



Princeton Industrial CompactFlash Card

CF Version Code: C2

Specifications

Document Revision History

Rev 1.0, Feb 2010 – Initial release.

Rev 1.1, Mar 2010 – Removed auto-detect transfer and disk mode options from part numbering.

Product Overview

The Princeton Technology Industrial CompactFlash (CF) card is a non-volatile data storage medium, compliant with the CompactFlash® 3.0 specification. It consists of an advanced flash memory controller and NAND-type flash memory available in standard and wide temperature grades. Princeton Industrial CF cards are ideal for use in specialized applications under normal or harsh environmental conditions.

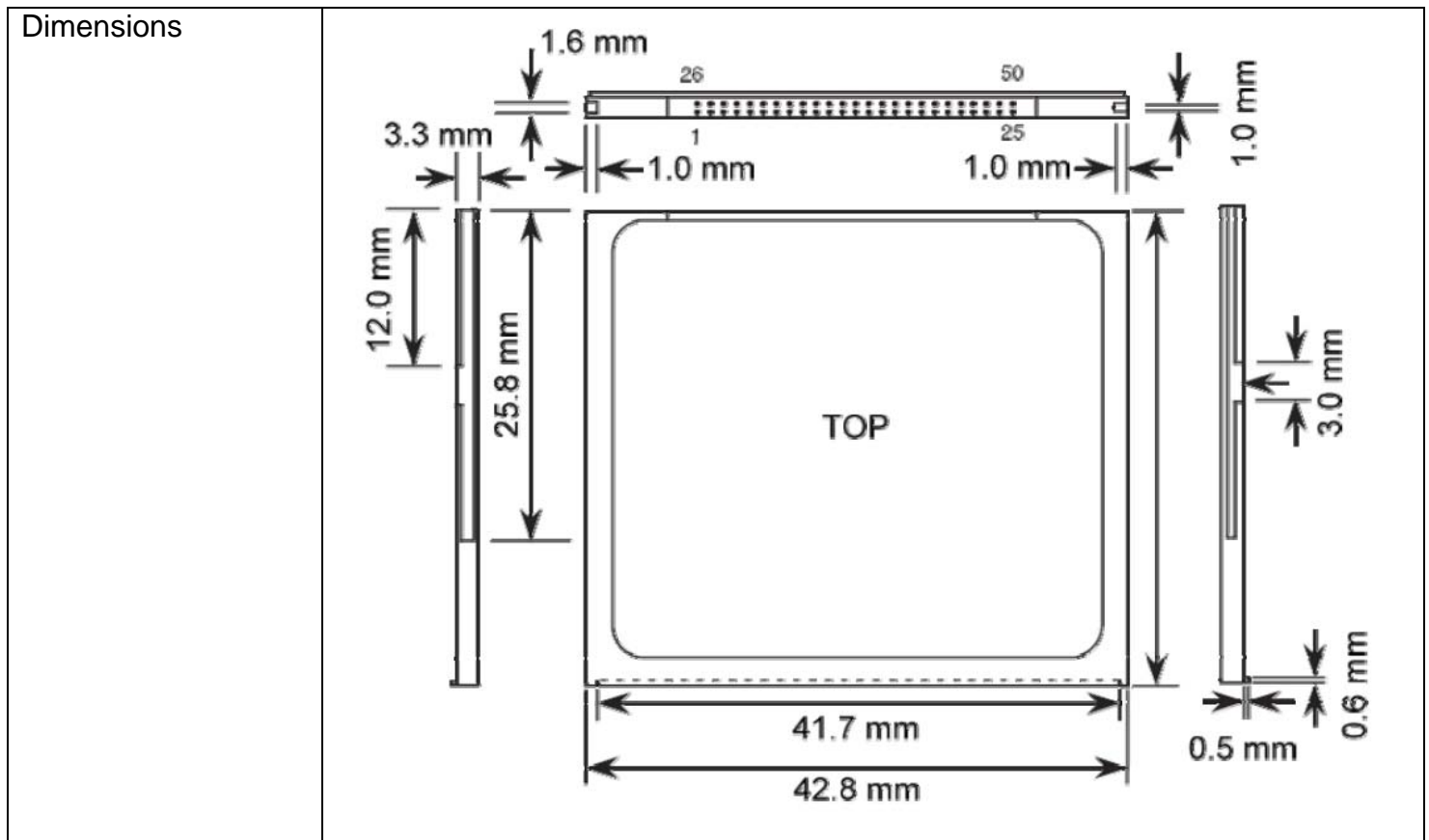
Features

- CompactFlash® Card Specification 3.0 compliant
- Operating modes supported:
 - PC card memory mode
 - PC card I/O mode
 - True-IDE mode
- Supports Ultra DMA up to mode 4
- Hardware RS-code ECC capable of correcting 4 check symbols in a 512-byte sector
- Reliable wear-leveling algorithm for maximum flash endurance
- Automatic error correction and retry capabilities
- Supports power down commands and auto standby / sleep mode
- Supports +5V \pm 10% or +3.3V \pm 5% operation
- Low power consumption
- Lightweight
- Noiseless
- High performance
- Minimum 10,000 insertions
- MTBF > 1,000,000 hours
- O/S support: Windows, WinCE, QNX, Linux, DOS, and more

