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

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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

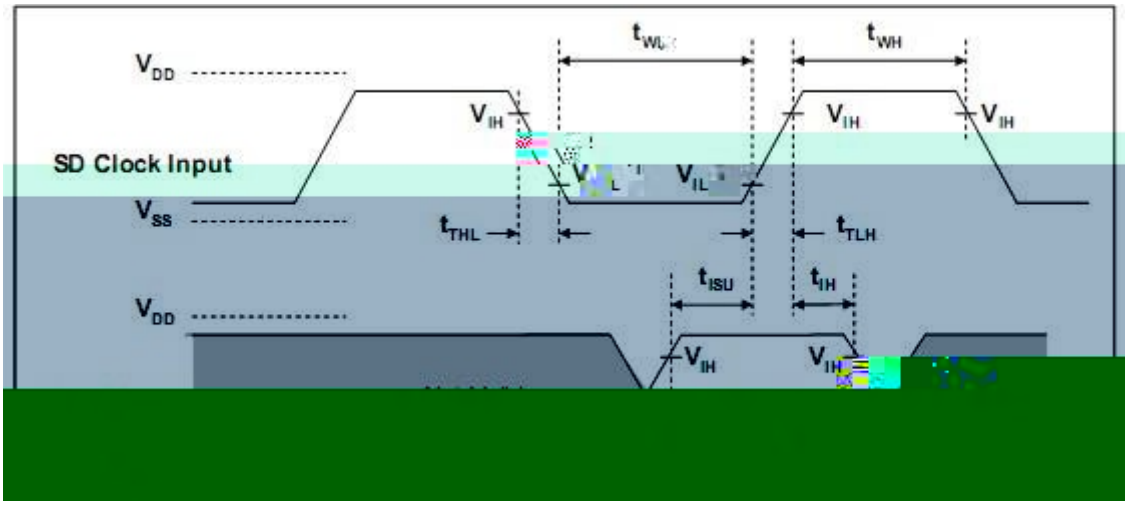
$T_{storage}$	Storage Temperature	-25	95	°C	-
Ta	Ambient Operating Temperature	0	85	°C	-
V_I	3.3V External Input Voltage	-0.3	3.6		

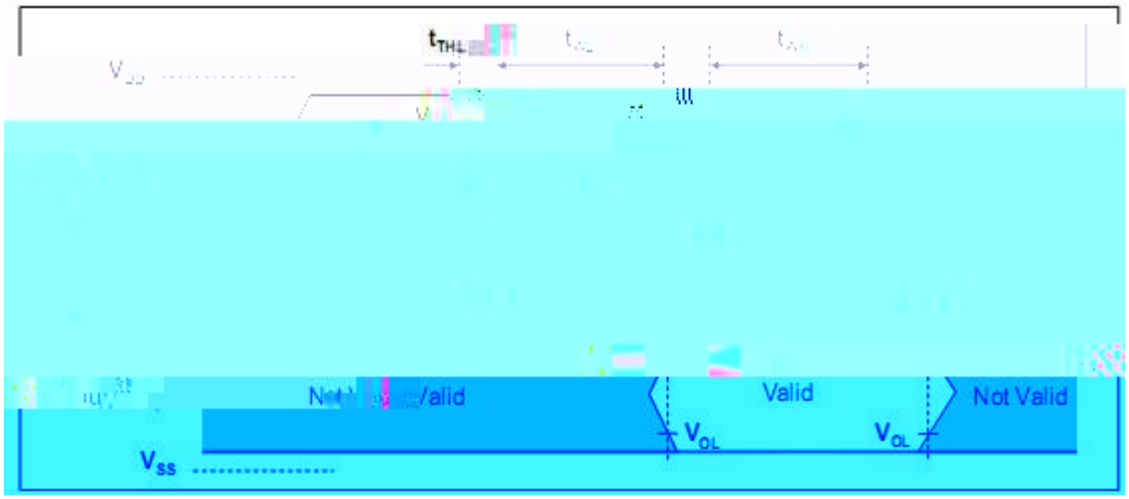
I_{Read}	Read Current at 3.3V	-	169	-	mA
I_{Write}	Write Current at 3.3V	-	89	-	mA
I_{STBY}	Standby Current at 3.3V	-	198	-	uA

