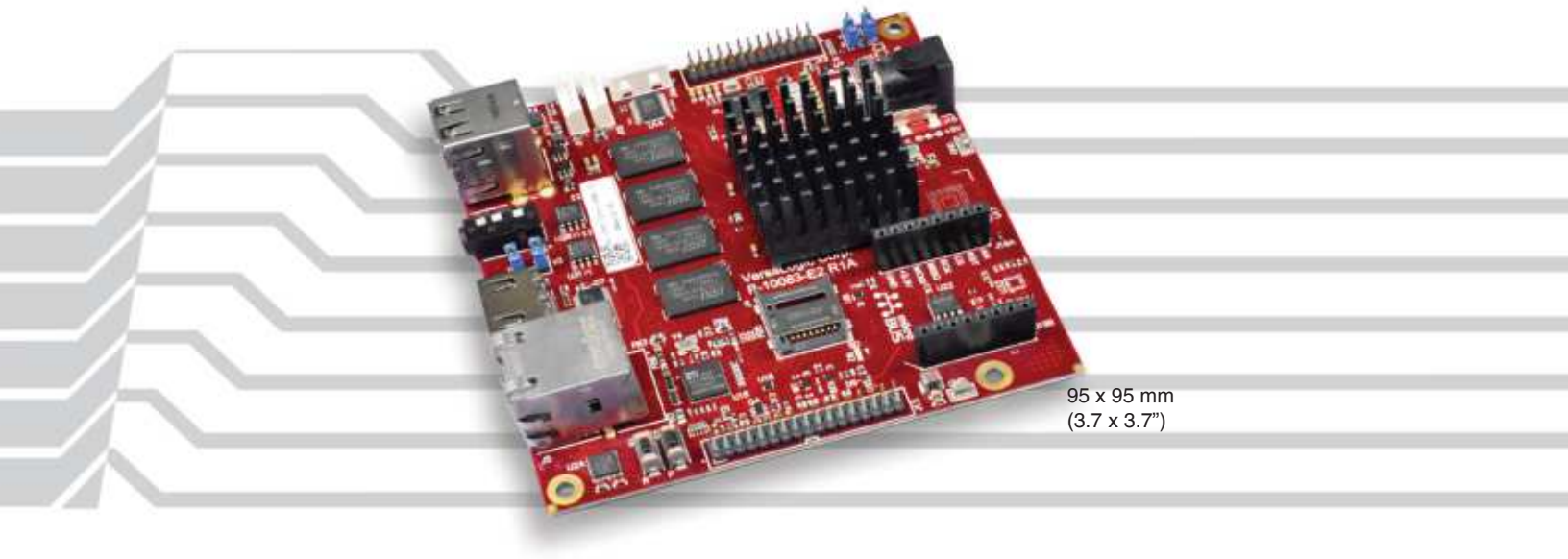
Zebra

Arm-based Single Board Computer



95 x 95 mm
(3.7 x 3.7")

Overview

The Zebra single board computer is a complete Arm-based embedded computer. It features several models that are available with power-efficient single- or dual-core i.MX6 CPUs. All models are delivered tested and ready for deployment. They are ideal for demanding applications that require rugged power-efficient solutions with long-term availability.

Unlike proprietary formats, Zebra is designed around the industry standard COM-Express footprint and mounting points, which simplifies installation and upgrading in the future. Unlike Arm-based "modules", Zebra is complete board level computer. Additional carrier boards, connector boards, or I/O expansion are not required for operation. Zebra boards are delivered with on-board soldered-on RAM, ready to plug-in and run.

