



## Product Brief

# **JMS586U** **USB 3.2 Gen 2x2 to x2 PCIe Gen 3x2** **Bridge Controller with Clone/Erase/PM**

Document No.: PDB-00000010 / Revision: 1.00 / Date: 12/15/2021

### **JMicron Technology Corporation**

1F, No. 13, Innovation Road 1, Science-Based Industrial Park,

Hsinchu, Taiwan 300, R.O.C.

Tel: 886-3-5797389

Fax: 886-3-5799566

Email: [sales@jmicron.com](mailto:sales@jmicron.com)

Website: <http://www.jmicron.com>

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Printed in Taiwan 2021

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Tel: 886-3-5797389

Fax: 886-3-5799566

### Revision History

Revision number	Effective date	Description of revision		Author
		Reference	Description of change	
0.01	04/16/2021	--	Initial release	Joe Chang
1.00	12/15/2021	Section 2 Section 5	Revised Features section Revised Package Dimension section	Katrina Mo

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## 1 Overview

JMS586U is a bridge controller between a USB host and storage devices 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 two PCIe Gen 3x2 ports, and able to be configured to either (1) both ports compatible with NVMe, or (2) Port0 is AHCI and Port1 is NVMe. They can be connected to PCIe storage devices at data rates up to 32Gb/s, such as SSDs and CFexpress cards.

For better data safety, JMS586U supports the Clone function, which enables to perfectly copy everything from one drive to another. The function of Port Multiplier can be a cost-effective and convenient solution to expanding the scalability of storage.

JMS586U integrates USB Type-C™ configuration channel (CC) logic. The device with JMS586U can use a USB Type-C™ connector without adding any additional peripheral part. JMS586U 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.

JMS586U 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.

JMS586U is well equipped for power management that it can meet a wide variety of power requirements from different scales of data storage systems: those for data center, network attached storage (NAS) system, and portable SSDs, and even those for thumb-sized Internet-of-Things (IoT) devices.

JMS586U is a new product that almost reaches USB 3.2 Gen 2x2 line bandwidth. Using JMS586U, the security system can transfer higher quality video, such as 4K or even 8K, and quicker to their data storage devices than ever..

## 2 Features

### 2.1 General Features

- USB 3.2 Gen 2x2 to two PCIe Gen 3x2 Bridge
- Design for Windows 7, Windows 10 and MAC 10.10.5 or later version
- Support firmware download through USB 2.0 / 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<sup>2</sup> 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 USB2.0/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 NVM Express 1.4
- Comply with AHCI 1.3.1
- Support two PCIe Gen 3x2, each up to 16Gb/s
- Support TRIM to the SSD
- Support NVM Express standard command set
- Support SCSI to NVM Express pass-through command
- Support AHCI standard command set
- Support SCSI to AHCI ATA pass-through command

## 2.4 PCIe SSD Duplicator and Eraser

- Support one button clone copy and one button erase in offline mode
- Support read error skip at the source drive
- Support Intelligent Duplication Modes
  - Whole disk clone
- Support Sanitization Methods
  - (1) Quick Erase: erase SSD index table in a few seconds
  - (2) Full Erase: erases the entire SSD with 0x00 or 0xFF
  - (3) DoD Erase Function
  - (4) Random Erase
- Support System Log

