

HERCULES-M Series

Industrial micro USB Flash (MUM) Module



Product features


- ❖ SLC - NAND type flash technology
- ❖ 2x5 header, x86 internal USB standard
- ❖ Vertical : 2x5 2.54 mm pitch pin connector
- ❖ Horizontal : 2 solutions of 2x5 2.54 mm & 2.00 mm pitch pin connector
- ❖ Complies with Microsoft Vista Ready-Boost® requirements
- ❖ Fixed disk mode configuration
- ❖ Advanced error detection and error correction algorithms
- ❖ High-speed USB 2.0 interface; backward compatible with USB 1.1
- ❖ Vertical : Capacities from 512MB up to 8GB (Single CH.)
- ❖ Horizontal : Capacities from 512MB up to 16GB (Dual CH.)
- ❖ Performance up to 33.0 MB/sec

Product specifications


Compatibility	❖ USB 2.0 and USB 1.1 backwards compatible	Power consumption	
Flash technology	❖ SLC-NAND flash type technology	Power requirement	❖ 5V±10% via on board USB port
Form-factor	❖ Standard & Low profile Horizontal Type with fixed hole	Reading mode	❖ 120.0 mA (Max.)
Host Interface	❖ Standard 10 pins 2.54 mm pin pitch USB female connector ❖ Low-profile 10 pins 2.00 mm pin pitch USB female connector	Writing mode	❖ 120.0 mA (Max.)
Performance		Idle mode	❖ 60.0 mA (Max.)
Data transfer rate	❖ USB 2.0 and USB 1.1 backwards compatible	Reliability	
Sequential read	❖ 32.0 MB/sec (Max.)	Wear-leveling	❖ Dynamic wear-leveling algorithms
Sequential write	❖ 30.0 MB/sec (Max.)	MTBF	❖ > 3,000,000 hours
Average access time	❖ 0.4 ms (estimated)	ECC	❖ 8 bits per 528 bytes block
Environmental specification		Endurance	❖ > 2,000,000 cycles
Operating temp.	❖ STD. 0°C ~ 70°C / IND. -40°C ~ +85°C	Physical specification	
Non-operating temp.	❖ STD. -20°C ~ +80°C / IND. -50°C ~ +95°C	Weight (max.)	❖ Vertical type : 15 g ± 1 g / 0.53 oz. Horizontal type : 10 g ± 1 g / 0.35 oz.
Humidity	❖ 10% ~ 95% non-condensing	Dimension(W x L x H)	
Vibration	❖ 15G compliance to MIL-STD-810F	Verf. 2.54mm pitch pin	❖ 34.20 x 15.40 x 6.30 (mm)
Shock	❖ 1,500G compliance to MIL-STD-810F	Hori. STD. 2.54mm pitch pin	❖ 36.9 x 26.6 x 9.00 (mm)
Altitude	❖ 70,000 feet	Hori. Low pro. 2.0mm pitch pin	❖ 36.9 x 26.6 x 5.90 (mm)
Acoustic noise	❖ 0dB	Conformal coating	❖ Option for special request
OS supported	❖ Microsoft Windows Vista, 7 Microsoft Win CE, Microsoft Windows XP Pro, Microsoft Windows XP Embedded, Microsoft Windows for Point of Service, Microsoft Windows Server 2003, Linux and DOS	Warranty	
		Standard grade	❖ 3 years
		Industrial grade	❖ 5 years

Operating temperature supports Standard grade 0°C ~ 70°C and Industrial grade -40°C ~ +85°C


Part number list - Vertical type standard form factor (Pin pitch = 2.54mm)

Product picture	Capacity	0°C ~ 70°C	-40°C ~ +85°C
	512MB	SPMUM512M-MMCS-CVS	WPMUM512M-MMISI-VS
	1GB	SPMUM001G-MMCS-CVS	WPMUM001G-MMISI-VS
	2GB	SPMUM002G-MMCS-CVS	WPMUM002G-MMISI-VS
	4GB	SPMUM004G-MMCMC-VS	WPMUM004G-MMIMI-VS
	8GB	SPMUM008G-MMCMC-VS	WPMUM008G-MMIMI-VS