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	

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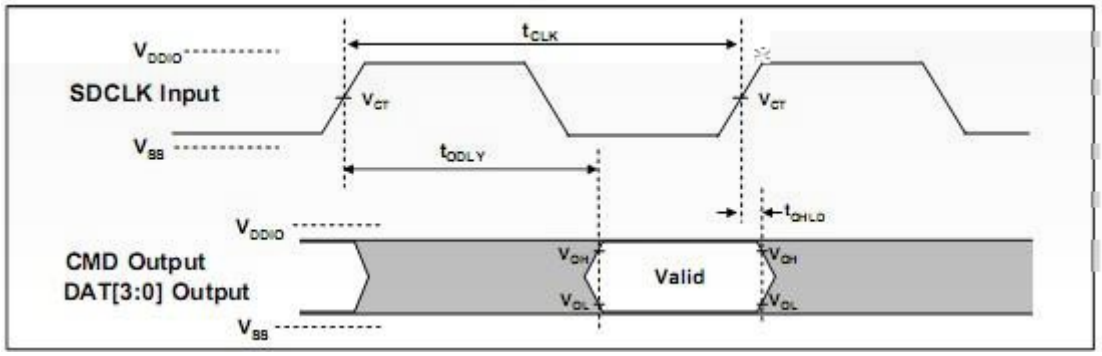




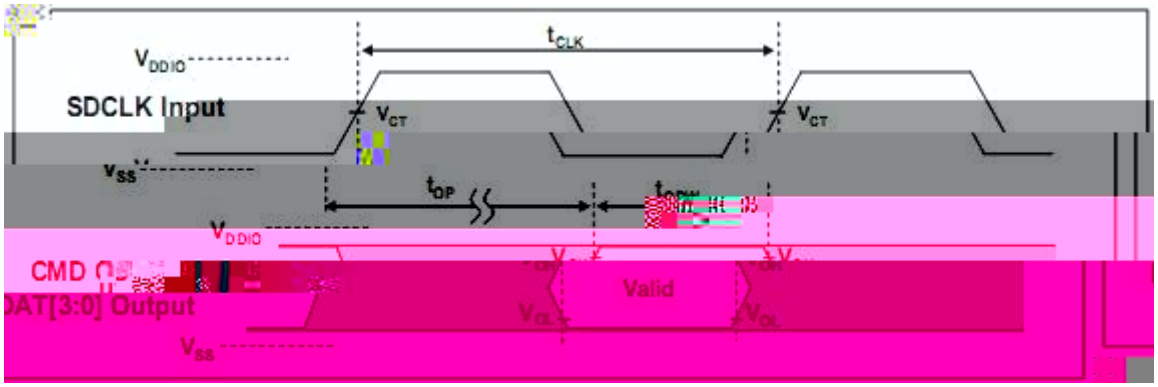
‹ All values are referred to min ‹ V_{IH} Œand max ‹ VŒE

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

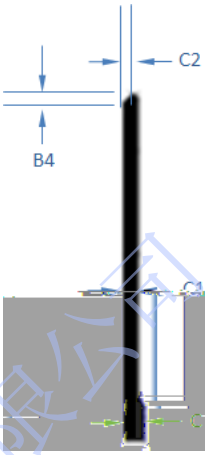
‹ All values are referred to min ‹ V_{IH} Œ and max ‹ V_{IL} Œ					
Clock frequency data transfer	fpp	0	50	MHz	

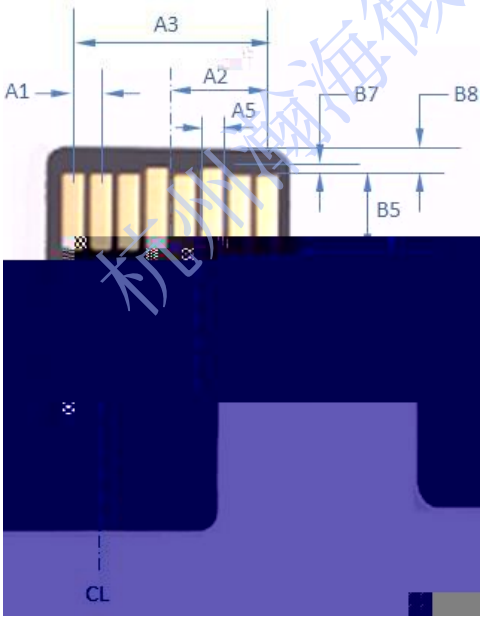


Symbol	Min	Max	Unit	Remark



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.





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	Normal temperature	Wide temperature

	Normal Temperature	Extended Temperature	Wide temperature

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