



USB FLASH Drive DATA SHEET

UNITY DIGITAL

USB FLASH DRIVE DATA SHEET

1GB, 2GB, 4GB, 8GB, 16GB

Version 1.1



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A. General Description

The Unity Digital USB Flash drive is a removable flash disk drive with USB connection and can support various storage capacities.

The Unity Digital USB Flash drive is compatible with both USB 1.1 and USB 2.0 specification. The Unity Digital USB Flash drive is a plug and play device, simply plug into any USB port and it will automatically be detected by the computer as a removable drive. Now you can read, write, copy, delete and move data from your hard disk drive to the Unity Digital USB Flash drive.

The Unity Digital USB Flash drive is so compact that you can take it with you anywhere in your pocket. Now, you don't have to carry a laptop computer with you to work if you have access to a computer. Moreover, the Unity Digital USB Flash drive does not require any battery, cables or software drivers. It is compatible with any desktop or notebook computer with a USB port. Experience the light weight, compact design, high performance and fast data transfer with the Unity Digital USB Flash drive.

B. Features

1. Compatible with USB specification revision 1.1 and 2.0.
2. Capacity available : please check local vendor.
3. Support Windows ME, Windows 2000 and Windows XP **without** device driver.
4. Support Windows Vista **without** device driver.
5. Support MAC OS 9.X and later **without** device driver. (USB 1.1 speed)
6. Support MAC OS 10.2.8 and later **without** device driver. (USB 2.0 speed)
7. Support Linux Kernel ver 2.4.0 or above **without** device driver. (USB 1.1 speed)
8. Support Linux Kernel ver 2.4.10 or above **without** device driver. (USB 2.0 speed)
9. Support Windows 98 / 98 SE with device driver
10. Hot Plug & Play.
11. Durable solid-state storage – data retention for at least 10 years.
12. No external power is required - DC 4.5V ~ 5.5V from USB port.
13. Transfer rate for USB interface :
 - ◆ High speed up to 480Mbps/sec for USB 2.0
 - ◆ Full speed up to 12Mbps/sec for USB 1.1
14. Shock resistance : 1000G (maximum)
15. Power consumption < 110 mA when in use.
16. Suspend current < 500uA.
17. Altitude : 80,000 feet (relative to sea level)
18. Acoustic noise : 0 dB (at one meter)
19. Vibration : 15 G peak to peak max
20. Operating temperature : 0°C to 70°C
21. Humidity : 20% to 90%

C. System Power Consumption

Item	Power Consumption (mA)	
	1 * Flash	2 * Flash
Normal	61.07	62.28
Suspend	0.356	0.402
Sleep	0.361	0.387
Read	106.90	121.98
Write	155.80	181.99

The above values are for reference only, it may change according to the flash memory used.

D. Electrical Specifications

Absolute Maximum Rating

Item	Symbol	Parameter	MIN	MAX	Unit
1	$V_{DD}-V_{SS}$	DC Power Supply	-0.3	+5.5	V
2	V_{IN}	Input Voltage	$V_{SS}-0.3$	$V_{DD}+0.3$	V
3	T_a	Operating Temperature	0	+70	°C
4	T_{st}	Storage Temperature	-25	+85	°C

Parameter	Symbol	Min	Typ	MAX	Unit
Operating Temperature	T_a	0	+25	+70	°C
V_{DD} Voltage	V_{DD}	3.0	3.3	3.6	V
		4.5	5.0	5.5	V

E. DC Characters

DC characteristics of 3.3V I/O Cells

Symbol	Parameter	Conditions	MIN	TYP	MAX	Unit
V _{CK}	Core Power Supply	Core Area	1.62	1.8	1.98	V
V _{CC3IO}	Power Supply	3.3V I/O	3.0	3.3	3.6	V
Temp	Junction Temperature		0	25	115	°C
V _t	Switching threshold	LVTTTL		1.5		V
V _{t-}	Schmitt Trigger Negative Going threshold voltage	LVTTTL	0.8	1.1		V
V _{t+}	Schmitt Trigger Positive Going threshold voltage			1.6	2.0	V
V _{ol}	Output Low voltage	I _{ol} = 2 ~ 16 mA			0.4	V
V _{oh}	Output High voltage	I _{oh} = 2 ~ 16 mA	2.4			V
R _{pu}	Input Pull-Up Resistance	PU=high, PD=low	40	75	190	KΩ
R _{pd}	Input Pull-Down Resistance	PU=high, PD=low	40	75	190	KΩ
I _{in}	Input Leakage Current	V _{in} = V _{CC3I} or 0			1	μA
I _{oz}	Tri-state Output Leakage Current		-10	±1	10	μA

