JMicron Technology Corporation

Product Brief

JMS586A
USB 3.2 Gen 2x2 to PCIe Gen 3x2 Bridge Controller

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Revision History

Revision Number	Effective Date	Description of Revision		Author
		Reference	Description of Change	
0.1	04/16/2021	--	Initial release	Joe Chang
1.00	12/10/2021	Section 1 Figure 2	Revised overview section Revised application scenario diagram	Katrina Mo
1.05	07/01/2026	Section 1~3	Revised sections for “Overview”, “Features” and “Block Diagram”	Robert Lin

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1 Overview

JMS586A is a bridge controller between a USB host and a storage device with a PCIe interface. The upstream port supports USB connectivity and is compliant with the USB 3.2 Gen 2x2 standard with data rates up to 20Gb/s. The downstream port supports either (1) one PCIe AHCI/NVMe Gen 3x2 port, or (2) Port0 is AHCI Gen 3x2 and Port1 is NVMe Gen 3x2. The PCIe interface can be connected to PCIe storage devices at data rates up to 16Gb/s, such as SSDs. JMS586A is built for the DIY recycle market that targets the NVMe/AHCI SSD. Therefore, it can perfectly support the NVMe/AHCI SSD in the market.

JMS586A integrates USB Type-C™ configuration channel (CC) logic. The device with JMS586A can use a USB Type-C™ connector without adding any additional peripheral part. JMS586A can also support external Power Delivery controller to build Power Delivery (PD) enabled data storage device. The data storage devices with large capacity SSD can accept the electrical power from sources of energy, such as hosts acting as a power provider of USB PD to supply sufficient electricity to the device after they negotiate with each other.

JMS586A supports TRIM to the SSD and can transmit and receive data by both of the USB Mass Storage Class Bulk-Only Transport (BOT) and USB Attached SCSI Protocol (UASP) to and from the host respectively. The data storage devices can achieve its summit of performance by taking advantage of these built-in unmatched features.

2 Features

2.1 General Features

- USB 3.2 Gen 2x2 to PCIe Gen 3x2 or 2x PCIe Gen 3x2 Bridge
- Design for Windows 7, Windows 10 and MAC 10.10.5 or later version
- Support firmware download through USB 2 / USB 3.2
- Support 25 GPIOs for customization
- Support SPI/I2C/UART/LED control with PWM
- Support 3.3V I/O
- Support 25MHz external crystal
- QFN100 10x10mm^2 package

2.2 Universal Serial Bus

- Comply with USB 3.2 Gen 2x2 Specification
- Support USB 3.2 Gen 2x2, up to 20Gb/s
- Integrate with USB Type-C™ multiplexer & configuration channel (CC) logic
- Support USB 2.0/ USB 3.2 Gen 1/ Gen 2 power saving mode
- Comply with USB Mass Storage Class, Bulk-Only Transport Specification (Revision 1.0)
- Comply with USB Attached SCSI Protocol (UASP) Specification (Revision 4)
- Support external SPI NVRAM for Vendor VID/PID of USB 2.0/USB 3.2 Gen 1/2 device controller
- Support SCSI command translation to NVM Express
- Support SCSC command translation to AHCI

2.3 PCI Express

- Comply with PCI Express Base Specification Revision 3.1a
- Comply with AHCI 1.3.1
- Comply with NVM Express 1.4
- Support PCIe0 Gen 3x2, up to 16Gb/s
- Support PCIe1 Gen 3x2, up to 16Gb/s
- Support TRIM to the SSD
- Support AHCI standard command set
- Support SCSI to AHCI ATA pass-through command
- Support NVMe standard command set
- Support SCSI to NVM Express pass-through command

