Data Sheet

MACH2 and MACH4

Compact Flash Cards

Embedded Flash Memory with Industry-Leading Ruggedness and Performance

MACH2 and MACH4 Compact Flash (CF) cards from HGST are designed for embedded applications that demand ultimate reliability with high tolerance to shock, vibration, humidity, altitude and temperature.

HGST MACH2 cards are a 2-channel design that supports Ultra Direct Memory Access (UDMA) and True IDE modes for hard disk equivalent performance, with sharply reduced power consumption. MACH2 cards provide a wide range of capacities from 128MB to 16GB, with multiple configurations to meet application throughput requirements, including smaller sector, random or larger sector, and sequential transfers.

HGST MACH4 cards feature an ultra high-performance, 4-channel design that supports UDMA and True IDE modes, making it an ideal entry-level parallel ATA (PATA) solid-state drive (SSD). The MACH4 card is the perfect solution for high-throughput applications and transitioning from low-capacity PATA hard drives to SSD technology.

Industrial-Grade Embedded Storage with Ruggedness and Reliability

Small-footprint HGST CF cards are ideal for space-constrained embedded applications, including industrial devices, professional media, telecom and networking equipment, military, aerospace and automotive systems. HGST CF cards incorporate industrial-strength flash management technology for high-data integrity in rugged, high-endurance designs that tolerate industrial temperature ranges (-40°C to +85°C).

Features and Benefits

Feature / Function	Benefits
High performance	Multi-channel architecture and fast SLC NAND flash provide maximum performance
Simple integration	True plug-and-play storage device for short design cycles. Compact Flash Association (CFA) Compliant Type 1 Compact Flash card with ATA interface and true IDE support
Flash management	Includes read disturb and write-amplification mitigation algorithms to improve data integrity, performance and overall endurance
Power consumption	MACH2: 100mA (max) fits a low-power consumption requirement MACH4: At 200mA (max), requires less than half the power of a mobile hard disk drive
Full data-path protection	Provides enhanced data integrity with full data-path protection. SDDs built with 8-bit ECC engline offload overhead from host
High reliability	Built-in power-down data protection is designed to protect data in event of unexpected power loss

HGST
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Specifications

Models	MACH2	MACH4
Interface		
Type	UDMA-4	UDMA-4
Capacity (GB)[1]	128 / 256 / 512MB 1 / 2 / 4 / 8 / 16GB	8 / 16GB
Form Factor	Compact Flash (Type 1)	Compact Flash (Type 1)
Performance		
Average Response Time	<90ms	<85ms
Transfer Rate (Read)	Up to 38MB/s	Up to 85MB/s
Transfer Rate (Write)	Up to 22MB/s	Up to 50MB/s
Transactional Performance (Read IOPS)	5,800	15,650
Transactional Performance (Write IOPS)	5,200	13,900
MTBF	4 million hours	4 million hours
Physical		
Dimensions (L x W x H)	36.4mm X 42.8mm X 3.3mm	36.4mm X 42.8mm X 3.3mm
Power	<100mA	<100mA
Power Supply	5V/3.3V	5V/3.3V
Environmental		
Operational Temperature	-40° to 85°C	-40° to 85°C
Shock/Vibration	1500G/20G	1500G/20G
Humidity (non-condensing)	85°C, 55% RH	85°C, 55% RH
Altitude	-1,000 to 85,000 ft	-1,000 to 85,000 ft
Compliance		
	RoHS-6, EU Directive	RoHS-6, EU Directive

[1] One GB is equal to one billion bytes when referring to hard drive capacity. Accessible capacity will vary depending on the operating environment and formatting.
[2] Portion of buffer capacity used for drive firmware
[3] MB is equal to MillionBytes
[4] Excludes command overhead
[5] MTBF target is based on a sample population and is estimated by statistical measurements and acceleration algorithms under median operating conditions. MTBF ratings are not intended to predict an individual drive's reliability. MTBF does not constitute a warranty.

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