Like other VersaLogic products, the Zebra SBC is engineered to be rugged. It is validated for operation in unforgiving environments including high temperature, mechanical shock and vibration. Each component has been carefully sourced to ensure reliable operation in the field.

continued ▸

Highlights

- Complete single board computer
- -40° to +85°C operation
- One or two core i.MX6 processor
- Shock and vibration per MIL-STD-202G
- Standard 95 x 95 mm size
- Low power draw
- Fanless operation
- Up to 4 GB soldered-on RAM*
- Gigabit Ethernet
- HDMI video
- USB 2.0 ports
- Serial I/O (RS-232)
- MicroSD card socket
- Up to 32 GB eMMC Flash*
- CAN bus
- SPI, I2C, audio I/O
- 6-axis e-compass*
- MikroBUS™ expansion socket
- VersaAPI software support
- Linux support

* Optional. Not available on all models.

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Overview *...continued*

Zebra embedded computer boards provide connectivity via Gigabit Ethernet, USB, and CAN bus interfaces, as well as HDMI video support. They also provide a MikroBUS socket for expandability, and additional on-board I/O including I2C, audio, SPI, and GPIO lines. An on-board 6-axis e-compass is available as a modified COTS option.

VersaLogic's 10+ year product life support programs ensure long-term deployment in the field, free from expensive upgrades and migrations that come from short, disposable lifecycle products. ■

Features

1 NXP i.MX6 Cortex®-A9 32-bit Processor
i.MX6 Solo or i.MX6 DualLite Arm processor with integrated I/O and 2D/3D graphics engine

2 Video Output
HDMI video output

3 RAM
500 MB to 4 GB soldered-on memory*

4 Network Support
Gigabit Ethernet interface with network boot capability

5 USB
Two USB 2.0 ports support keyboard, mouse, and other devices

6 CAN
Two CAN bus ports

7 Serial I/O
Two serial I/O ports (UART and Debug), I2C, and SPI

8 Audio
Audio I/O

9 GPIO
Eight 3.3V GPIO

10 Accelerometer
Integrated 6-axis e-compass (accelerometer/magnetometer)

11 MicroSD Socket
Supports removable microSD card solid-state drives (bootable)

12 eMMC Flash
Up to 32 GB of soldered-on Flash storage*

13 Expansion
MikroBUS compatible socket

14 Power Input
5V power input

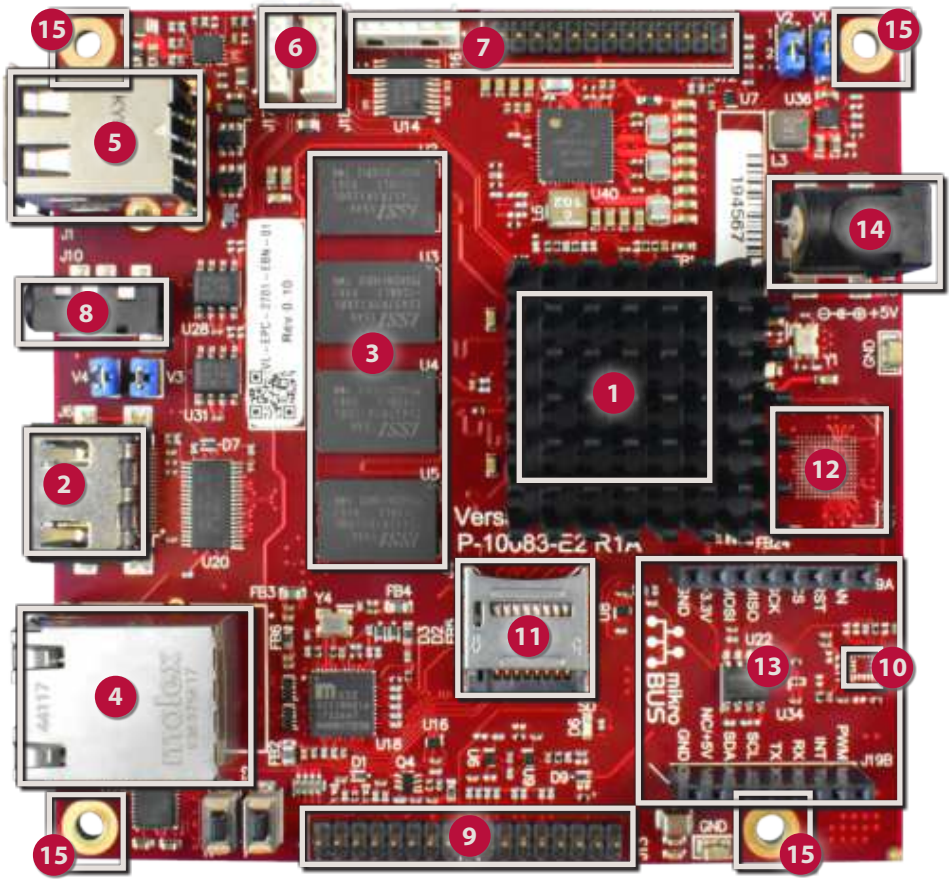
15 Standard Mounting Pattern
Same mounting holes as COM Express Compact

