

# AEGIS Series

## Industrial micro SATA I Flash (MSF) Module



### Product features

- ❖ SLC - NAND type flash technology
- ❖ Standard 7 pins SATA female connector
- ❖ Form-factor support vertical, leftward and rightward
- ❖ Built-in ECC corrects up to 8 bits per 512 bytes
- ❖ Serial ATA 1.0a Specification compliance
- ❖ Performance up to 25.1 MB/sec
- ❖ Power request optional: Built-in power pin-7 (w/fuse) or 5V power input power cable (w/o fuse)

### Product specifications

<b>Compatibility</b>	❖ Serial ATA standard rev. 1.0a	<b>Power consumption</b>	❖ 5V±10% Build-in power pin-7(w/fuse)
<b>Flash technology</b>	❖ SLC-NAND type flash based	<b>Power requirement</b>	❖ 5V power input power cable(w/o fuse)
<b>Form-factor</b>	❖ Vertical type : Standard/Low profile ❖ Horizontal type : Standard / Low profile / Lowprofile with mounting hole	<b>Reading mode</b>	❖ 155.0 mA (Max.)
<b>Host Interface</b>	❖ Standard 7 pins SATA female connector	<b>Writing mode</b>	❖ 170.0 mA (Max.)
<b>Performance</b>		<b>Sleeping mode</b>	❖ 105.0 mA (Max.)
<b>Data transfer rate</b>	❖ Serial ATA standard Gen1(1.5Gbps)	<b>Reliability</b>	
<b>Sequential read</b>	❖ 25.1 MB/sec (64MB file test / 4GB mSATA)	<b>Wear-leveling</b>	❖ Dynamic wear-leveling algorithms
<b>Sequential write</b>	❖ 14.4 MB/sec (64MB file test / 4GB mSATA)	<b>MTBF</b>	❖ > 3,000,000 hours
<b>Average access time</b>	❖ 1.0 ms (estimated)	<b>ECC</b>	❖ 8 bits per 512 bytes block
<b>Environmental specification</b>		<b>Endurance</b>	❖ > 2,000,000 cycles
<b>Operating temp.</b>	❖ STD. 0°C ~ 70°C / IND. -40°C ~ +85°C	<b>Physical specification</b>	
<b>Non-operating temp.</b>	❖ STD. -20°C ~ +80°C / IND. -50°C ~ +95°C	<b>Weight (max.)</b>	❖ 20 g (0.71 oz)
<b>Humidity</b>	❖ 10% ~ 95% non-condensing	<b>Dimension(W x L x H)</b>	
<b>Vibration</b>	❖ 15G compliance to MIL-STD-810F	<b>Vert. STD.</b>	❖ 20.50 x 39.20 x 8.00 (mm)
<b>Shock</b>	❖ 1,500G compliance to MIL-STD-810F	<b>Verti. Low pro.</b>	❖ 32.83 x 29.55 x 8.00 (mm)
<b>Altitude</b>	❖ 70,000 feet	<b>Hori. STD.</b>	❖ 18.00 x 35.20 x 10.20 (mm)
<b>Warranty</b>		<b>Hori. Low pro.</b>	❖ 30.00 x 20.08 x 10.20 (mm)
<b>Standard grade</b>	❖ 3 years	<b>Low pro. with mounting hole</b>	❖ 30.00 x 28.80 x 10.20 (mm)
<b>Industrial grade</b>	❖ 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

Product picture	Capacity	0°C ~ 70°C	-40°C ~ +85°C
	128MB	SPMSF128M-TACSC-VS(/F)	WPMSF128M-TAISI-VS(/F)
	256MB	SPMSF256M-TACSC-VS(/F)	WPMSF256M-TAISI-VS(/F)
	512MB	SPMSF512M-TACSC-VS(/F)	WPMSF512M-TAISI-VS(/F)
	1GB	SPMSF001G-TACSC-VS(/F)	WPMSF001G-TAISI-VS(/F)
	2GB	SPMSF002G-TACSC-VS(/F)	WPMSF002G-TAISI-VS(/F)
	4GB	SPMSF004G-TACSC-VS(/F)	WPMSF004G-TAISI-VS(/F)
	8GB	SPMSF008G-TACSC-VS(/F)	WPMSF008G-TAISI-VS(/F)

### Remark:

/F: optional item power pin-7 with fuse

### Part number list - Vertical type low profile form factor

Product picture	Capacity	0°C ~ 70°C	-40°C ~ +85°C
	128MB	SPMSF128M-TACSC-VL(/F)	WPMSF128M-TAISI-VL(/F)
	256MB	SPMSF256M-TACSC-VL(/F)	WPMSF256M-TAISI-VL(/F)
	512MB	SPMSF512M-TACSC-VL(/F)	WPMSF512M-TAISI-VL(/F)
	1GB	SPMSF001G-TACSC-VL(/F)	WPMSF001G-TAISI-VL(/F)
	2GB	SPMSF002G-TACSC-VL(/F)	WPMSF002G-TAISI-VL(/F)
	4GB	SPMSF004G-TACSC-VL(/F)	WPMSF004G-TAISI-VL(/F)
	8GB	SPMSF008G-TACSC-VL(/F)	WPMSF008G-TAISI-VL(/F)

