

# MARVELL® MSB0143 Multimedia South Bridge

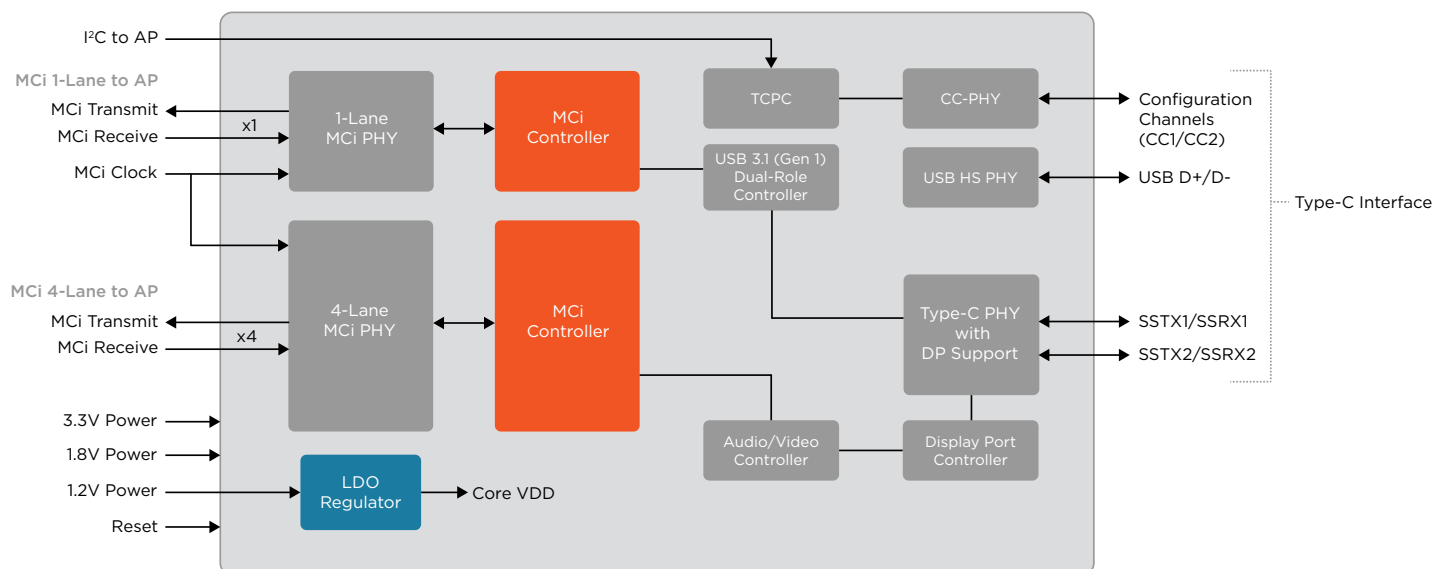
DisplayPort 1.3 and USB 3.1 (Gen 1) Connectivity through USB Type-C

## PRODUCT OVERVIEW

The Marvell® MSB0143 is a multimedia solution in Marvell’s MoChi™ South Bridge (SB) family of products. The MSB0143 delivers USB 3.1 (Gen 1) and DisplayPort 1.3 connectivity through its USB Type-C interface. Its integrated display controller and DisplayPort (DP) controller supports 4K video resolution, its USB controller provides both Host and Device capabilities, and its integrated USB Type-C Port Controller (TCPC) supports attachment and orientation detection, power and data role negotiation, and alternate-mode handshaking. The MSB0143 offers 3 options for its Type-C interface: as a four-lane DP connection, as a two-lane DP connection and USB 3.1 (Gen 1) connection, or as a dedicated USB 3.1 (Gen 1) connection. Utilizing this MoChi solution offers developers many advantages, including: 1) scalability across product needs, 2) possibility to add/replace features with drastically improved time-to-market, and 3) flexibility in board placement.

The MSB0143 is connected through its two MoChi Interconnect (MCi) interfaces—one single-lane interface and one four-lane interface—to Marvell’s MCi-enabled Application Processor (AP) with a raw bandwidth of 8 Gbps and 32 Gbps respectively. Maximum performance is ensured by isolating the video and USB traffic to the four-lane MCi and the single-lane MCi. The MCi interface is transparent and, therefore, MSB0143 appears to the application as an integrated function in the AP.

