (ACMD42) command.**

Pin Assignment in SPI Bus Mode Pad Definition

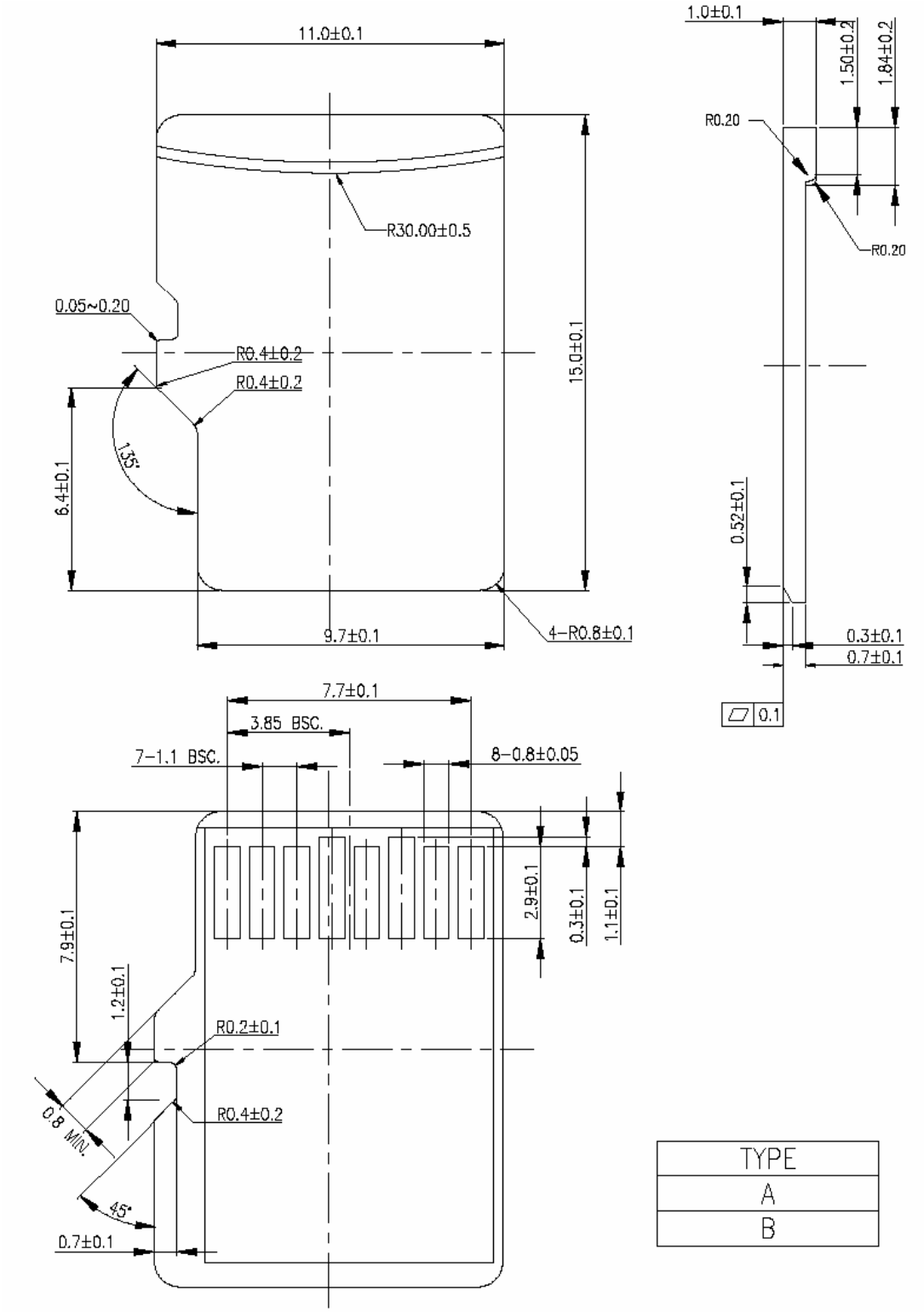
Pin #	Name	Type	microSD Description
1	RSV		Reserved
2	CS	I	Chip Select (neg true)
3	DI	S	Data In
4	VDD	S	Supply Voltage
5	SCLK	I	Clock
6	VSS	S	Supply Voltage Ground
7	DO	O	Data Out
8	RSV	I	Reserved