Part number list - Horizontal type standard form factor (Pin pitch = 2.54mm)

Product picture	Capacity	0°C ~ 70°C	-40°C ~ +85°C
	512MB	SBMUM512M-MMCS-CVS	WBMUM512M-MMISI-HS
	1GB	SBMUM001G-MMCS-CVS	WBMUM001G-MMISI-HS
	2GB	SBMUM002G-MMCS-CVS	WBMUM002G-MMISI-HS
	4GB	SBMUM004G-MMCS-CVS	WBMUM004G-MMISI-HS
	8GB	SBMUM008G-MMCMC-HS	WBMUM008G-MMIMI-HS
	16GB	SBMUM016G-MMCMC-HS	WBMUM016G-MMIMI-HS

Part number list - Horizontal type low profile form factor (Pin pitch = 2.00mm)

Product Picture	Capacity	0°C ~ 70°C	-40°C ~ +85°C
	512MB	SBMUM512M-MMCS-CVS	WBMUM512M-MMISI-HL
	1GB	SBMUM001G-MMCS-CVS	WBMUM001G-MMISI-HL
	2GB	SBMUM002G-MMCS-CVS	WBMUM002G-MMISI-HL
	4GB	SBMUM004G-MMCS-CVS	WBMUM004G-MMISI-HL
	8GB	SBMUM008G-MMCMC-HL	WBMUM008G-MMIMI-HL
	16GB	SBMUM016G-MMCMC-HL	WBMUM016G-MMIMI-HL

CF
Industrial CompactFlash Card

CFast
Industrial CFast Card

ATA
Industrial PCMCIA ATA Card

IDE
Industrial micro IDE Flash Module

SATA
Industrial micro SATA Flash Module

MUM
Industrial micro USB Flash Module

PCLe
Industrial mini PCLe Flash Module

SATA
Industrial mini SATA Flash Module

SSD
Industrial Solid State Disk

UED
Industrial Rugged Metal USB Flash Disk

SD
Industrial SD & SDHC Memory Card

AD
Industrial Adapter Card-Drive

CF

Industrial CompactFlash Card

Part number decoder

X1 X2 X3 X4 X5 X6 X7 X8 X9 — X11 X12 X13 X14 X15 — Y1 Y2 — C

CFast

Industrial CFast Card

Example

S P M U M 5 1 2 M — M M C S C — V S

ATA

Industrial PCMCIA ATA Card

X1 ➤ Grade

S : Standard grade operating temp. 0° C ~ +70 ° C

X14 ➤ Flash IC

S : Samsung SLC-NAND flash IC

W : Industrial grade operating temp. -40° C ~ +85 ° C

M : Micron SLC-NAND flash IC

MIF

Industrial micro IDE Flash Module

X2 ➤ The material of casing

B : Bare (without casing)

X15 ➤ Flash IC grade

C : Commercial grade

P : Plastic casing

I : Industrial grade

MSE

Industrial micro SATA Flash Module

X3 X4 X5 ➤ Product category

MUM : micro USB module

Y1 Y2 ➤ MUM orient only

VS : Vertical type standard form factor

MUM

Industrial micro USB Flash Module

X6 X7 X8 X9 ➤ Capacity

512M : 512MB

HS : Horizontal type standard form factor

HL : Horizontal type low profile form factor

M2M

Industrial mini PCIe Flash Module

001G : 1GB

C ➤ Reserved for specific requirement

C : Conformal-coating

002G : 2GB

004G : 4GB

008G : 8GB

016G : 16GB

M3M

Industrial mini SATA Flash Module

X11 ➤ Controller

M : SMI (HERCULES Series)

SSD

Industrial Solid State Disk

X12 ➤ Controller version

A,B,C...M..

UED

Industrial Rugged Metal USB Flash Disk

X13 ➤ Controller grade

C : Commercial grade

I : Industrial grade

SD

Industrial SD & SDHC Memory Card

AD

Industrial Adapter Card-Drive