Specifications

General		
Compatibility	CompactFlash® Card Specification 3.0 compliant	
Flash Technology	NAND type flash memory (Single Level Cell or Multi Level Cell)	
Connector Type	CF Type I, 50-pin	
Performance		
Data Transfer Rate To/From Flash	25 MB/sec burst	
Data Transfer Rate To/From Host	UDMA-4	66 MB/sec burst
	PIO-4	16 MB/sec burst
SLC Flash	Seq. Read	43 MB/sec max.
	Seq. Write	35 MB/sec max.
MLC Flash	Seq. Read	35 MB/sec max.
	Seq. Write	15.5 MB/sec max.

Environmental		
Standard Temp.	Operation	0°C ~ +70°C
	Non-operation	-20°C ~ +80°C
Wide Temp.	Operation	-40°C ~ +85°C
	Non-operation	-50°C ~ +95°C
Vibration	Operation max.	20 G
	Non-operation max.	20 G
Humidity	5% ~ 95% non-condensing	
Shock	2,000 G max.	
Altitude	50,000 ft max.	
Reliability		
MTBF	> 1,000,000 hours	
Error Correction	Hardware RS-code ECC capable of correcting 4 check symbols in a 512-byte sector	
Endurance	SLC Flash	> 1,000,000 cycles logically determined by wear-leveling and advanced bad sector management algorithms
	MLC Flash	> 100,000 cycles logically determined by wear-leveling and advanced bad sector management algorithms
Data Reliability	< 1 non-recoverable error in 10^{14} bits read < 1 erroneous correction in 10^{20} bits read	
Data Retention	10 years	
Power		
Voltage	DC Input +5V \pm 10%, 100mV max. ripple (p-p)	
Read	95 mA	
Write	117 mA	
Standby	12.5 mA	
Physical		
Length	36.40 mm \pm 0.15 mm (1.433 \pm 0.006 in)	
Width	42.80 mm \pm 0.10 mm (1.685 \pm 0.004 in)	
Thickness	3.3 mm \pm 0.10 mm (0.130 \pm 0.004 in)	
Weight	11.4 g (0.40 oz) typical, 14.2 g (0.50 oz) max.	



Capacity

Unformatted Capacity	Default Cylinders	Default Heads	Default Sectors	User Data Size
SLC Flash				
128 MB	246	16	63	126,328,832
256 MB	493	16	63	253,739,008
512 MB	987	16	63	508,690,432
1 GB	1,974	16	63	1,017,954,304
2 GB	3,949	16	63	2,037,219,328
4 GB	7,899	16	63	4,075,061,248
8 GB	15,798	16	63	8,150,712,320
16 GB	33,704	15	63	16,302,768,128
MLC Flash				
512 MB	971	16	63	500,432,896
1 GB	1,942	16	63	1,001,439,232
2 GB	3,884	16	63	2,003,697,664
4 GB	7,769	16	63	4,007,985,152
8 GB	15,538	16	63	8,016,560,128
16 GB	33,149	15	63	16,034,299,904
32 GB	66,298	15	63	32,069,222,400

Part Numbering

$$M^1CF^2XXXXX^3X^4X^5X^6X^7 - C2^8$$

1: Memory

2: CompactFlash

3: Capacity

128MB: 128 Megabytes
 256MB: 256 Megabytes
 512MB: 512 Megabytes
 001GB: 1 Gigabytes
 002GB: 2 Gigabytes
 004GB: 4 Gigabytes
 008GB: 9 Gigabytes
 016GB: 16 Gigabytes
 032GB: 32 Gigabytes

4: Flash Type

C: MLC
 I: SLC

5: Operating Temperature

S: Standard (0°C ~ +70°C)
 W: Wide (-40°C ~ +85°C)

6: Transfer Mode

P: PIO
 U: UDMA

7: Disk Mode

F: Fixed
 R: Removable

8: Product Version Code

C2: These specifications

Example Part Numbers

8GB, SLC, Wide Temp, UDMA, Fixed	MCF008GBIWUF-C2
32GB, MLC, Standard Temp, UDMA, Fixed	MCF032GBCSUF-C2