3 Block Diagram

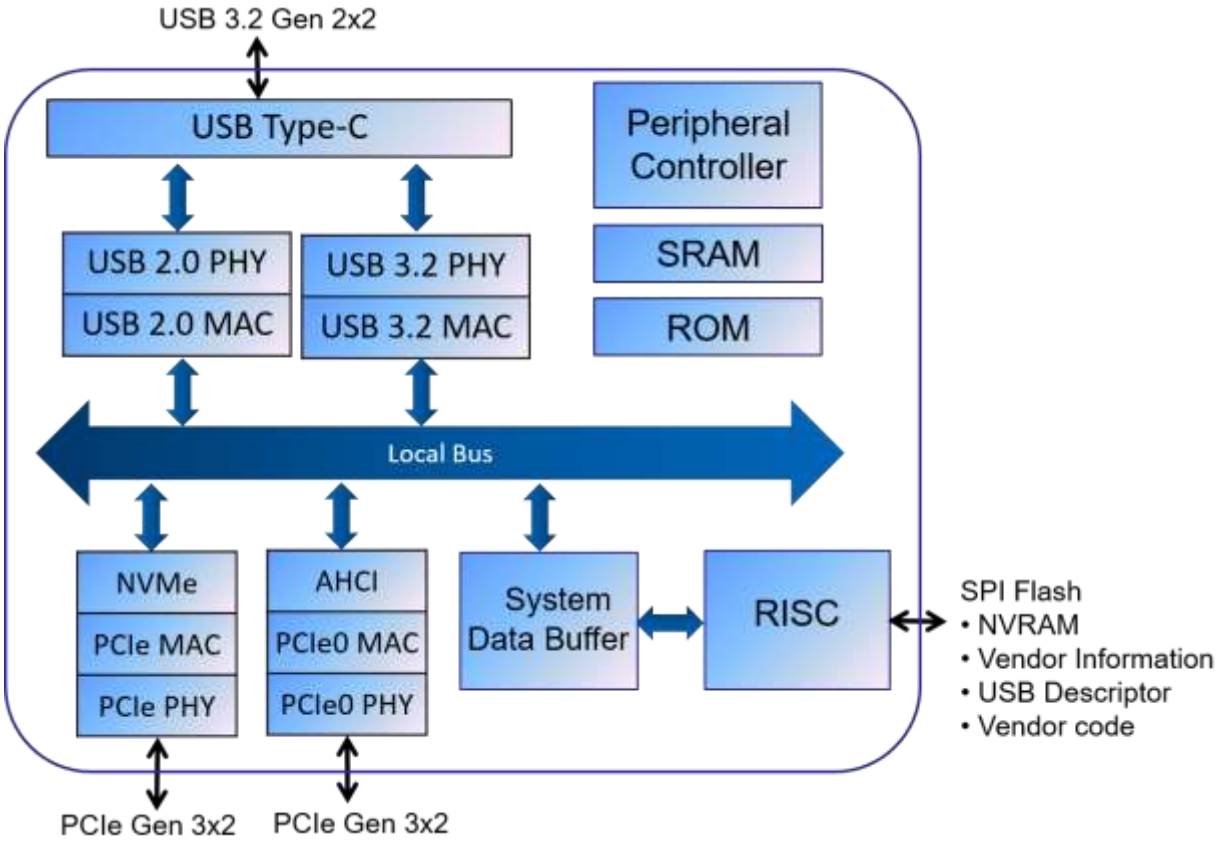


Figure 1 Block Diagram – JMS586A

4 Application

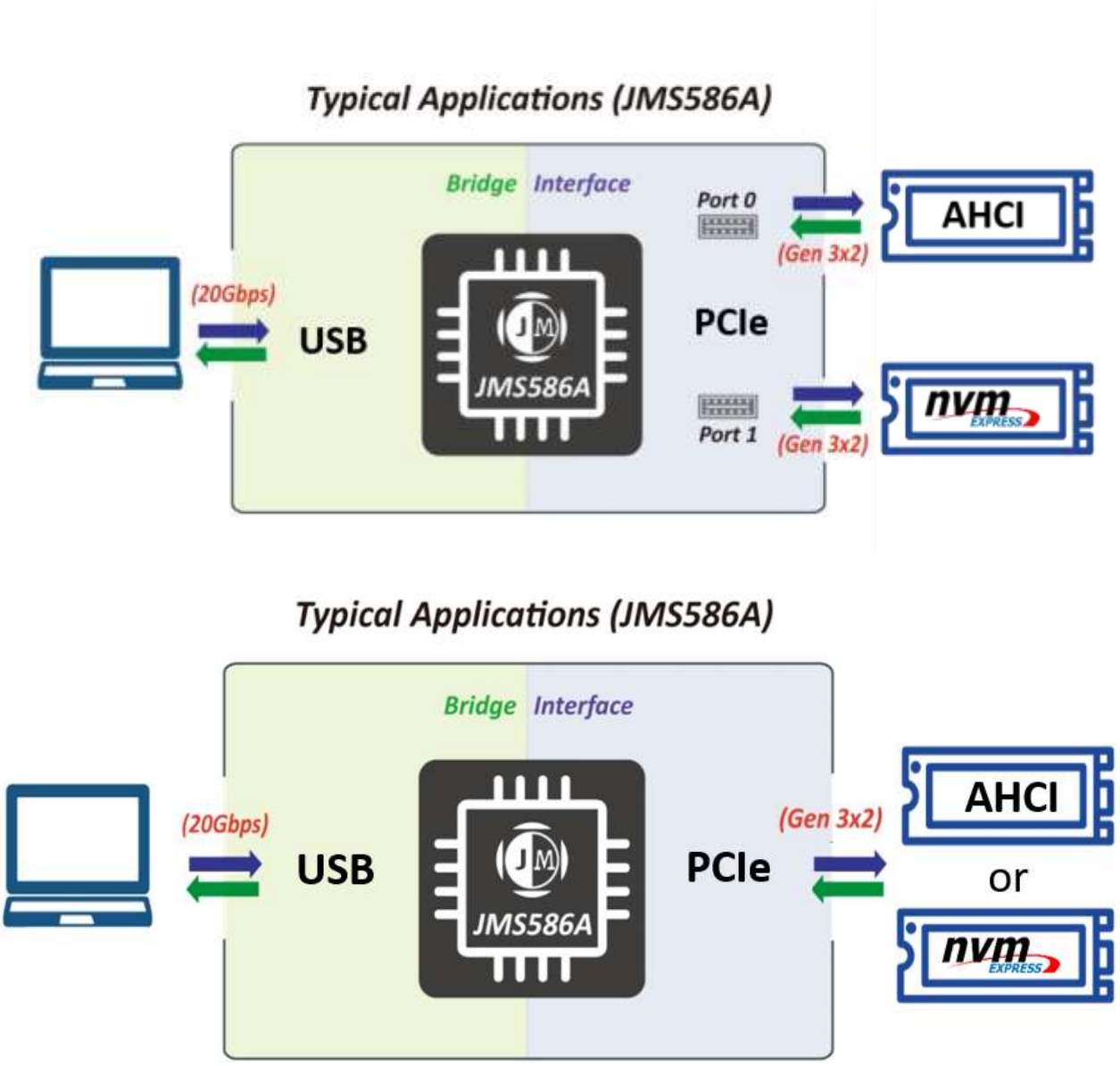


Figure 2 Application Scenario

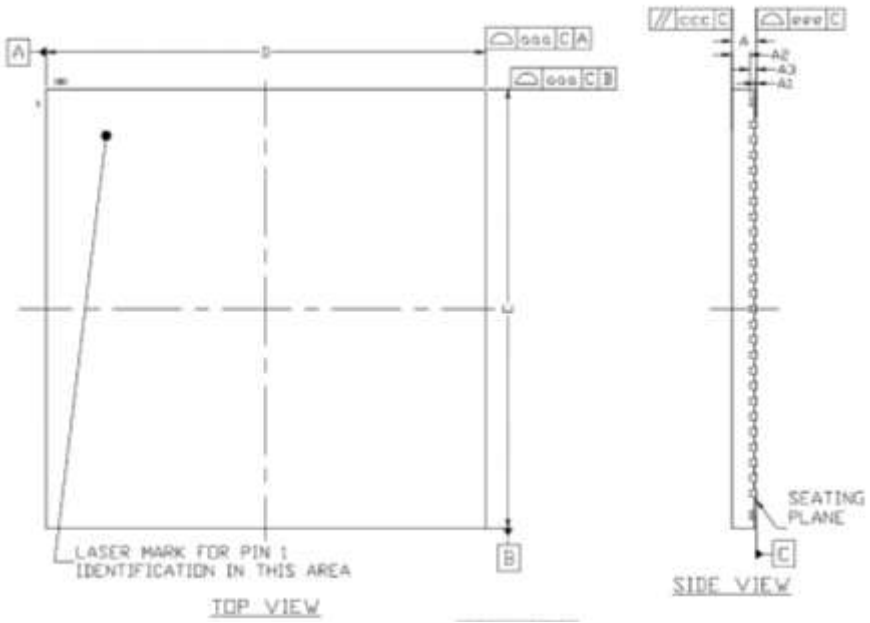
5 Package Dimension

* CONTROLLING DIMENSION : MM

SYMBOL	MILLIMETER			INCH		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	—	—	0.900	—	—	0.035
A1	0.000	—	0.050	0.000	—	0.002
A2	—	0.650	0.700	—	0.026	0.028
A3		0.152	REF.		0.006	REF.
b	0.130	0.180	0.230	0.005	0.007	0.009
D		10	BSC		0.394	BSC
D2	8.600	8.700	8.800	0.339	0.343	0.346
