# *HHW microSD Card*

„ SDR104: 1.8V signaling, frequency up to 208MHz, up to 104MB/sec

„ DDR50: 1.8V signaling, frequency up to 50MHz, sampled on both clock edges, up to 50MB/s

z Operating Temperature: N-Temp: at 0°C to 70°C

z Flash: MLC NAND Flash

z Read disturbance management

z Adaptive wear leveling

| | | | |
|---|---|---|---|
| 1 | DAT2 | I/O | Data Line [Bit 2] |
| 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] |

Notes:

1) S: power supply; I: input; O: output using push-pull drivers; PP: I/O using push-pull drivers;
2) The extended DAT Lines (DAT1-DAT3) are input on power up. They start to operate as DAT lines after 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 Multi-media Cards.
3) After power up this line (Pin2) is input with 50Kohm pull-up (can be used for card detection or SPI mode selection). The pull-up should be disconnected by user, during regular data transfer, with SET_CLR_CARD_DETECT (ACMD42) command.

| | | | |
|---|---|---|---|
| 1 | RSV | | Reserved |
| 2 | CS | I | Chip Select (neg true) |
| 3 | DI | I | Data In |
| 4 | VDD | S | Supply Voltage |
| 5 | SCLK | I | Clock |
| 6 | VSS | S | Supply Voltage Ground |
| 7 | DO | O | Data Out |

| | | | |
|---|---|---|---|
| 8 | RSV | | Reserved |

杭州瀚海微科技有限公司

Max. Data Transfer Rate

„ Read: 90MB/s; Write: 70MB/s

microSD Card Multi Level Cell (MLC) and (TLC) NAND Flash memory, which is non-volatility, high reliability and high speed memory storage.

„ 2.7V to 3.6V

„ N-Temp:0°C to70°C

Relative Humidity: 5-95%, non-condensing

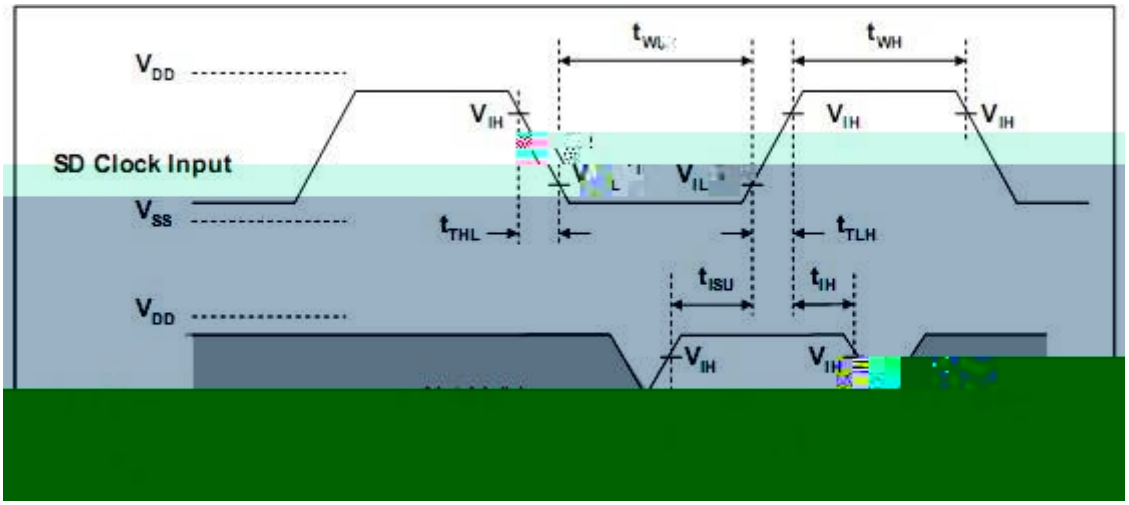
| | | | | | |
|---|---|---|---|---|---|
| $T_{storage}$ | Storage Temperature | -25 | 95 | °C | - |
| Ta | Ambient Operating Temperature | 0 | 85 | °C | - |
| $V_I$ | 3.3V External Input Voltage | -0.3 | 3.6 | | |

