# HHW Corp. Flash Media Products


Issue Date: December 22, 2024
Revision: 1.1

**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 version3.0
- Operating voltage range
  - 2.7-3.6 V

- Power Consumption Note
  - Standby Current <250uA
  - Read Current <400mA
  - Write Current <400mA
- Performance（Min）:
  - Read Speed(Min): 45MB/s
  - Write Speed(Min): 30MB/s

- Available Storage Capacities:
  - 128-256GB

- Operating Temperature : -25°C to 85 °C ;

- Storage Temperature : -25°C to 85 °C ;

- Flash Type :TLC NAND Flash

## 1.1 AC Characteristics

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

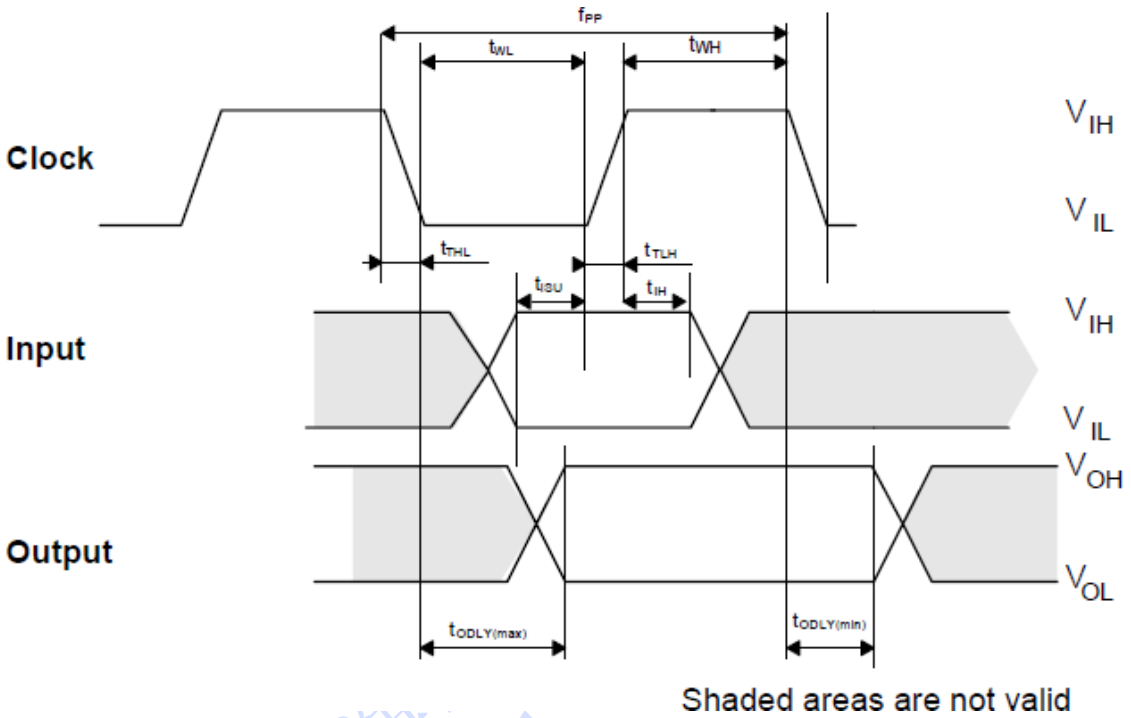


**Table 3-4a: AC Characteristics (Default mode)**

| Parameter | Symbol | Min | Max | Unit | Remark |
|---|---|---|---|---|---|
| Clock CLK (All values are referred to min (VIH) and max (VIL) | | | | | |
| Clock frequency data transfer mode | fPP | 0 | 25 | MHz | Ccard <= 10pf (1 card) |
| Clock frequency identification mode | fOD | 0[1]/100 | 400 | kHz | Ccard <= 10pf (1 card) |
| Clock low time | tWL | 10 | | ns | Ccard <= 10pf (1 card) |
| Clock high time | tWH | 10 | | ns | Ccard <= 10pf (1 card) |
| Clock rise time | tTLH | | 10 | ns | Ccard <= 10pf (1 card) |
| Clock fall time | tTHL | | 10 | ns | Ccard <= 10pf (1 card) |
| Inputs CMD,DAT (referenced to CLK) | | | | | |
| Input set-up time | tISU | 5 | | ns | Ccard <= 10pf (1 card) |
| Input hold time | tIH | 5 | | ns | Ccard <= 10pf (1 card) |
| Outputs CMD,DAT (referenced to CLK) | | | | | |
| Output delay time during data transfer mode | tODLY | 0 | 14 | ns | $C_L$ <= 40pf (1 card) |
| Output delay time during identification mode | tODLY | 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)**

