Description:

MicroSD memory cards are functionally compatible with SD memory cards but are smaller in size. MicroSD memory cards communicate based on an advanced 8-pin interface, and the MicroSD card host interface supports standard SD or MiniSD memory card adapters, acting as an SD storage card.

MicroSD memory cards are SD card applications that prioritize small size and low power consumption design. All device and interface configuration data (such as maximum frequency, card identification, etc.) are stored on the card. In addition to the SD card interface, MicroSD memory cards provide compatibility with existing controllers, including a backup communication protocol based on the SPI standard. MicroSD cards are storage cards that integrate a controller and NAND-type flash memory with serial and random access capabilities. These devices are designed for cameras, smartphones, digital recorders, MP3 players, handheld computers, electronic toys, etc. MicroSD cards comply with the SDA (SD Card Association specifications). This document provides a general overview of the MicroSD memory card architecture, with detailed specifications available in the "SDA Standards".

Features

Contoller：SA3309AD
Flash：N38A
Capacity：512GB

Product Description:

- Compatible with digital secure memory card communication protocols

- Designed for both mobile and stationary product applications for secure (copyright protection) and non-secure data storage

- Supports serial (daisy chain) transmission modes and interfaces

- Features self-correction of data errors (memory field errors)

- Supports card detection mode (insertion/removal)

Detailed Parameter Description:

- H2 Test Full Disk Read: 84 Mbytes/s
- H2 Test Full Disk Write: 43.3 Mbytes/s to 43.5 Mbytes/s
- CrystalDiskMark Read: 96.07 Mbytes/s to 96.90 Mbytes/s
- CrystalDiskMark Write: 92.19 Mbytes/s to 92.63 Mbytes/s

Note: Performance may vary due to differences in system capabilities or variations, resulting in different outcomes.

Supports a dedicated instruction set.
Communication channels are as shown in the following table.

Micro SD Bus Channel/Serial (Daisy Chain) Bus Channel Comparison Table.

Using the SD Bus Channel	Using the Serial (Daisy Chain) Bus Channel
Six bus channels (timing, command, and four data lines).	Three bus channels (timing, data input, and data output) and card-specific selection signal.
Data transmission with error prevention (protection).	Provides an optional non-protected data transfer mode.
Supports data transfer of a single block or multiple blocks.	Supports data transfer of individual or multiple blocks.

Product Specifications

System Environment Specifications

Temperature	Working status: Non-working state:	0 ~70 -20 ~85
Humidity	Working status: Non-working state:	8%~95% non-condensing 8%~95% non-condensing
Shake	Working status: Non-working state:	15 G peak to peak max. 15 G peak to peak max.
Shock	Working status: Non-working state:	1,000 G max. 1,000 G max.
Altitude	Working status: Non-working state:	80,000 feet max. 80,000 feet max.