*Feature optional or available on some models only

Industrial Temperature Versions
-40° to +85°C operation for harsh environments

MIL-STD-202G
Qualified for high shock and vibration environments

Software Support
Compatible with a variety of popular Arm operating systems including Linux.
Support includes VersaAPI software for onboard I/O devices.



Modify Zebra to Your Exact Requirements

COTS modifications are available in quantities as low as 100 pieces.

- On-board RAM size
- On-board Flash storage size
- Accelerometer/ Magnetometer
- Standard Temperature Version
- Conformal Coating
- Connector & I/O Changes
- Custom Testing
- Custom Labeling
- BGA Underfill
- U-Boot Modifications
- Software and Drivers
- Revision Locks
- Custom Screening
- Application-Specific Testing
- Etc.

Specifications

General				
Board Size	95 x 95 x 20 mm (3.7 x 3.7 x .79")			
Weight	62 grams (2.1 oz.)			
Processor	NXP i.MX6 Solo and i.MX6 DualLite			
Input Voltage	5VDC +/- 5%			
Power Requirements §	*Model*	*Standby*	*Idle*	*Busy*
	VL-EPC-2701-EAK-005	0.53W	2.2W	2.7W
	VL-EPC-2701-EBK-01	0.53W	2.2W	3.0W
System Reset and Hardware Monitors	Major voltage rails monitored. Watchdog timer with programmable timeout. CPU temperature monitoring. Push-button reset.			
Manufacturing Standards	IPC-A-610 Class 2 modified			
Regulatory Compliance	RoHS (2011/65/EU), Conflict Minerals compliant.			

Environmental		
Operating Temperature ◊	-40° to +85°C	
Storage Temperature	-40° to +85°C	
Altitude	Operating*	To 4,570 m (15,000 ft.)
	Storage	To 12,000 m (40,000 ft.)
Airflow Requirements	0.5 Linear Meters per Second (100 Linear Feet per Minute)	
Thermal Shock	5°C/min. over operating temperature	
Humidity	Less than 95%, 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 ms duration per axis	

Memory	
System RAM	0.5 and 1 GB DDR3L soldered-on memory. Optional up to 4 GB.***

Video	
General	Integrated video controller. Supported video decoders: DivX 3/4/5/6, H.263, H.264, MJPEG, MPEG-1/2, MPEG-4, VC1. Video encoders: H.263, H.264, MJPEG, MPEG-4.
Desktop Display Interface ‡	HDMI V1.4 port

‡ TVS protected port (enhanced ESD protection)

Power pins are overcurrent protected

◊ Derate -1.1°C per 305 m (1,000 ft.) above 2,300 m (7,500 ft.)

* For extended altitude information contact VersaLogic Sales.

§ Represents operation at +25°C and +12V running Yocto Linux 2.1 with HDMI display, SATA, and USB keyboard/mouse. Busy power measured with "./bmt" Himeno Max Power. The power consumed is a direct result of the peripherals plugged into the Zebra board.

