

HHW Corp. Flash Media Products



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Revision History

Rev. No.	History	Issue Date	Remarks
1.1	Initial Release	Dec 22, 2024	Preliminary

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Datasheet

Secure Digital Card

PRODUCT DESCRIPTION

SD Memory card (Secure Digital Memory Card) is a memory card that is specifically designed to meet the security, capacity, performance and environment requirements. The SD Memory Card will include a copyright protection mechanism that complies with the security of the SDMI standard and will be faster and capable for higher memory capacity. The SD Memory Card communication is based on an advanced 9-pin interface (Clock, Command, 4x Data and 3x Power lines) designed to operate in at maximum operating frequency of 50 MHz and low voltage range.

HHW's SD memory card is designed with industry leading edge micro controllers and 3D TLC flash to achieve high level performance, reliability and endurance. SD memory card is optimized for OEM applications where device life is the top priority.

FEATURES

- Compliance:
 - SD specification version 6.0
- Operating voltage range
 - 2.7-3.6 V
- Power Consumption Note
 - UHS-I Mode
 - Power Up Current <250uA
 - Standby Current <1000uA
 - Read Current <400mA
 - Write Current <400mA
- Performance:
 - Read Speed(max.): 90MB/s
 - Write Speed(max.): 80MB/s
- Available Storage Capacities:
 - 512GB~1TB
- Operating Temperature : -25 °C to 85 °C ;
- Storage Temperature : -40 °C to 85 °C ;
- Flash Type : 3D TLC NAND Flash

TBW: 512GB:1200TB
1TB: 2400TB

1.1 AC Characteristics

Figure 3-4a: Timing diagram (default mode)

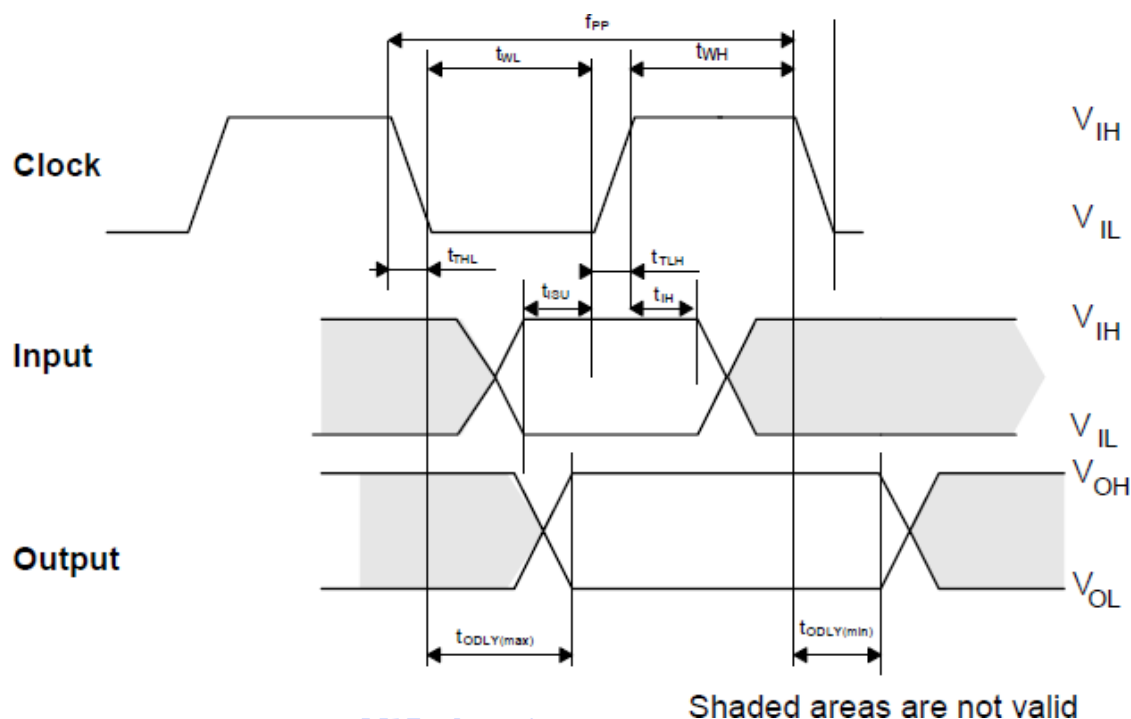
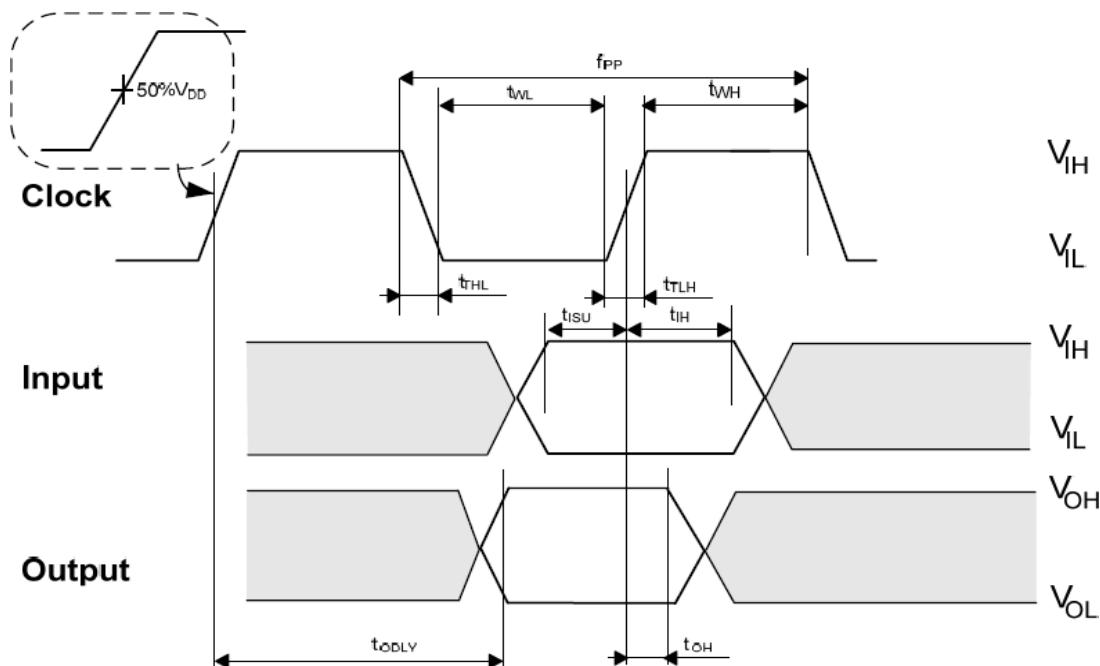