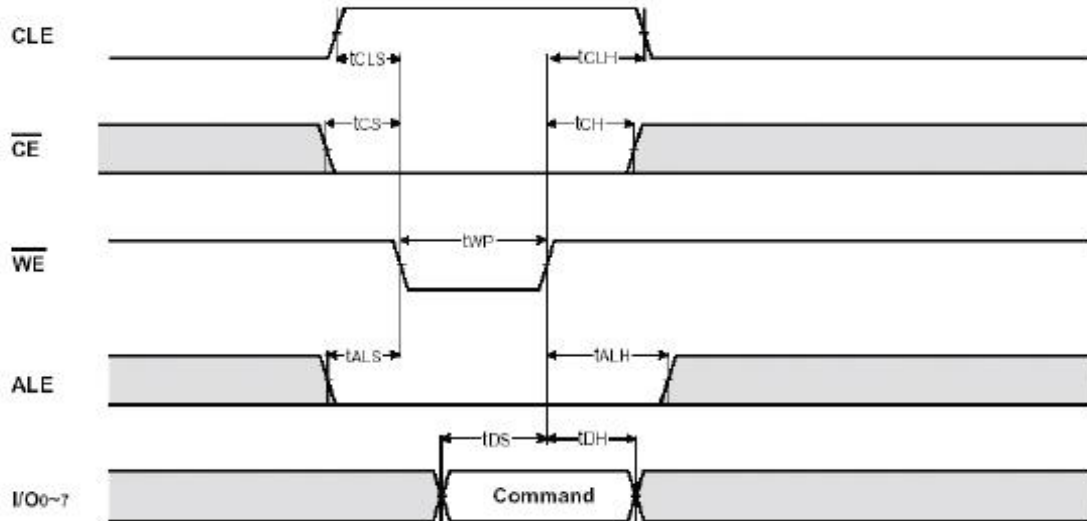
F. AC Characters

F1. Flash Memory Interface Timing

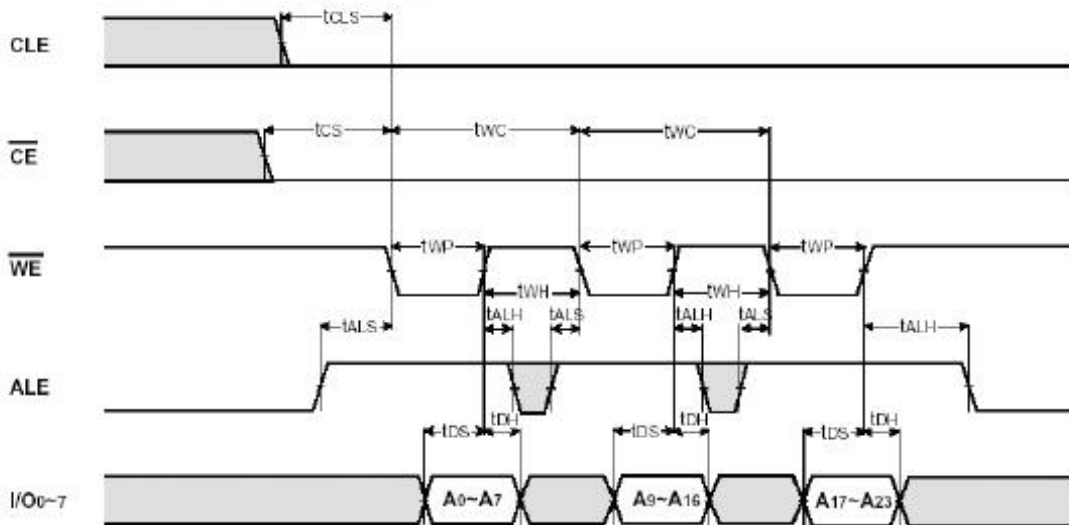
F1.1 NAND Flash Memory Interface Timing

Parameter	Symbol	Min	Max	Unit
CLE Set-up Time	t_{CLS}	12	-	ns
CLE Hold Time	t_{CLH}	12	-	ns
CE Setup Time	t_{CS}	20	-	ns
CE Hold Time	t_{CH}	12	-	ns
WE Pulse Width	t_{WP}	12	-	ns
ALE Setup Time	t_{ALS}	12	-	ns
ALE Hold Time	t_{ALH}	12	-	ns
Data Setup Time	t_{DS}	12	-	ns
Data Hold Time	t_{DH}	10	-	ns
Write Cycle Time	t_{WC}	25	-	ns
WE High Hold Time	t_{WH}	10	-	ns
Read Cycle Time	t_{RC}	25	-	ns
/RE Pulse Width	t_{RP}	12	-	ns
/RE High Hold Time	t_{REH}	10	-	ns
Ready to /RE Low	t_{RR}	50	-	ns