¤ MIL-STD-202G shock and vibration levels were used to illustrate the overall ruggedness of this product. Certification at higher levels or different types of shock or vibration methods per the specific requirements of the application is available. Contact VersaLogic Sales for further information.

*** Optional. Not available on all models—contact VersaLogic Sales.

Specifications are subject to change without notification. Arm and Cortex are trademarks of Arm Ltd. Android is a trademark of Google Inc. MikroBUS is a trademark of MikroElektronika. All other trademarks are the property of their respective owners.

Mass Storage	
Flash / Solid-State Drives	microSD socket, bootable
	eMMC MLC Flash drive (chip). 0 to 32 GB, bootable***

Network Interface	
Ethernet ‡	One autodetect 10BaseT/100BaseTX/1000BaseT port. Latching connector.
Network Boot	Supported

Device I/O	
USB # ‡	Two USB 2.0 host ports
Serial I/O	One UART (3.3V) One RS232 debug port ‡
Audio	Microphone and headphones in/out on single 3.5 mm audio jack. Line inputs/outputs on 34-pin I/O header.
Digital I/O	Eight CMOS level I/O lines (3.3V)
PWM	0 to 3 PWM outputs. Use of PWM outputs reduces GPIO pin count.
I2C	Two I2C interfaces
CAN Bus	Two channels CAN 2.0B, ISO 11898-2 compliant
Accelerometer / Magnetometer* **	6-axis sensor with integrated linear accelerometer and magnetometer

Other I/O	
MikroBUS	One socket supporting industry standard Click Boards
SPI Interface	Supports one channel with three device chip selects

Software	
VersaAPI	VersaLogic Application Programming Interface to support on-board I/O devices
Sleep Modes	i.MX6 Power Modes: - Run - Wait - Stop - Dormant
Operating Systems	Compatible with most Arm operating systems including Linux

Ordering Information

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

Model	CPU Model	Cores	Nominal CPU Speed	RAM Memory	eMMC Flash	6-axis e-compass	Operating Temperature
VL-EPC-2701-EAK-005	i.MX6 Solo	Single	800 MHz	0.5 GB	–	–	-40° to +85°C
VL-EPC-2701-EBK-01	i.MX6 DualLite	Dual	800 MHz	1 GB	–	–	-40° to +85°C

Other configurations are possible. Please contact VersaLogic Sales at (503) 747-2261 to discuss requirements.

Accessories

Part Number	Description
Cable/Development Kit	
VL-CKR-ZEBRA	Development Cable Kit for Zebra. Includes: VL-F41-8SBN-LINUX2 , CBR-0504, 2603, 3407, PS-WALL5-15.
VL-F41-8SBN-LINUX2	Linux Operating System, 8 GB MLC microSD card with bootable Linux, standard temperature
VL-CBR-0504	RS-232 Cable, 2mm 5-pin to DB-9M, 0.3m
VL-CBR-2603	Serial I/O (I2C, UART, SPI). 26-pin 2 mm IDC to Ribbon Cable, 0.5m
VL-CBR-3407	User I/O cable, 34-pin 2 mm IDC to Ribbon Cable, 0.5m
VL-PS-WALL5-15	Power Adapter, 90 ~ 264 VAC to 5VDC @ 3A, 5.5 mm ID plug, with international wall adaptors
Cables	
VL-CBR-0405	CAN bus cable, 2mm 4-pin to 2mm 4-pin MicroClasp, 1m
VL-CBR-0406	CAN bus cable, 2mm 4-pin MicroClasp to DB9 connector
Solid-State Storage (flash memory)	
VL-F41-xxxx	microSD card (SDIO), SLC, industrial temperature

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Whether it's selecting the optimum solution for your application, lending expertise during development, or on-time delivery of defect-free products, VersaLogic is here to make sure your project goes smoothly from initial concept through the extended life of your program. Contact VersaLogic today to learn more.

ISO 9001:2015 Certified

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