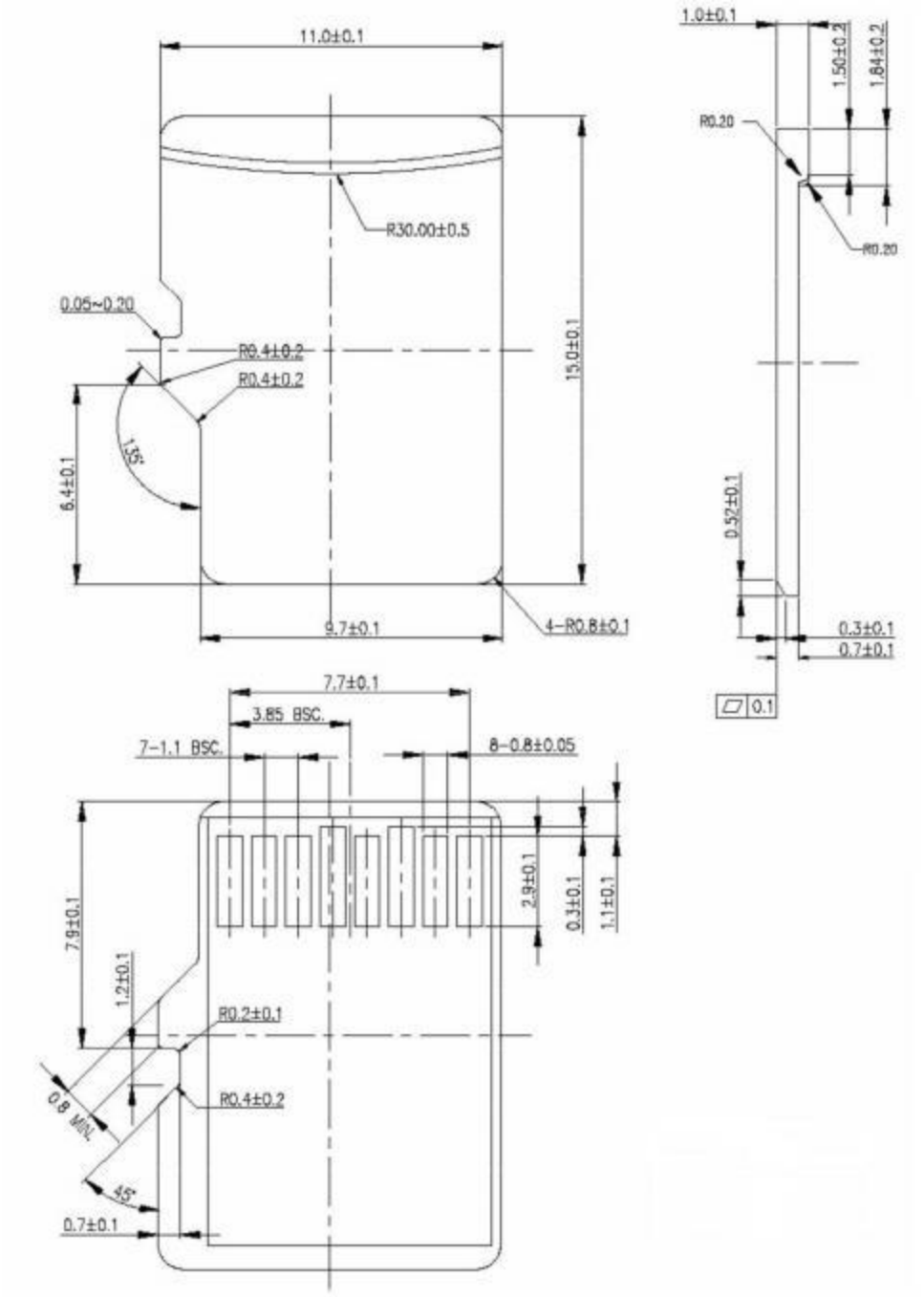
Reliability and durability specifications

Durability	10,000 mating cycles
Bending resistance	10N
Torque specifications	0. 10N.m or ±2.5 deg.
Drop test	1.5m free fall
UV resistance	UV: 254nm, 15Ws/cm^2 according to IOS 7816- 1
Appearance inspection/appearance and type	No war page; no mold slim; complete form; no cavities; Surface smoothness -.01mm/ cm^2 within contour; no cracks; no pollution (oil, dust, etc.)

System reliability

Life expectancy	> 200,000 hours
Preventive Maintenance	None
Data reliability	< 1 non-recoverable error in 10^{14} bits read
Block Durability	1000 write/erase cycles. (typical)

Dimensions


11.0±0.1
R30.00±0.5
0.05~0.20
R0.4±0.2
R0.4±0.2
15°
6.4±0.1
15.0±0.1
9.7±0.1
4-R0.8±0.1
1.0±0.1
1.50±0.2
1.84±0.2
R0.20
R0.20
0.52±0.1
0.3±0.1
0.7±0.1
0.1
7.7±0.1
3.85 BSC.
7-1.1 BSC.
8-0.8±0.05
7.9±0.1
1.2±0.1
2.9±0.1
0.3±0.1
1.1±0.1
R0.2±0.1
R0.4±0.2
0.8 MIN.
45°
0.7±0.1

接口訊號定義

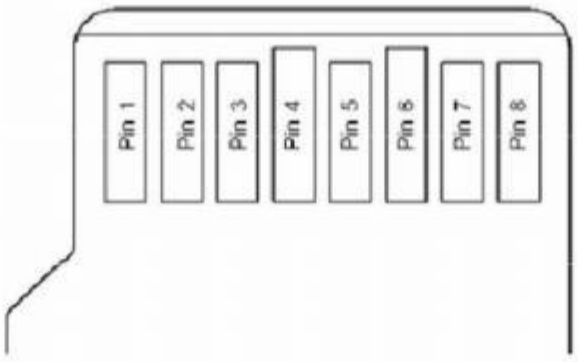
Pin Assignment in microSD Bus Mode Pad Definition

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]

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