### 3 Block Diagram

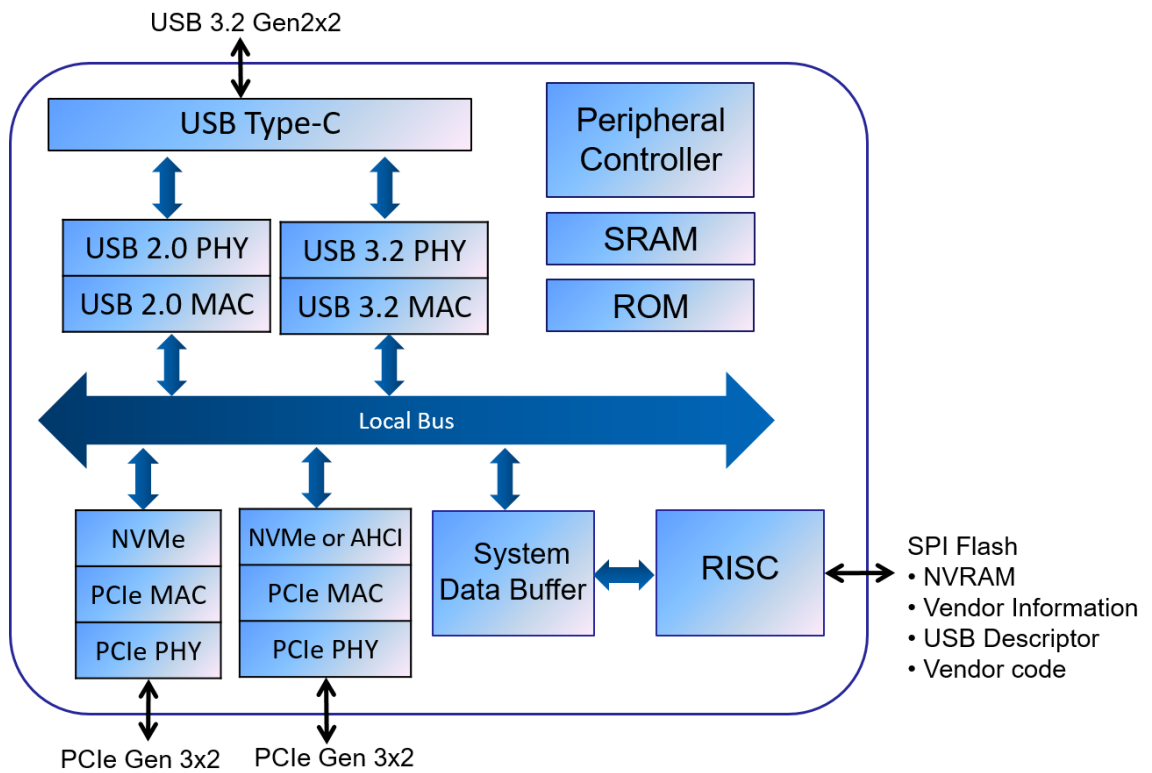


Figure 1 Block Diagram – JMS586U



## 4 Application

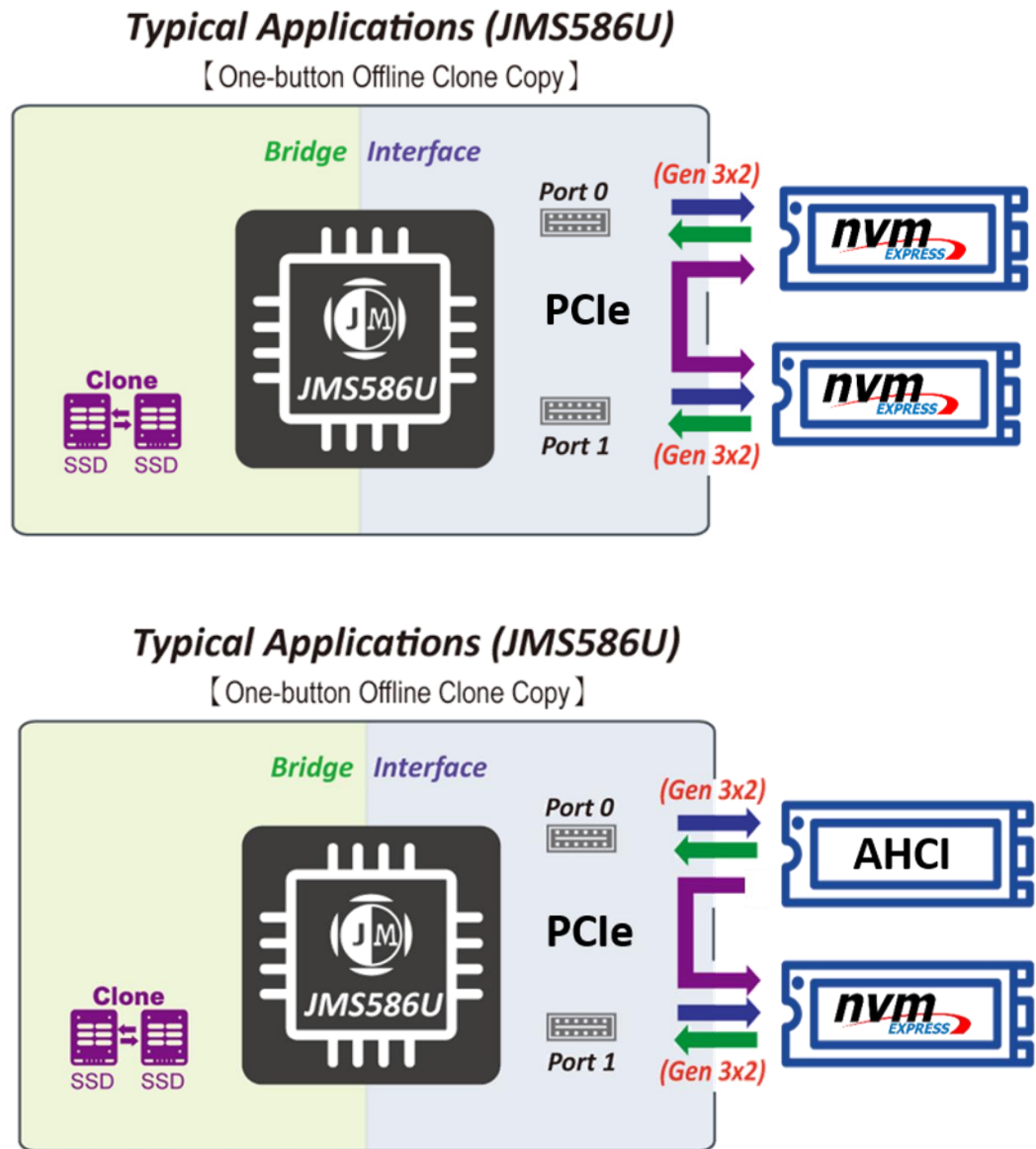
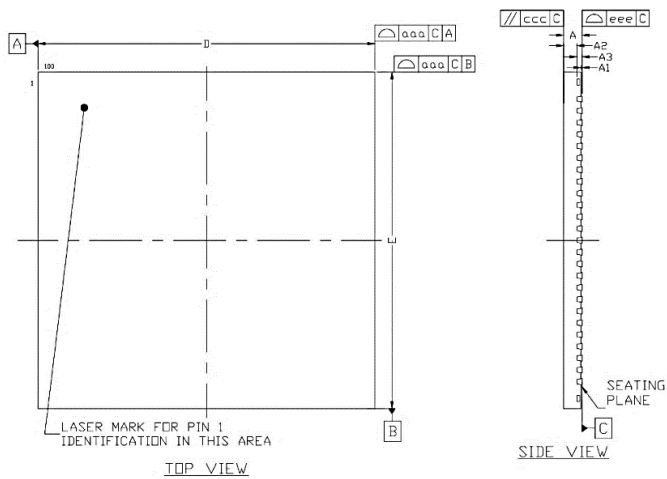