### Remark:

/F: optional item power pin-7 with fuse

### Part number list - Horizontal type standard form factor

Product Picture	Capacity	0°C ~ 70°C	-40°C ~ +85°C
	128MB	SBMSF128M-TACSC-HS(/F)	WBMSF128M-TAISI-HS(/F)
	256MB	SBMSF256M-TACSC-HS(/F)	WBMSF256M-TAISI-HS(/F)
	512MB	SBMSF512M-TACSC-HS(/F)	WBMSF512M-TAISI-HS(/F)
	1GB	SBMSF001G-TACSC-HS(/F)	WBMSF001G-TAISI-HS(/F)
	2GB	SBMSF002G-TACSC-HS(/F)	WBMSF002G-TAISI-HS(/F)
	4GB	SBMSF004G-TACSC-HS(/F)	WBMSF004G-TAISI-HS(/F)
	8GB	SBMSF008G-TACSC-HS(/F)	WBMSF008G-TAISI-HS(/F)

### Remark:

/F: optional item power pin-7 with fuse

**CF**  
Industrial CompactFlash Card

**CFast**  
Industrial CFast Card

**ATA**  
Industrial PCMCIA ATA Card

**MIF**  
Industrial micro IDE Flash Module

**MSF**  
Industrial micro SATA Flash Module

**MUM**  
Industrial micro USB Module

**MPM**  
Industrial mini PCI-e Module

**SSD**  
Industrial Solid State Disk


**UFD**  
Industrial Rugged Metal USB Flash Disk

**SD**  
Industrial SD & SDHC Memory Card

**AD**  
Industrial Adapter Card-Drive

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


**Part number list - Horizontal type low profile form factor**

Product picture	Capacity	0°C ~ 70°C	-40°C ~ +85°C
	128MB	SBMSF128M-TACSC-HL(/F)	WBMSF128M-TAISI-HL(/F)
	256MB	SBMSF256M-TACSC-HL(/F)	WBMSF256M-TAISI-HL(/F)
	512MB	SBMSF512M-TACSC-HL(/F)	WBMSF512M-TAISI-HL(/F)
	1GB	SBMSF001G-TACSC-HL(/F)	WBMSF001G-TAISI-HL(/F)
	2GB	SBMSF002G-TACSC-HL(/F)	WBMSF002G-TAISI-HL(/F)
	4GB	SBMSF004G-TACSC-HL(/F)	WBMSF004G-TAISI-HL(/F)
	8GB	SBMSF008G-TACSC-HL(/F)	WBMSF008G-TAISI-HL(/F)

**Remark:**

/F: optional item power pin-7 with fuse

**Part number list - Horizontal type low profile form factor with mounting hole**

Product picture	Capacity	0°C ~ 70°C	-40°C ~ +85°C
	128MB	SBMSF128M-TACSC-HO(/F)	WBMSF128M-TAISI-HO(/F)
	256MB	SBMSF256M-TACSC-HO(/F)	WBMSF256M-TAISI-HO(/F)
	512MB	SBMSF512M-TACSC-HO(/F)	WBMSF512M-TAISI-HO(/F)
	1GB	SBMSF001G-TACSC-HO(/F)	WBMSF001G-TAISI-HO(/F)
	2GB	SBMSF002G-TACSC-HO(/F)	WBMSF002G-TAISI-HO(/F)
	4GB	SBMSF004G-TACSC-HO(/F)	WBMSF004G-TAISI-HO(/F)
	8GB	SBMSF008G-TACSC-HO(/F)	WBMSF008G-TAISI-HO(/F)

**Remark:**

/F: optional item power pin-7 with fuse

**Part number decoder**

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

**Example 1 - Standard grade MSF 512MB with conformal coating**

S P M S F 5 1 2 M — T A C S C — V S / C

**Example 2 - Standard grade MSF 512MB with power pin-7 fuse and conformal coating**

S P M S F 5 1 2 M — T A C S C — V S F C

**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

MSF : micro SATA flash module

**X6 X7 X8 X9** ➤ Capacity

128M : 128MB    001G : 1GB

256M : 256MB    002G : 2GB

512M : 512MB    004G : 4GB

008G : 8GB

**X11** ➤ Controller

T : TDK (AEGIS Series)

**X12** ➤ Controller version

A,B,C.....

**X13** ➤ Controller grade

C : Commercial grade

I : Industrial grade

**X14** ➤ Flash IC

S : Samsung SLC-NAND flash IC

**X15** ➤ Flash IC grade

C : Commercial grade

I : Industrial grade

**Y1 Y2** ➤ MSF orient only

VS : Vertical type standard form factor

VL : Vertical type low profile form factor

HS : Horizontal type standard form factor

HL : Horizontal type low profile form factor

HO : Horizontal type low profile form factor with mounting hole

**C** ➤ Reserved for specific requirement

F : Power pin-7 with fuse

C : Conformal-coating

**CF**  
Industrial CompactFlash Card

**CFast**  
Industrial CFast Card

**ATA**  
Industrial PCMCIA ATA Card

**MIF**  
Industrial micro IDE Flash Module

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Industrial micro USB Module

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Industrial mini PCI-e Module

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Industrial Solid State Disk

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Industrial SD & SDHC Memory Card

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Industrial Adapter Card-Drive