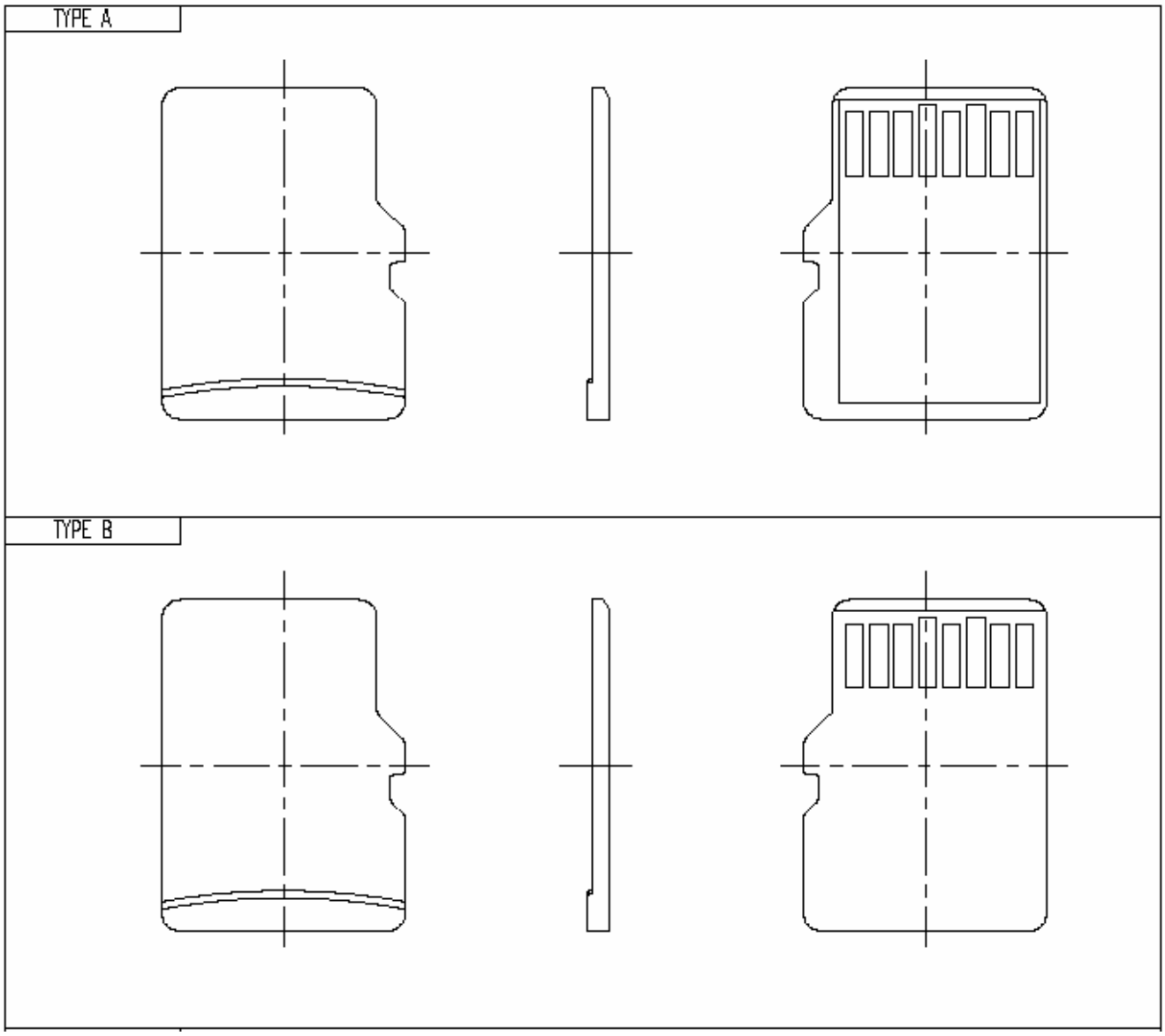
microSD memory Card Pin Assignment



microSD memory Card contact Area

8. Physical Outline




TYPE A
TYPE B