JMicron Technology Corporation

Product Brief

JMS581SD
USB 3.2 Gen2x1 to SD Express Bridge Controller

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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

Website: http://www.jmicron.com

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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

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Revision History

Revision number	Effective date	Description of revision		Author
		Reference	Description of change	
1.00	20/01/2020	--	Initial release	Larry Chien
1.01	24/04/2020	Section 5	Modify the package dimension	Katrina Mo

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1 Overview

JMS581SD is a system on chip solution which embedded with USB 3.2 Gen2x1 10Gb/s to SD Express interfaces. Its upstream port provides a USB which data speed can reach up to 10Gb/s. Meanwhile, its downstream port can connect to UHS-1 and SD Express memory card. SD Express port can achieve up to maximum 985MB/s data transfer rate. Meanwhile, JMS581SD can also support UHS-II and UHS-III through the backward compatibility with the speed of UHS-1 SDR104. Furthermore, JMS581SD enable to meet with the latest SD Ultra Capacity (SDUC) card specification, which can offer the theoretical capacity up to 128TB.

Moreover, JMS581SD has USB Type-C™ connectivity built in to the controller that any device using JMS581SD can have a USB Type-C™ connector without adding any additional peripheral part. It can save costs to buy parts, and efforts to build inventory, and it can reduce printed circuit board area for the system designs.

JMS581SD supports TRIM to the NAND flash based storages and enable 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.

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2 Features

2.1 General Features

- Design for Windows 7, Windows 10 and MAC 10.10.5 or later version
- Provide 8 hardware controlled PWMs
- Provide software utilities for downloading the upgraded firmware code under USB2.0/ USB3.2 Gen1 and USB3.2 Gen2
- 144TFBGA (9x9mm^2) package
- Support 25MHz external crystal
- Support 3.3V I/O
- 32 GPIOs for customization

2.2 Universal Serial Bus

- Comply with USB 3.2 Gen 1 and Gen 2 Specification,
- Comply with USB Mass Storage Class, Bulk-Only Transport Specification (Revision 1.0)
- Comply with USB Attached SCSI Protocol (UASP) Specification (Revision 4)
- Integrate with USB Type-C™ multiplexer & configuration channel (CC) logic
- Support USB Super-Speed/ High-Speed/ Full-Speed Operation
- Support USB2.0/ USB 3.2 Gen 1/ Gen 2 power saving mode
- Support external SPI NVRAM for Vendor VID/PID of USB2.0/USB 3.2 Gen 1/2 device controller

2.3 SD Express

- Support SD 3.01 UHS-1
- Support SD 7.1 SD Express (PCIe Gen3x1 NVMe 1.3)