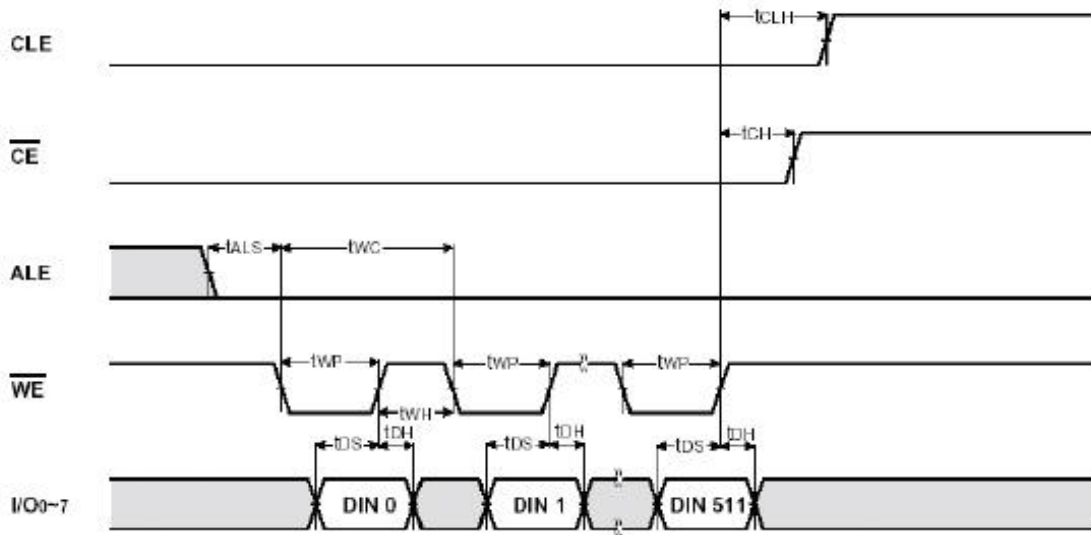
F.1.1.1 Command Latch Cycle



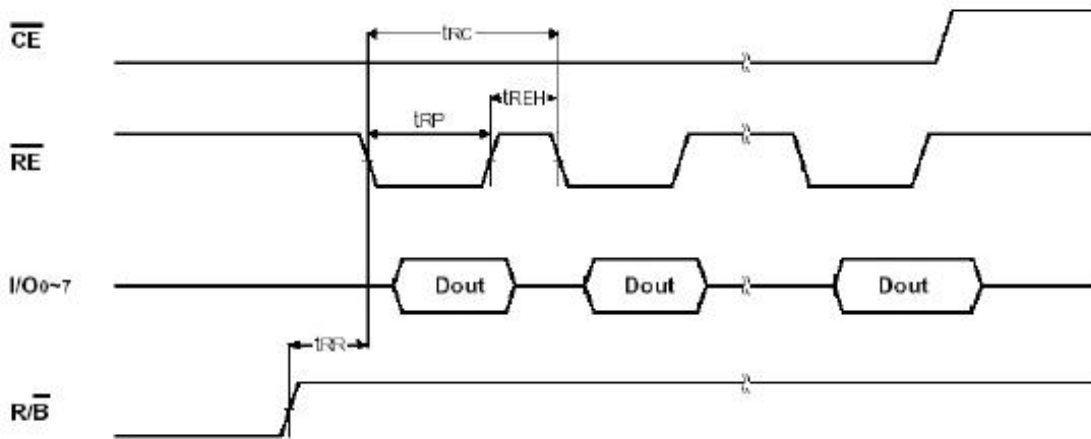
F.1.1.2 Address Latch Cycle



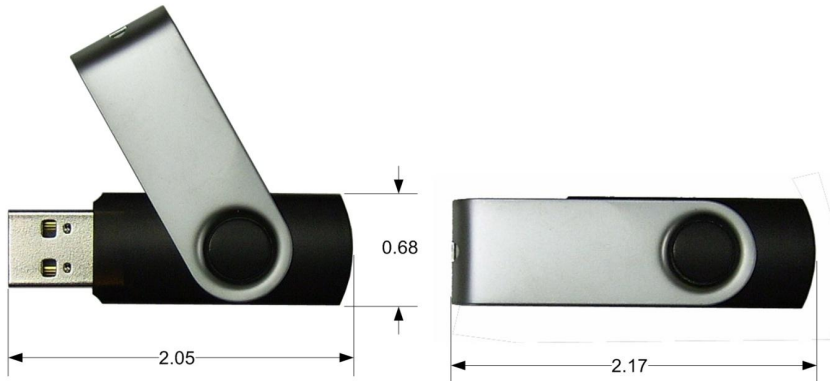
F.1.1.3 Input Data Latch Cycle



F.1.1.4 Sequential Out Cycle after Read (CLE=L, /WE=H, ALE=L)



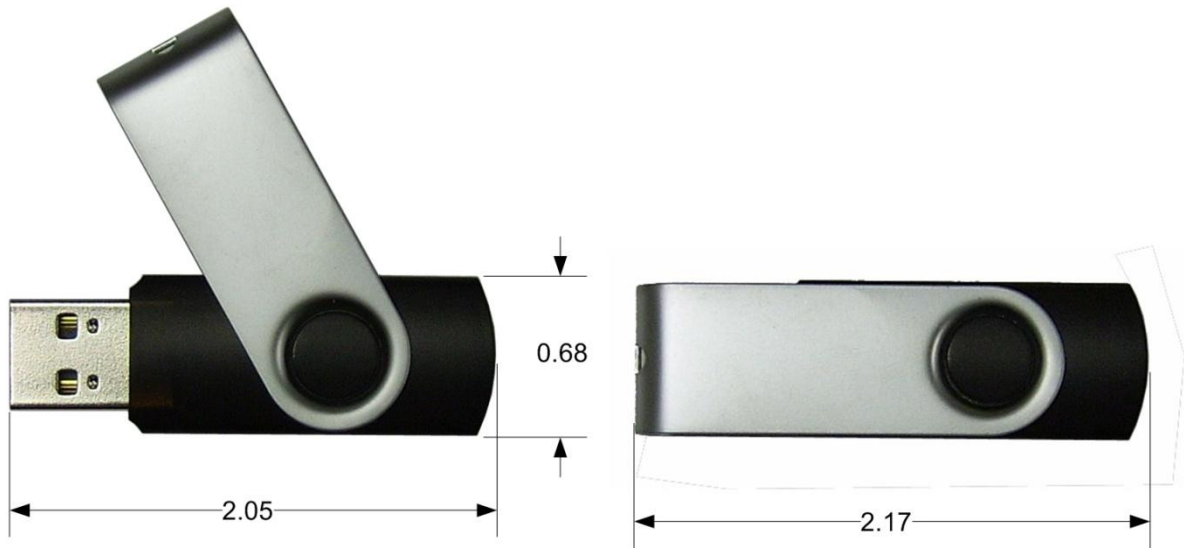
G. Dimensions:



H. ORDERING INFORMATION:

PART NUMBER	DESCRIPTION
USUSB01GBPHC	1GB SLC "C" temp USB
USUSB02GBPHC	2GB SLC "C" temp USB
USUSB04GBPHC	4GB SLC "C" temp USB
USUSB08GBPHC	8GB SLC "C" temp USB
USUSB016GBPHC	16GB SLC "C" temp USB
USUSB01GBPHI	1GB SLC "I" temp USB
USUSB02GBPHI	2GB SLC "I" temp USB
USUSB04GBPHI	4GB SLC "I" temp USB
USUSB08GBPHI	8GB SLC "I" temp USB
USUSB016GBPHI	16GB SLC "I" temp USB

G. Dimensions



ORDERING INFORMATION:

PART NUMBER	DESCRIPTION
USUSB01GBPHC	1GB SLC "C" temp USB
USUSB02GBPHC	2GB SLC "C" temp USB
USUSB04GBPHC	4GB SLC "C" temp USB
USUSB08GBPHC	8GB SLC "C" temp USB
USUSB016GBPHC	16GB SLC "C" temp USB
USUSB01GBPHI	1GB SLC "I" temp USB
USUSB02GBPHI	2GB SLC "I" temp USB
USUSB04GBPHI	4GB SLC "I" temp USB
USUSB08GBPHI	8GB SLC "I" temp USB
USUSB016GBPHI	16GB SLC "I" temp USB