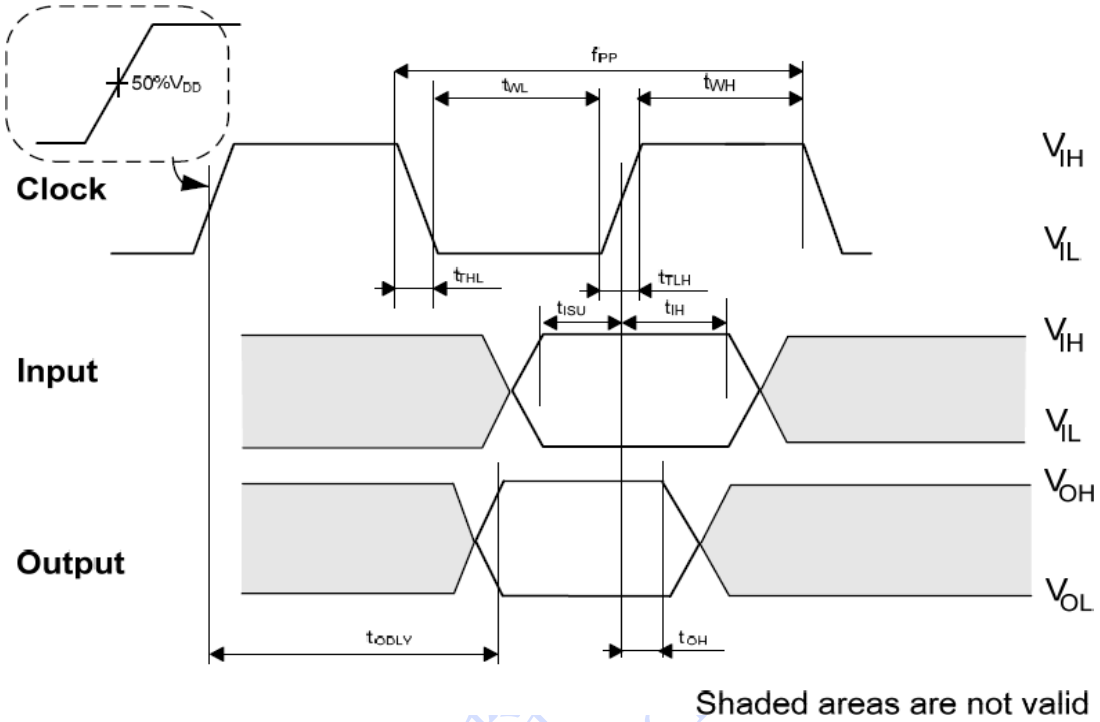


**Table 3-4b: AC Characteristics (high-speed mode)**

| Parameter | Symbol | Min | Max | Unit | Remark |
|---|---|---|---|---|---|
| Clock CLK (All values are referred to min (VIH) and max (VIL) | | | | | |
| Clock frequency data transfer mode | fPP | 0 | 50 | MHz | Ccard <= 10pf (1 card) |
| Clock low time | tWL | 7 | | ns | Ccard <= 10pf (1 card) |
| Clock high time | tWH | 7 | | ns | Ccard <= 10pf (1 card) |
| Clock rise time | tTLH | | 3 | ns | Ccard <= 10pf (1 card) |
| Clock fall time | tTHL | | 3 | ns | Ccard <= 10pf (1 card) |
| Inputs CMD,DAT (referenced to CLK) | | | | | |
| Input set-up time | tISU | 6 | | ns | Ccard <= 10pf (1 card) |
| Input hold time | tIH | 2 | | ns | Ccard <= 10pf (1 card) |
| Outputs CMD,DAT (referenced to CLK) | | | | | |
| Output delay time during data transfer mode | tODLY | | 14 | ns | $C_L$ <= 40pf (1 card) |
| Output hold time | tOH | 2.5 | 50 | ns | $C_L$ >= 15pf (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