E		10	BSC		0.394	BSC
E2	8.600	8.700	8.800	0.339	0.343	0.346
L	0.300	0.400	0.500	0.012	0.016	0.020
e		0.350	BSC		0.014	BSC
R	0.065	—	—	0.003	—	—
TOLERANCES OF FORM AND POSITION						
aaa	0.100			0.004		
bbb	0.070			0.003		
ccc	0.100			0.004		
ddd	0.050			0.002		
eee	0.080			0.003		
fff	0.100			0.004		

NOTES :
1.ALL DIMENSIONS ARE IN MILLIMETERS.
2.DIE THICKNESS ALLOWABLE IS 0.305 mm MAXIMUM.(12 INCHES MAXIMUM)
3.DIMENSIONING & TOLERANCES CONFORM TO ASME Y14.5M. -1994.
4.THE PIN #1 IDENTIFIER MUST BE PLACED ON THE TOP SURFACE OF THE PACKAGE BY USING INDENTATION MARK OR OTHER FEATURE OF PACKAGE BODY.
5.EXACT SHAPE AND SIZE OF THIS FEATURE IS OPTIONAL.
6.PACKAGE WARPAGE MAX 0.08 mm.
7.APPLIED FOR EXPOSED PAD AND TERMINALS. EXCLUDE EMBEDDING PART OF EXPOSED PAD FROM MEASURING.
8.APPLIED ONLY TO TERMINALS.

ASE		SCALE:	PROJ:
TITLE: PACKAGE OUTLINE 100 L QFN 10 x 10 x 0.65 mm		DWG. NO. AAAI8842	REV. 0
		SHEET 1 OF 2	SIZE A4
UNIT	TOLERANCE: DIMENSION	ANGLE	REFERENCE DOCUMENT
INCH / MM			



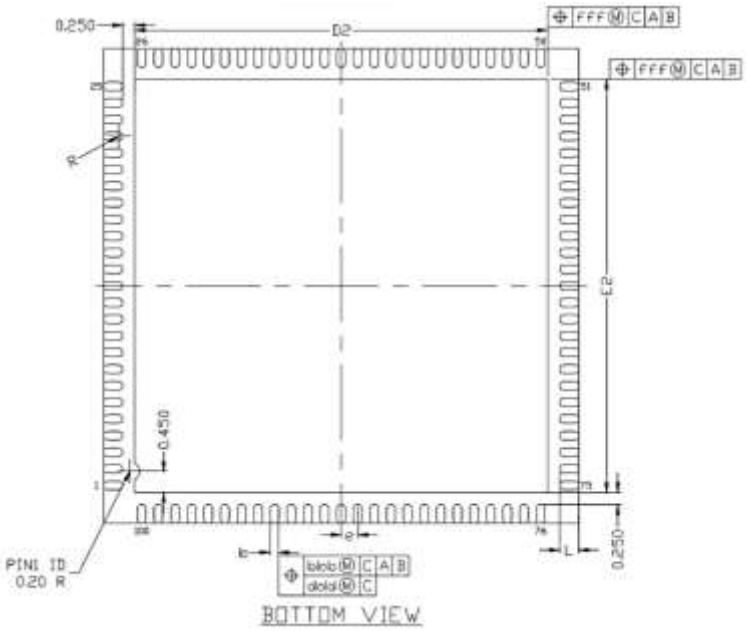


Figure 3 Package Outline Drawing of QFN100 10x10mm^2

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