Figure 2 Application Scenario

### 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	—	0.200	0.006	—	0.008
b	0.130	0.180	0.230	0.005	0.007	0.009
D	10	BSC	—	0.394	BSC	—
D2	7.700	—	8.800	0.303	—	0.346
E	10	BSC	—	0.394	BSC	—
E2	7.700	—	8.800	0.303	—	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			

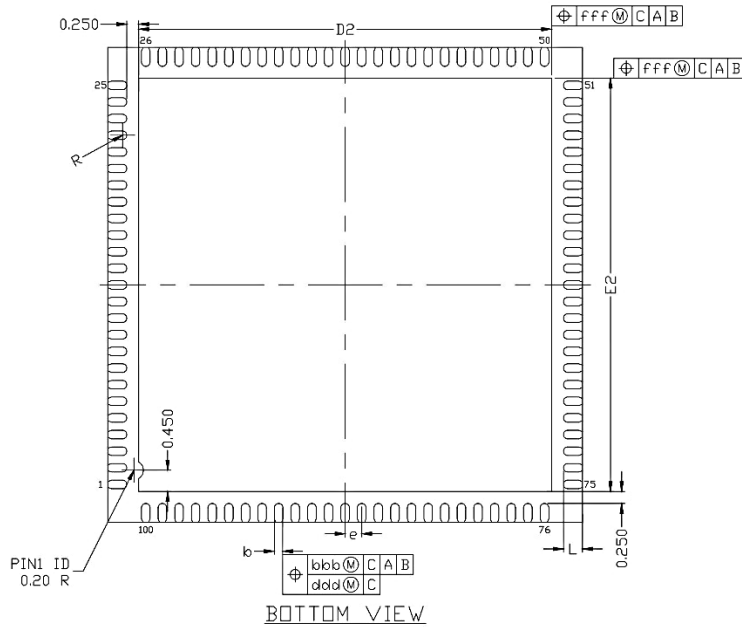


Figure 3 Package Outline Drawing of QFN100 10x10mm<sup>2</sup>

**How to Reach Us:**

- Home Page: <http://www.jmicron.com>
- Technical & Order Support: [sales@jmicron.com](mailto:sales@jmicron.com)

A series of thin, light gray lines that resemble circuit traces or data paths, starting from the left and moving towards the right, with some lines curving upwards and others downwards, creating a sense of movement and connectivity.

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