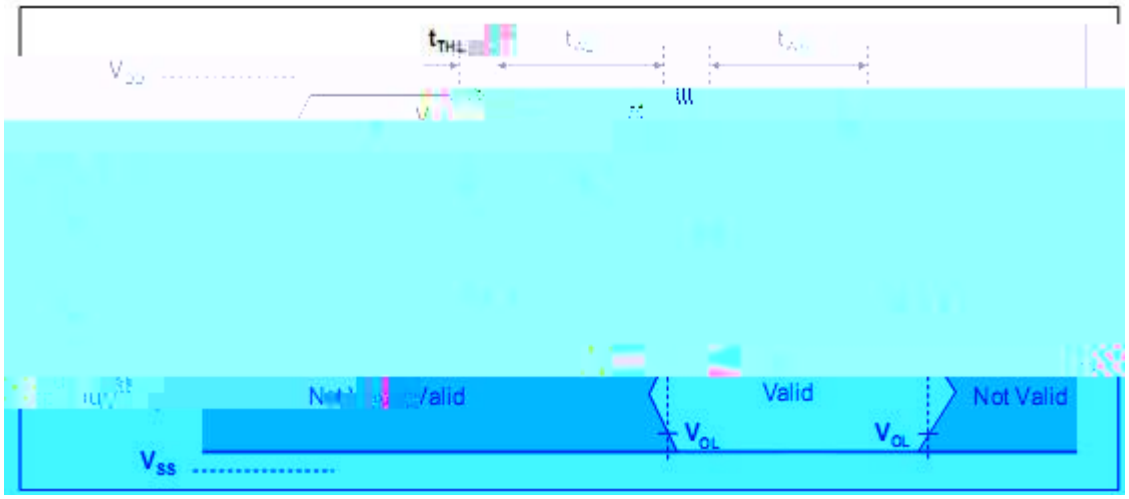
| | | | | | |
|---|---|---|---|---|---|
| $I_{Read}$ | Read Current at 3.3V | - | 169 | - | mA |
| $I_{Write}$ | Write Current at 3.3V | - | 89 | - | mA |
| $I_{STBY}$ | Standby Current at 3.3V | - | 198 | - | uA |

| Parameter | Symbol | Min | Max | Unit | Remark |
|---|---|---|---|---|---|
| Supply Voltage | $V_{DD}$ | 2.7 | 3.6 | V | |
| Output High Voltage | $V_{OH}$ | 0.75* $V_{DD}$ | | V | $I_{OH}$=2mA $V_{DD\ min}$ |
| Output Low Voltage | $V_{OL}$ | | 0.125* $V_{DD}$ | V | $I_{OL}$=2mA $V_{DD\ min}$ |
| Input High Voltage | $V_{IH}$ | 0.625* $V_{DD}$ | $V_{DD}$+0.3 | V | |
| Input Low Voltage | $V_{IL}$ | $V_{ss}$-0.3 | 0.25* $V_{DD}$ | V | |
| Power Up Time | | | 250 | ms | From 0V to $V_{DD\ min}$ |

| Parameter | Symbol | Min | Max | Unit | Remark |
|---|---|---|---|---|---|
| Peak voltage on all lines | | -0.3 | $V_{DD}$+0.3 | V | |
| All Inputs | | | | | |
| Input Leakage Current | | -10 | 10 | uA | |
| All Outputs | | | | | |
| Output Leakage Current | | -10 | 10 | uA | |

