

# HERCULES-P Series

Industrial micro USB Flash (MUM) Module  
2.0/2.54(mm) pin pitch of 10 pins USB internal connector



CFC Industrial CompactFlash Card

CFA Industrial CFast Card

AFC Industrial PCMCIA ATA Card

MIF Industrial micro IDE Flash Module

MSF Industrial micro SATA Flash Module

**MUM** Industrial micro USB Flash Module

MPM Industrial mini PCIe Flash Module

MSM Industrial mini SATA Flash Module

SSD Industrial Solid State Disk

UFD Industrial Rugged Metal USB Flash Disk

SDC/H Industrial SD & SDHC Memory Card

AD Industrial Adapter Card-Drive

## Product features

- SLC - NAND type flash technology
- 2x5 header, x86 internal USB standard
- Pin pitch 2.00 mm of USB 10 pins female connector
- Pin pitch 2.54 mm of USB 10 pins female connector
- USB2.0 High-Speed and USB1.1 FullSpeed compatible interface
- Fixed disk mode configuration (not a removable disk)
- Vertical Type : Capacities from 512MB up to 16GB
- Horizontal Type : Capacities from 512MB up to 32GB
- Performance up to 28.0 MB/sec (Dual channel, max.)

## Product specifications

<b>Compatibility</b>	<ul style="list-style-type: none"> <li>USB 2.0 and USB 1.1 backwards Compatible</li> </ul>	<b>Power consumption</b>	<ul style="list-style-type: none"> <li>Power requirement 5V±10% via on board USB port</li> <li>Reading mode 130.0 mA(Max.)</li> <li>Writing mode 145.0 mA(Max.)</li> <li>Idle mode 75.0 mA(Max.)</li> </ul>
<b>Flash technology</b>	<ul style="list-style-type: none"> <li>SLC-NAND type flash based</li> </ul>	<b>Reliability</b>	<ul style="list-style-type: none"> <li>Wear-leveling Static wear-leveling algorithms</li> <li>MTBF &gt; 3,000,000 hours</li> <li>Endurance &gt; 2,000,000 cycles</li> </ul>
<b>Form-factor</b>	<ul style="list-style-type: none"> <li>Horizontal Type bare w/mounting Standard - 2.54mm pin pitch</li> <li>Low-profile - 2.00mm pin pitch</li> </ul>	<b>Performance</b>	<ul style="list-style-type: none"> <li>Data transfer rate USB2.0 High-Speed and USB1.1 FullSpeed compatible interface</li> <li>Sequential read 28.0 MB/sec (max.)</li> <li>Sequential write 20.0 MB/sec (max.)</li> <li>Random access time 0.4ms (estimated)</li> </ul>
<b>Host Interface</b>	<ul style="list-style-type: none"> <li>10 pins 2.54mm pin pitch connector</li> <li>10 pins 2.00mm pin pitch connector</li> </ul>	<b>Physical specification</b>	<ul style="list-style-type: none"> <li>Weight Vertical type : 3 g ± 1g / 0.10 oz.</li> <li>Horizontal type : 10 g ± 1g / 0.35 oz.</li> </ul>
<b>Environmental specification</b>	<ul style="list-style-type: none"> <li>Operating temp. STD. 0°C~70°C/IND. -40°C~+85°C</li> <li>Non-operating temp. STD. -20°C~+80°C/IND. -50°C~+95°C</li> <li>Humidity 10% ~ 95% non-condensing</li> <li>Vibration 15G compliance to MIL-STD-810F</li> <li>Shock 1,500G compliance to MIL-STD-810F</li> <li>Altitude 70,000 feet</li> </ul>	<b>Dimension(W x L x H)</b>	<ul style="list-style-type: none"> <li>2.54mm pin pitch_Ver. 34.1 x 15.2 x 6.40 (mm)</li> <li>2.54mm pin pitch_Hor. 37.0 x 26.6 x 9.50 (mm)</li> <li>2.00mm pin pitch_Hor. 37.0 x 26.6 x 6.40 (mm)</li> </ul>
<b>OS supported</b>	<ul style="list-style-type: none"> <li>Win Vista, CE, XP Pro, XP Embedded, Server 2003, Linux and DOS</li> </ul>	<b>Conformal coating</b>	<ul style="list-style-type: none"> <li>Option for special request</li> </ul>
		<b>Warranty</b>	<ul style="list-style-type: none"> <li>Standard grade 3 years</li> <li>Industrial grade 5 years</li> </ul>