Table 3-4a: AC Characteristics (Default mode)

Parameter	Symbol	Min	Max	Unit	Remark
Clock CLK (All values are referred to min (V _{IH}) and max (V _{IL}))					
Clock frequency data transfer mode	f _{PP}	0	25	MHz	C _{card} ≤ 10pf (1 card)
Clock frequency identification mode	f _{OD}	0 _i /100	400	kHz	C _{card} ≤ 10pf (1 card)
Clock low time	t _{WL}	10		ns	C _{card} ≤ 10pf (1 card)
Clock high time	t _{WH}	10		ns	C _{card} ≤ 10pf (1 card)
Clock rise time	t _{TLH}		10	ns	C _{card} ≤ 10pf (1 card)
Clock fall time	t _{THL}		10	ns	C _{card} ≤ 10pf (1 card)
Inputs CMD,DAT (referenced to CLK)					
Input set-up time	t _{ISU}	5		ns	C _{card} ≤ 10pf (1 card)
Input hold time	t _{IH}	5		ns	C _{card} ≤ 10pf (1 card)
Outputs CMD,DAT (referenced to CLK)					
Output delay time during data transfer mode	t _{ODLY}	0	14	ns	C _L ≤ 40pf (1 card)
Output delay time during identification mode	t _{ODLY}	0	50	ns	C _L ≤ 40pf (1 card)

Note: 1) 0Hz means to stop the clock. The given minimum frequency range is for cases where continuous clock is required

Figure 3-4b: Timing diagram (high-speed mode)



Shaded areas are not valid

Table 3-4b: AC Characteristics (high-speed mode)

Parameter	Symbol	Min	Max	Unit	Remark
Clock CLK (All values are referred to min (V_{IH}) and max (V_{IL}))					
Clock frequency data transfer mode	f_{PP}	0	50	MHz	$C_{card} \leq 10\text{pf}$ (1 card)
Clock low time	t_{WL}	7		ns	$C_{card} \leq 10\text{pf}$ (1 card)
Clock high time	t_{WH}	7		ns	$C_{card} \leq 10\text{pf}$ (1 card)
Clock rise time	t_{TLH}		3	ns	$C_{card} \leq 10\text{pf}$ (1 card)
Clock fall time	t_{THL}		3	ns	$C_{card} \leq 10\text{pf}$ (1 card)
Inputs CMD,DAT (referenced to CLK)					
Input set-up time	t_{ISU}	6		ns	$C_{card} \leq 10\text{pf}$ (1 card)
Input hold time	t_{IH}	2		ns	$C_{card} \leq 10\text{pf}$ (1 card)
Outputs CMD,DAT (referenced to CLK)					
Output delay time during data transfer mode	t_{ODLY}		14	ns	$C_L \leq 40\text{pf}$ (1 card)
Output hold time	t_{OH}	2.5	50	ns	$C_L \geq 15\text{pf}$ (1 card)
Total system capacitance for each line ¹	C_L		40	pf	1 card