杭州瀚海微科技有限公司

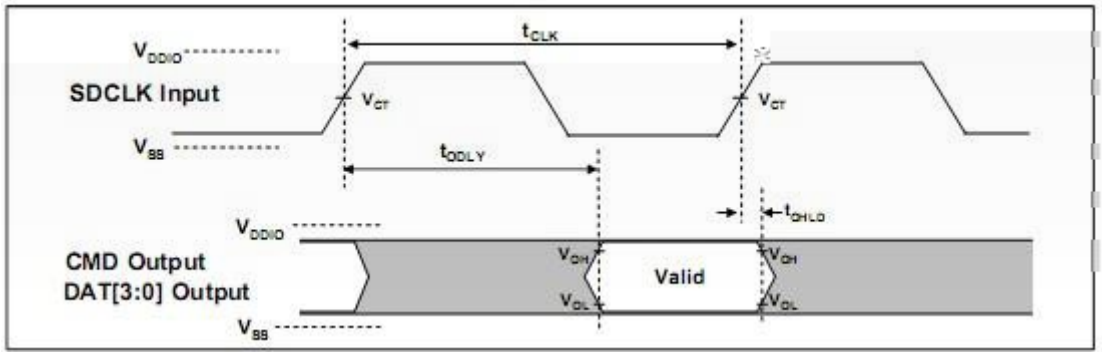


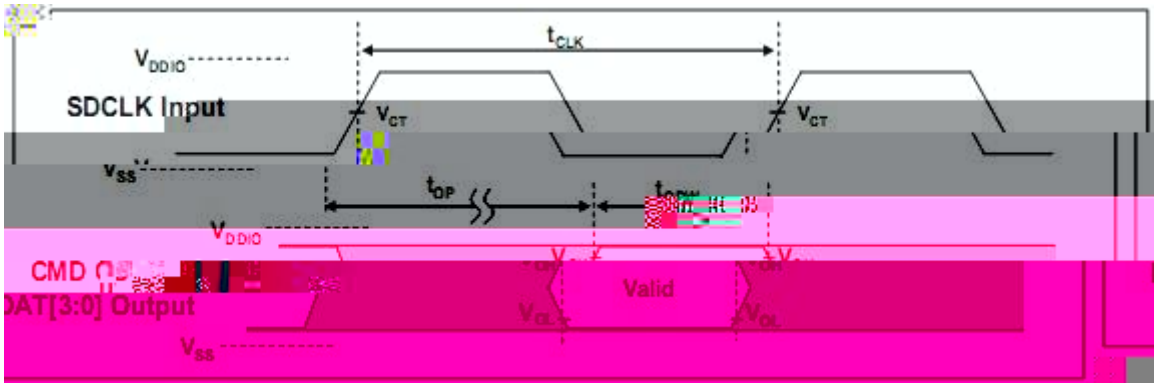

‹ All values are referred to min ‹ $V_{IH}$ Œand max ‹ VŒE

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Input hold time | $t_{TH}$ | 5 | | ns | $C_{CARD}$ | ” | S ) F D U G |

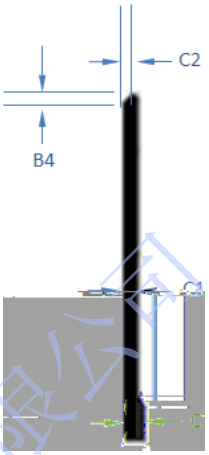
| | | | | | |
|---|---|---|---|---|---|
| ‹ All values are referred to min ‹ $V_{IH}$ Œ and max ‹ $V_{IL}$ Œ | | | | | |
| Clock frequency data transfer | fpp | 0 | 50 | MHz | |

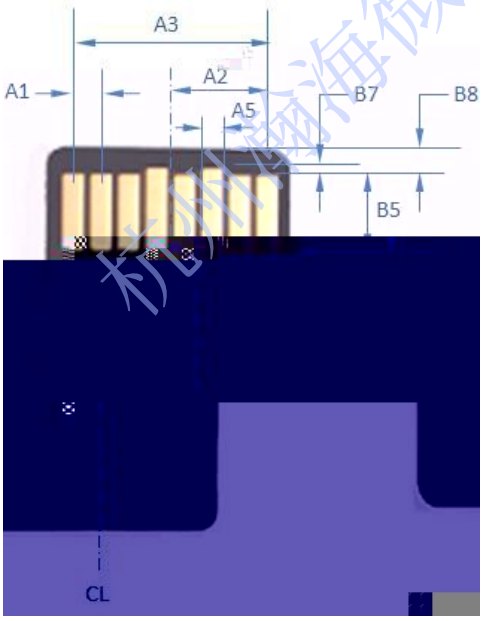



| Symbol | Min | Max | Unit | Remark |
|---|---|---|---|---|



The mechanical dimensions of Agrade Industrial microSD Card were basically followed the mechanical form factor definitions on microSD card specifications which constructed by SD card association.




杭州德海微科技有限公司

| | | |
|---|---|---|
| | Normal temperature | Wide temperature |
| | | |
| | | |
| | | |
| | | |

| | | | |
|---|---|---|---|
| | Normal Temperature | Extended Temperature | Wide temperature |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

杭州瀚海微科技有限公司