## BLOCK DIAGRAM



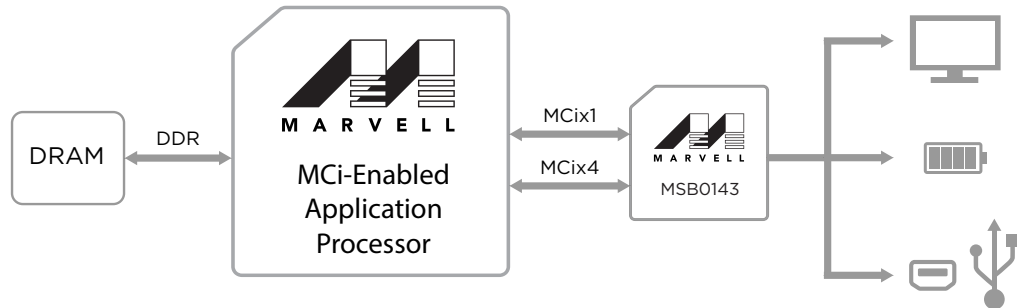
Marvell MSB0143 Block Diagram

## KEY FEATURES AND BENEFITS

FEATURES		BENEFITS
Package		<ul style="list-style-type: none"> <li>6x6 mm DRQFN (76 pin, 0.5 mm pitch)</li> </ul>
MCi Interface		<ul style="list-style-type: none"> <li>4 lane (up to 8 Gbps per lane) for video streaming</li> <li>1 lane (up to 8 Gbps) for USB and audio</li> </ul>
Power Supply		<ul style="list-style-type: none"> <li>1.2V, 1.8V, and 3.3V supplies required</li> <li>Built in, on-chip LDO regulator internal core supply</li> </ul>
Low Power		<ul style="list-style-type: none"> <li>USB 3.1 U1, U2, and U3 power management with remote wake up</li> <li>Reference clock removal and power gating when in hibernation</li> </ul>
Display Controller		<ul style="list-style-type: none"> <li>Input video data from AP: 8-bit and 10-bit RGB444-packed, 8-bit ARGB4444, 8-bit YCbCr422</li> <li>Output video data to DisplayPort controller: 8-bit and 10-bit RGB444, 8-bit and 10-bit YCbCr444, 8-bit and 10-bit YCbCr422</li> </ul>
DisplayPort Controller		<ul style="list-style-type: none"> <li>2-channel 192 kHz audio</li> <li>Compliant with DP 1.3 and supports HDCP 1.3 and 2.2</li> </ul>
USB Controller	Host	<ul style="list-style-type: none"> <li>1 SS/HS/FS/LS root hub port compliant with USB 3.1 (Gen 1) and xHCI 1.1</li> <li>Up to 32 device slots and 128 endpoints</li> </ul>
	Device	<ul style="list-style-type: none"> <li>1 SS/HS/FS/LS port compliant with USB 3.1 (Gen 1)</li> <li>Endpoints: 8 IN with 2 supporting bulk streaming, 8 OUT with 2 supporting bulk streaming, and 1 control</li> </ul>
Type-C Interface		<ul style="list-style-type: none"> <li>Operation as dedicated USB 3.1 (Gen 1) connection, 2 lane DP and USB 3.1 (Gen 1) connection, or 4 lane DP connection</li> <li>USB 3.1 power and role negotiation and DP alternate-mode negotiation</li> <li>Power delivery compliant with USB PD 2.0</li> </ul>
Analog-to-Digital Converter		<ul style="list-style-type: none"> <li>2 channels, 12 bits at 8 kHz with I<sup>2</sup>C-dedicated channel</li> </ul>

## TARGET APPLICATIONS

- I/O expansion in any Marvell MoChi platform
- Consumer electronic devices
- Digital entertainment (set-top boxes and DTV)
- Graphic and video displays
- Gaming platforms
- Personal computers (laptops)



**ABOUT MARVELL:** Marvell (NASDAQ: MRVL) is a global leader in providing complete silicon solutions. From storage to cloud infrastructure, Internet of Things (IoT), connectivity and multimedia, Marvell's diverse product portfolio aligns complete platform designs with industry-leading performance, security, reliability and efficiency. For additional information, including Marvell's sales offices and representatives, please visit our website at [www.marvell.com](http://www.marvell.com).