Note: 1) In order to satisfy severe timing, host shall drive only one card

2 PHYSICAL DIMENSIONS

Table 4-1: Physical Dimensions

Length	32.0mm (+/- 0.1mm)
Width	24.0mm (+/- 0.1mm)
Thickness	2.1mm (+/- 0.15mm)

2.1 Package Dimensions

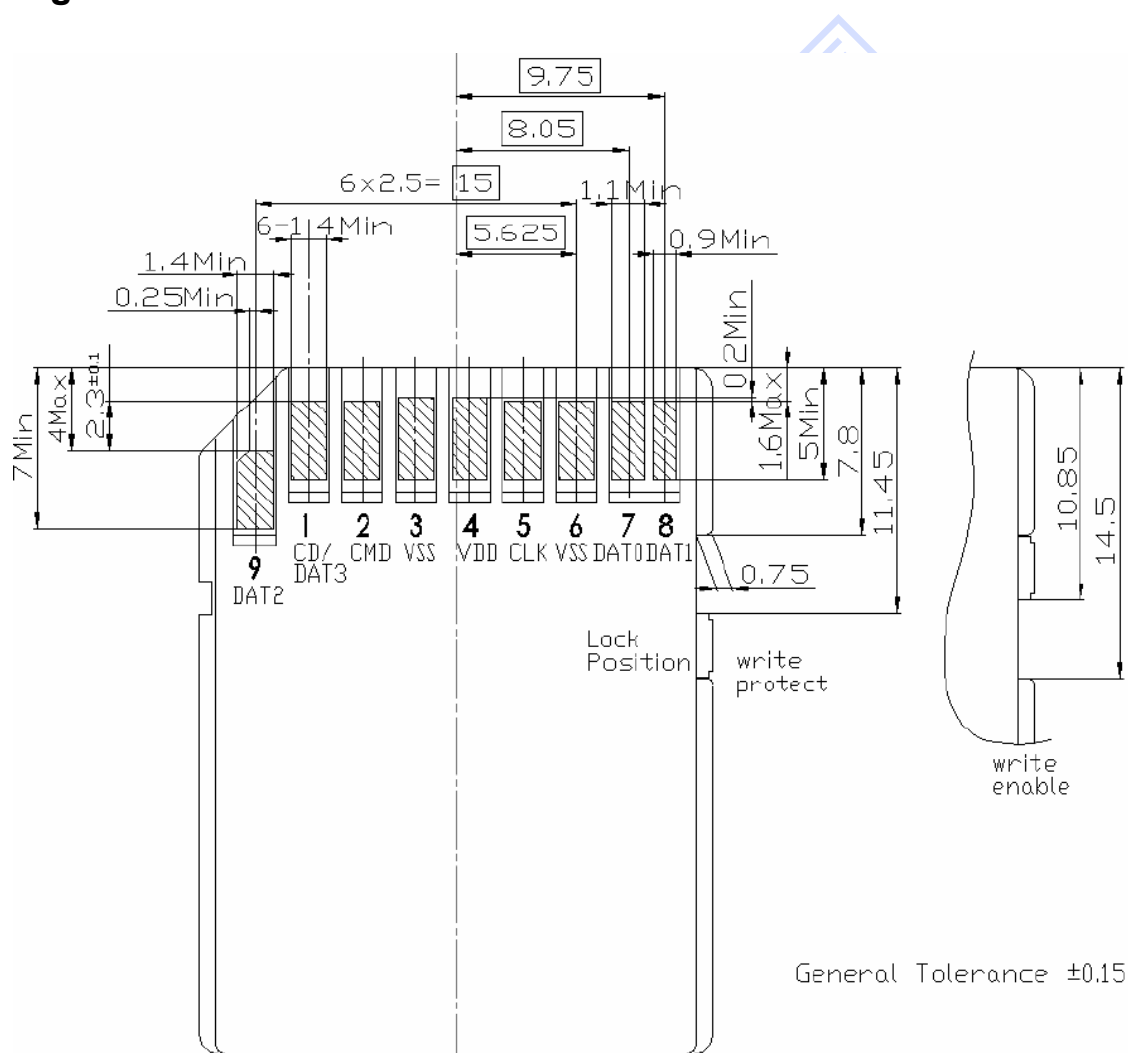


Figure 4-1a: SD card dimension



Figure 4-1b: SD card dimension

3 Part Number and Ordering Information

1. Part Number List

	SD Card(3D TLC)	
Capacity	Normal-Temperature	Wide-temperature
512GB		HHW512GSDT-E1
1TB		HHW1TBSDT-E1