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3 Block Diagram

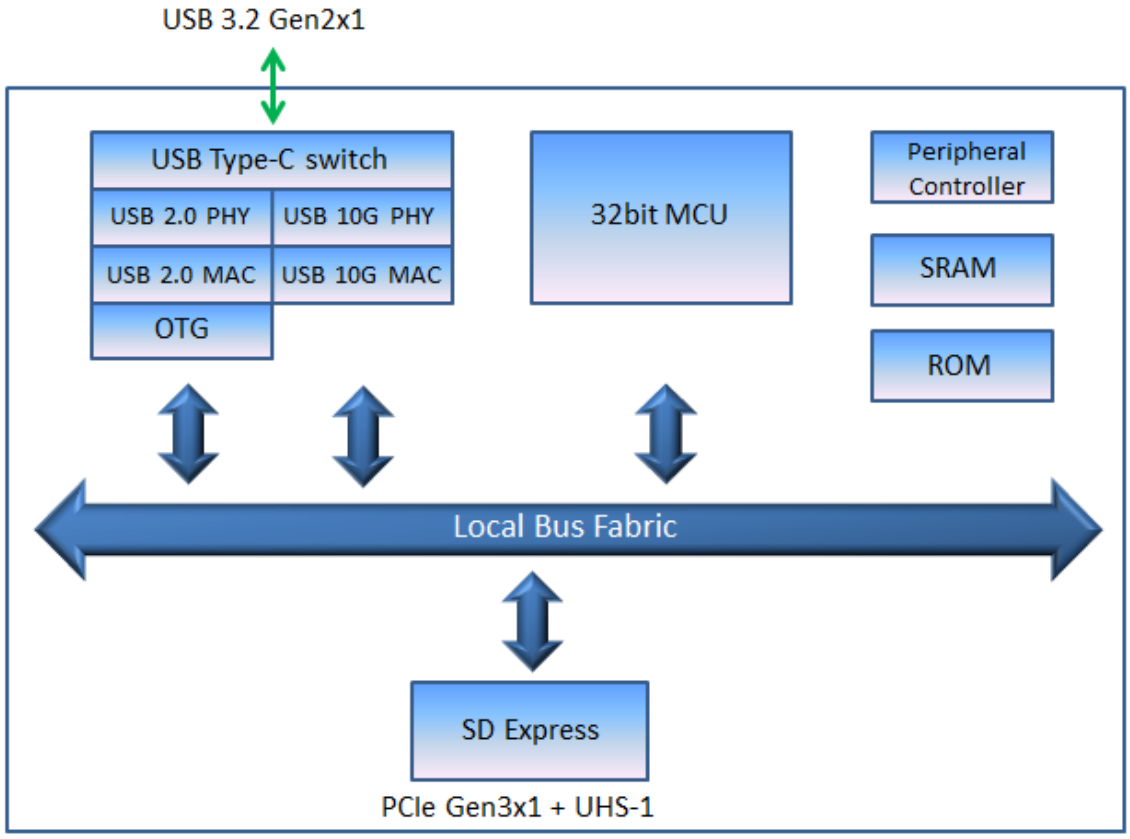

Figure 1 Block Diagram – JMS581SD

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4 Application

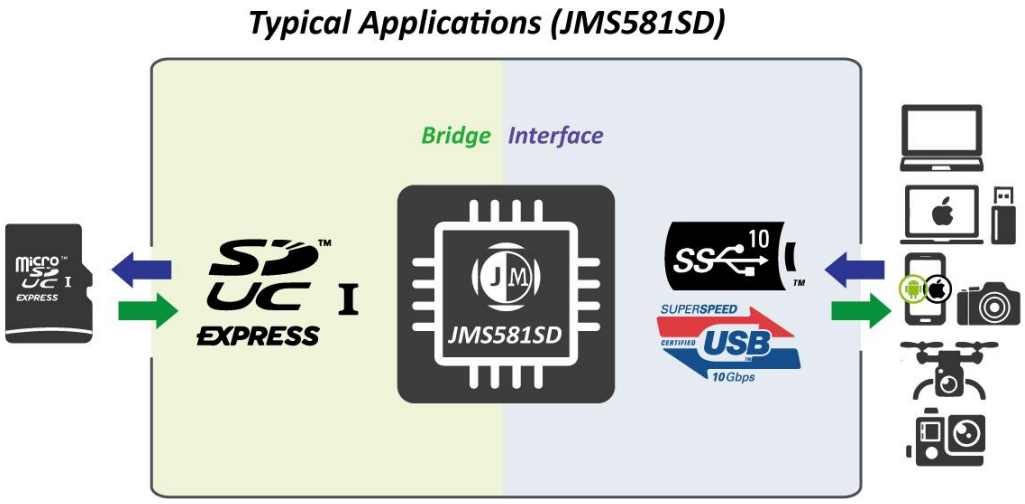

Figure 2 Application Scenarios

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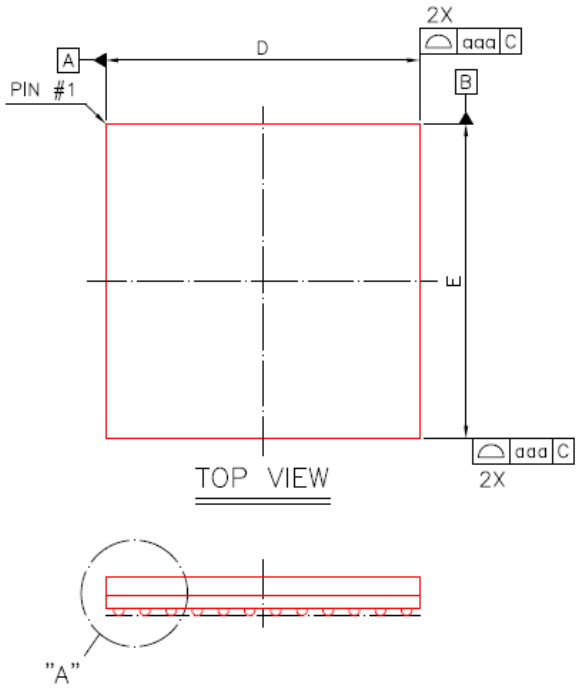
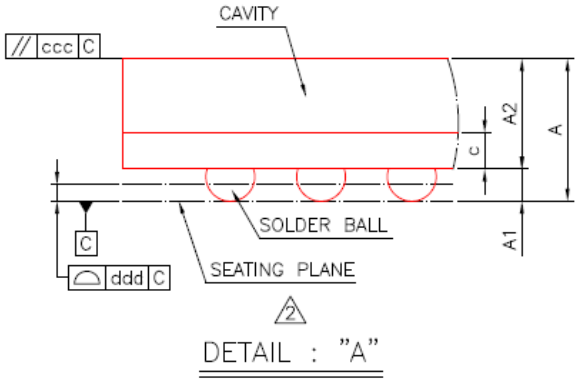
5 Package Dimension

