

# MAHOGANY

## KEY FEATURES

### PCIe Interface

- 1 x16 Gen4 edge connector to a host
- 9 Gen4 x4 MICO Ext. HD connector

### PCIe Clock Interface

- Common reference clock with or without spread spectrum clocking (SSC)
- Separate reference clock no SSC (SRNS)

### Serial Peripheral Interfaces (SPI)

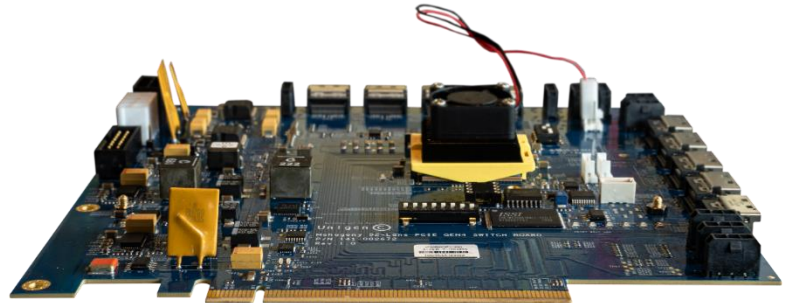
- 2 quad SPI buses
- 256Mb on-board SPI flash for bootup and initialization

### PFX Software Development Kit

- Allows development and test of custom PCIe switch functionality

### Peripheral I/O Interfaces

- I2C for SMBus Interfaces
- 128 Kbps SEEPROM for storage and PCIe switch configuration (2Kb)
- TWI bus access and connectivity to the monitor, GPIO and TWI expanders
- 110 GPIOs with 3 dedicated as GPIOs, 106 GPIOs are multiplexed to provide TWI, SPI, SGPIO, Ethernet, and UART interfaces
- UART access using 5-pin header
- 14-pin EJTAG connector header for Green Hills Software probe connectivity



The MAHOGANY Evaluation Kit (EVK) enables the testing and evaluation of the Microchip Switchtec PFX PM40052 Gen4 PCIe Switch in low-lane configurations. The EVK can be installed in a PCIe host slot to enable connections to up to 9 Gen4 x4 endpoint devices, such as NVMe SSDs. The Switchtec PFX Gen4 PCIe switches are configurable and managed through external interfaces, utilizing an embedded processor running turnkey firmware stored in flash memory. The EVK contains an evaluation board, cables, turnkey firmware, and ChipLink Diagnostic Tools software. ChipLink is convenient and easy-to-use Windows/Mac/Linux-based GUI that provides access to all hardware functions and status information. The MAHOGANY EVK was designed in close collaboration with Microchip to ensure customers receive a high-performance, robust platform to conduct testing and validation for low-lane count applications. Unigen also offers customization services should customers require a subset of features or unique form factors.

## KEY FEATURES CONT.

### Power Supply

- 0.84 V, 1.8 V and 3.3V power rails supplied by on-board regulators
- PCIe switch sense points for monitoring and measuring power rail voltages
- 12 V power provided through PCIe slot and 2 ATX supplemental power connectors

### ChipLink Diagnostic Tools

- Access to registers in the PCIe switch
- Configuration of high-speed analog settings for signal integrity evaluation
- Monitoring of status and mode indicators

### Kit Contents

- Switchtec PFX PM40052 PCIe Gen4 Evaluation Board

- PCIe bracket for mounting
- 9 MCIO to U.2 cables
- MCIO to MCIO loopback cable
- Standoffs and screws
- User Guide

### Kit Requirements (Supplied Separately)

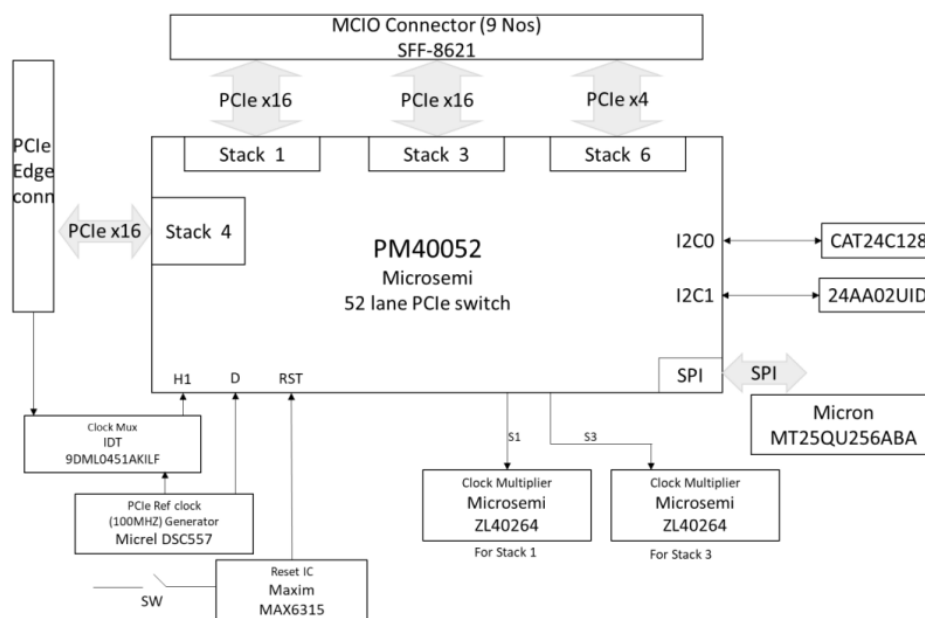
- Personal computer running Windows, Linux, or Mac OS
- ATX 750 W power supply, 2x3 and 2x4 pin 12V ATX connect

### Optional Evaluation Kit Cables

Not included, but available for separate purchase:

- Cable USB UART

## BLOCK DIAGRAM



# SPECIFICATIONS

Appearance	
Dimensions	170 x 190 x 27 (mm)
Weight	227g
Form Factor	PCIe Add-In-Card (AIC)
Interface	
Interface	PCIe Gen 4 x52 lanes
Operating Environment	
Operating Temperature	0°C ~ 70°C
Storage Temperature	-40°C ~ 95°C
Non-Operating Humidity	5% ~ 90%
Non-Operating Shock	500G
Non-Operation Vibration	5G
Power	
Power Requirement	PCIe 12V (66/75W), ATX PCIe 12V (75W), ATX CPU 12V (150W)
Power Consumption (idle)	< 50W
Performance	
Sequential Read/Write (max.)	Read: 252 GT/s (16 lanes Gen 4)
	Write: 252 GT/s (16 lanes Gen 4)
4K Random Read/ Write (IOPS max.)	Read: 252 GT/s (16 lanes Gen 4)
	Write: 252 GT/s (16 lanes Gen 4)
Mean Time Between Failures	≧1,000,000 hrs