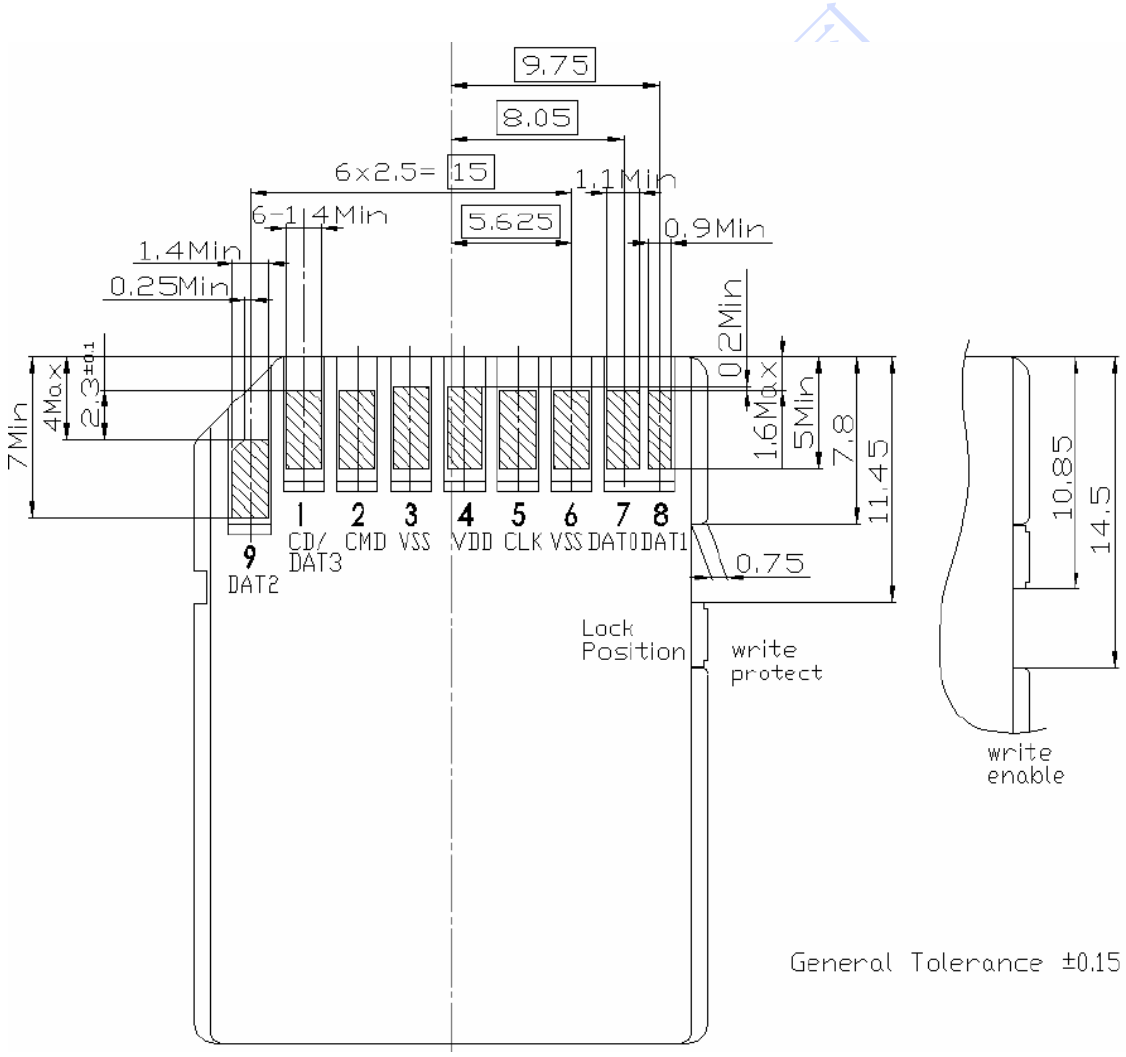


Figure 4-1a: SD card dimension

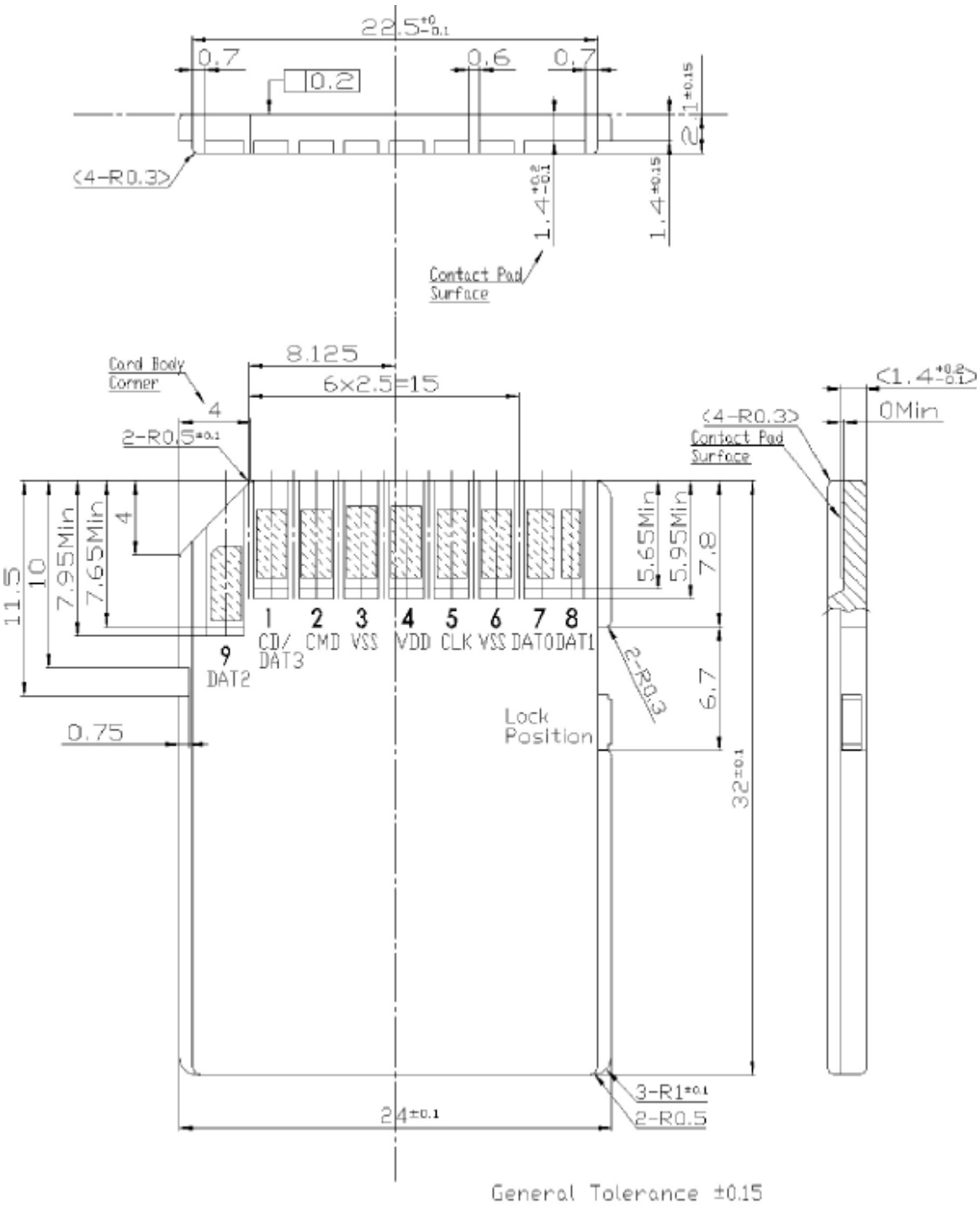


Figure 4-1b: SD card dimension

# 3 Part Number and Ordering Information

***1. Part Number List***

| | SD Card( TLC) | |
|---|---|---|
| **Capacity** | Normal-Temperature | Wide-temperature |
| **128GB** | **HHW128GSDT-E1** | |
| **256GB** | **HHW256GSDT-E1** | |
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