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

Part number list - Vertical type standard form factor - 2.54mm pin pitch

Product Picture	Capacity	0°C ~ 70°C	-40°C ~ +85°C
	512MB	SPMUM512M-MPCTC-VS	WPMUM512M-MPITI-VS
	1GB	SPMUM001G-MPCTC-VS	WPMUM001G-MPITI-VS
	2GB	SPMUM002G-MPCTC-VS	WPMUM002G-MPITI-VS
	4GB	SPMUM004G-MPCTC-VS	WPMUM004G-MPITI-VS
	8GB	SPMUM008G-MPCTC-VS	WPMUM008G-MPITI-VS
	16GB	SPMUM016G-MPCTC-VS	WPMUM016G-MPITI-VS

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

Part number list - Horizontal type standard form factor - 2.54mm pin pitch / 2.00mm pin pitch

Product Picture / 2.54mm	Capacity	0°C ~ 70°C	-40°C ~ +85°C
	512MB	SBMUM512M-MPCTC-HS(/C)	WBMUM512M-MPITI-HS(/C)
	1GB	SBMUM001G-MPCTC-HS(/C)	WBMUM001G-MPITI-HS(/C)
	2GB	SBMUM002G-MPCTC-HS(/C)	WBMUM002G-MPITI-HS(/C)
	4GB	SBMUM004G-MPCTC-HS(/C)	WBMUM004G-MPITI-HS(/C)
	8GB	SBMUM008G-MPCTC-HS(/C)	WBMUM008G-MPITI-HS(/C)
	16GB	SBMUM016G-MPCTC-HS(/C)	WBMUM016G-MPITI-HS(/C)
	32GB	SBMUM032G-MPCTC-HS(/C)	WBMUM032G-MPITI-HS(/C)

Product Picture / 2.00mm	Capacity	0°C ~ 70°C	-40°C ~ +85°C
	512MB	SBMUM512M-MPCTC-HL(/C)	WBMUM512M-MPITI-HL(/C)
	1GB	SBMUM001G-MPCTC-HL(/C)	WBMUM001G-MPITI-HL(/C)
	2GB	SBMUM002G-MPCTC-HL(/C)	WBMUM002G-MPITI-HL(/C)
	4GB	SBMUM004G-MPCTC-HL(/C)	WBMUM004G-MPITI-HL(/C)
	8GB	SBMUM008G-MPCTC-HL(/C)	WBMUM008G-MPITI-HL(/C)
	16GB	SBMUM016G-MPCTC-HL(/C)	WBMUM016G-MPITI-HL(/C)
	32GB	SBMUM032G-MPCTC-HL(/C)	WBMUM032G-MPITI-HL(/C)

## Part number decoder

X1	X2	X3	X4	X5	X6	X7	X8	X9	—	X11	X12	X13	X14	X15	—	Z1	Z2	/	C
W	B	M	U	M	5	1	2	M	—	M	M	I	S	I	—	H	S	/	C

- Example**
- X1** ➤ Grade  
S : Standard grade operating temp. 0°C~70°C  
W : Industrial grade operating temp. -40°C~+85°C
- X2** ➤ The material of casing  
B : Bare (without casing)  
P : Plastic casing
- X3 X4 X5** ➤ Product category  
MUM : micro USB module
- X6 X7 X8 X9** ➤ Capacity  
512M : 512MB    004G : 4GB    032G : 32GB  
001G : 1GB    008G : 8GB  
002G : 2GB    016G : 16GB
- X11** ➤ Controller  
M : SMI (HERCULES Series)
- X12** ➤ Controller version  
A,B,C.....
- X13** ➤ Controller grade  
C : Commercial grade  
I : Industrial grade
- X14** ➤ Flash IC  
T : Toshiba SLC-NAND flash IC
- X15** ➤ Flash IC grade  
C : Commercial grade  
I : Industrial grade
- Z1 Z2** ➤ MUM orient only  
VS : Vertical type standard form factor pin pitch 2.54 mm  
HS : Horizontal type standard form factor pin pitch 2.54 mm  
HL : Horizontal type low profile form factor pin pitch 2.0 mm
- C** ➤ Reserved for specific requirement  
C : Conformal-coating

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