Symbol	Dimension in mm			Dimension in inch		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.03	1.10	1.17	0.041	0.043	0.046
A1	0.16	0.21	0.26	0.006	0.008	0.010
A2	0.84	0.89	0.94	0.033	0.035	0.037
c	0.32	0.36	0.40	0.013	0.014	0.016
D	8.90	9.00	9.10	0.350	0.354	0.358
E	8.90	9.00	9.10	0.350	0.354	0.358
D1	---	8.25	---	---	0.325	---
E1	---	8.25	---	---	0.325	---
e	---	0.75	---	---	0.030	---
b	0.25	0.30	0.35	0.010	0.012	0.014
aaa		0.15			0.006	
ccc		0.10			0.004	
ddd		0.08			0.003	
eee		0.15			0.006	
fff		0.08			0.003	
MD/ME		12/12				

NOTE :
1. CONTROLLING DIMENSION : MILLIMETER.
2. PRIMARY DATUM C AND SEATING PLANE ARE DEFINED BY THE SPHERICAL CROWNS OF THE SOLDER BALLS.
3. DIMENSION b IS MEASURED AT THE MAXIMUM SOLDER BALL DIAMETER, PARALLEL TO PRIMARY DATUM C.
4. SPECIAL CHARACTERISTICS C CLASS: ccc,ddd(SPIL STANDARD)
5. THE PATTERN OF PIN 1 FIDUCIAL IS FOR REFERENCE ONLY.
6. REFERENCE DOCUMENT : JEDEC PUBLICATION 95 DESIGN GUIDE 4.5





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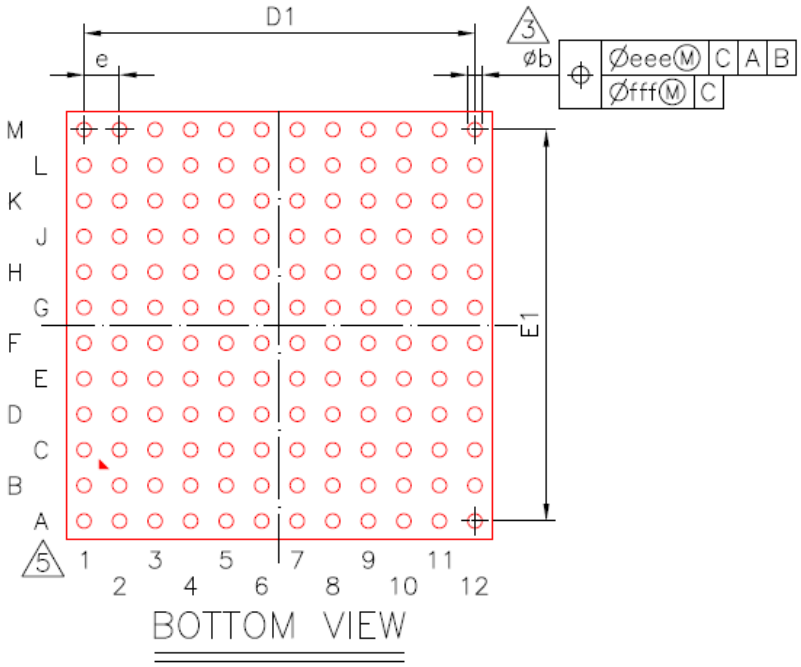

Figure 3 Package Outline Drawing of 144TFBGA 9x9mm²

How to Reach Us:

- Home Page: http://www.jmicron.com
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