mSATA Drive
Mini PCIe Module

VL-MPEs-F1
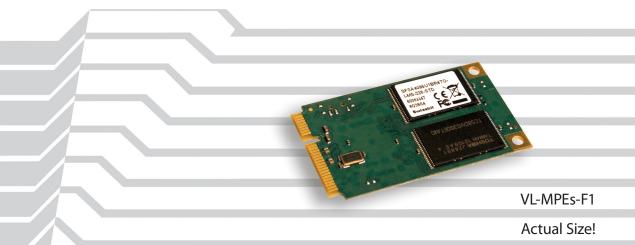
Actual Size!

Overview

The VL-MPEs-F1 is an extremely small and rugged mSATA module based on the industry-standard Mini PCIe module format. Unlike typical I/O expansion boards, Mini PCIe allows additional I/O functions to be added to a system with almost no increase in overall system/package size. Mini PCIe modules provide a simple, economical, and standardized way to add I/O functions to embedded computer products.

In a very small package, this board provides up to 256 GB of plug-in flash data storage for almost any embedded system.

This non-volatile memory drive provides high-capacity data storage. The drive has an intelligent internal controller which manages interface protocols, data storage, and retrieval. The wear leveling mechanism assures an equal usage of the Flash memory cells to maximize the longevity of the device. The hardware BCH-code ECC detects and corrects internal errors. The voltage detector and power-loss management features prevent data corruption after power-down.

This rugged product is designed and tested for full industrial temperature operation (-40° to +85°C). It also meets MIL-STD-202G specifications for shock and vibration, making it at home in harsh environments.

This mSATA board is compatible with a variety of popular x86 operating systems including Windows, Windows Embedded, and Linux.

The module utilizes SATA signaling and can be used in any system that supports SATA signaling at the Mini PCIe socket.

This 3rd party product has been selected and tested for compatibility with VersaLogic products, compliance with VersaLogic ruggedness requirements, and is backed by VersaLogic's product warranty, world-class technical support, and 5-year lifecycle guarantee.

Highlights

- **Mini PCIe Module Format**
  Small and flexible.
- **Flash Memory**
  Non-volatile storage up to 256 GB.
- **Industrial Temperature Operation**
  -40° to +85°C operation for harsh environments.
- **MIL-STD-202G**
  Qualified for high shock/vibration environments.

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Specifications

General

General	
Board Size	Mini PCIe module (full size): 29.85 x 50.8 x 3.3 mm (1.18 x 2.0 x 0.13")
Power Requirements	3.3V ±5% @ 1.39 W (supplied by the Mini PCIe socket)
Regulatory Compliance	RoHS
Mini PCIe Signal Type	Modules up to 32 GB: SATA 3 Gbit/s (1.5 Gbit/s compatible)
	Modules 64 GB and larger: SATA 6 Gbit/s (3 & 1.5 Gbit/s compatible)

Environmental

Environmental		
Operating Temperature ◊	-40° to +85°C	
Storage Temperature	-40° to +85°C	
Altitude *	Operating	To 4,570m (15,000 ft.)
	Storage	To 12,000m (40,000 ft.)
Cooling	None (fanless)	
Airflow Requirements	None (free air)	
Thermal Shock	5°C/min. over operating temperature.	
Humidity	Less than 90%, noncondensing	
Vibration, Sinusoidal Sweep †	MIL-STD-202G, Method 204, Modified Condition A: 2g constant acceleration from 5 to 500 Hz, 20 min. per axis	
Vibration, Random †	MIL-STD-202G, Method 214A, Condition A: 5.35g rms, 5 min. per axis	
Mechanical Shock †	MIL-STD-202G, Method 213B, Condition G: 20g half-sine, 11 msec. duration per axis	

Device I/O

Device I/O		
Rotating Drives / Flash / Solid-State Drives	For mSATA modules up to 32 GB. SLC NAND Flash. Hardware ECC. Wear leveling. SATA signaling. Bootable.	
	Burst Transfer	Up to 300 MB/s
	Sustained Write	Up to 95 MB/s
	Sustained Read	Up to 120 MB/s
	For mSATA modules 64 GB and larger. pSLC NAND Flash. Hardware ECC. Wear leveling. SATA signaling. Bootable.	
	Burst Transfer	Up to 600 MB/s
	Sustained Write	Up to 465 MB/s
	Sustained Read	Up to 555 MB/s

Software

Software	
Operating Systems	Compatible with most x86 operating systems including Windows, Windows Embedded, and Linux

* Extended altitude specifications available upon request

† MIL-STD-202G shock and vibe levels are used to illustrate the ruggedness of this product in general. Testing to higher levels and/or different types of shock or vibration methods can be accommodated per the specific requirements of the application. Contact VersaLogic Sales for further information.

Specifications are subject to change without notification. PCI Express is a registered trademark of the PCI-SIG. All other trademarks are the property of their respective owners.

Ordering Information

Model	Function	Operating Temp.
VL-MPEs-F1E4	SLC mSATA drive, 4 GB	-40° to +85°C
VL-MPEs-F1E16	SLC mSATA drive, 16 GB	-40° to +85°C
VL-MPEs-F1E32	SLC mSATA drive, 32 GB	-40° to +85°C
VL-MPEs-F1E64	pSLC mSATA drive, 64 GB	-40° to +85°C
VL-MPEs-F1E128	pSLC mSATA drive, 128 GB	-40° to +85°C
VL-MPEs-F1E256	pSLC mSATA drive, 256 GB	-40° to +85°C

Accessories

Part Number	Description
Hardware	
VL-HDW-108	Mini PCIe module hold-down screws (10) for use with 2.5 mm standoffs.
VL-HDW-110	Mini PCIe module hold-down screws (10) for use with 2.0 mm standoffs.

Other VersaLogic Mini PCIe Modules

Model	Function	Signaling
VL-MPEe-A1E	Analog input (12-bit resolution)	PCIe
VL-MPEe-A2E	Analog input (16-bit resolution)	PCIe
VL-MPEu-C1	Dual CAN Bus Interface	USB
VL-MPEe-E4E	Gigabit Ethernet Over Fiber Module	PCIe
VL-MPEe-E5E	Dual Channel Gigabit Ethernet Adapter	PCIe
VL-MPEe-E6	Gigabit Ethernet	PCIe
VL-MPEe-E6E-P	Gigabit Ethernet with POE+	PCIe
VL-MPEe-U2E	Four Serial ports. Twelve GPIO lines.	PCIe
VL-MPEe-V5E	Video Display Adapter. VGA and LVDS interfaces	PCIe
VL-MPEe-FW1	1394 Firewire Module	PCIe
VL-MPEs-S3E	SATA adapter	SATA
VL-MPEu-G2E	GPS receiver	USB
VL-MPEu-G3E	Advanced GPS receiver	USB

Call VersaLogic Sales at (503) 747-2261 for more information!

Mini PCIe Modules

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