

# MARVELL® MSB0140 ISP and Machine Vision South Bridge

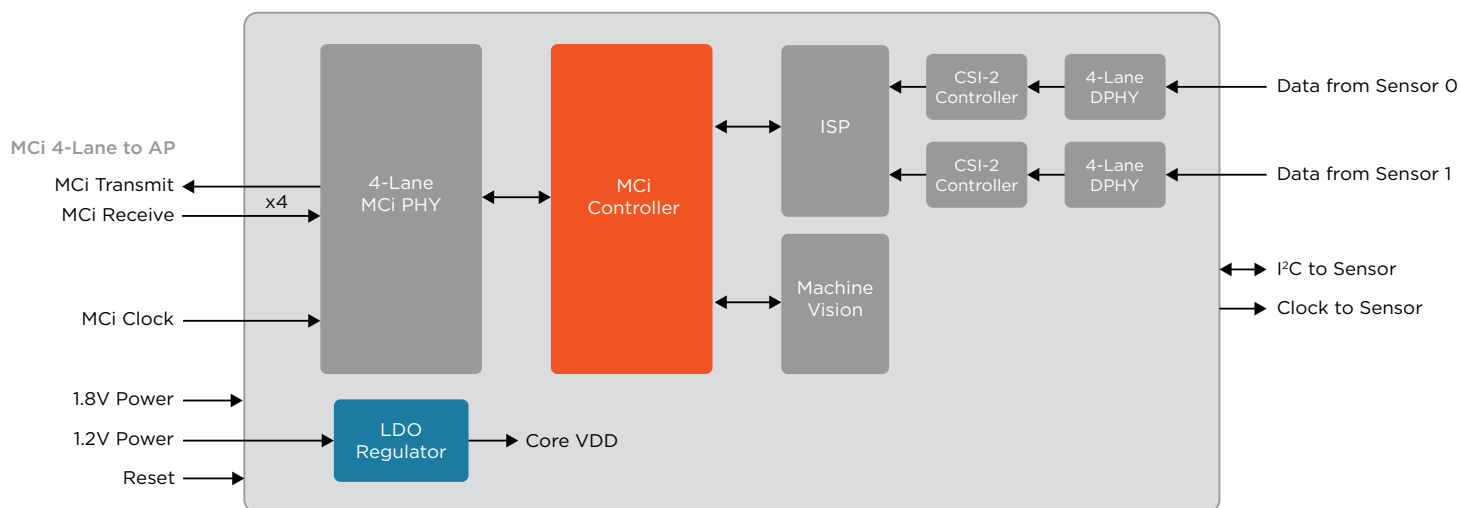
Dual 4K Camera, Image Processing up to 20 Megapixels

## PRODUCT OVERVIEW

The Marvell® MSB0140 is an Image Signal Processor (ISP) and machine vision solution in Marvell's MoChi™ South Bridge (SB) family of products. The MSB0140 has an integrated full-featured ISP that supports advanced image corrections and enhancements and also has machine vision that supports multi-target detection and object classification. The dual, CSI-2 camera ports connect up to two camera sensors. The system supports capturing two UHD (4K) video streams as well as still images up to 20 megapixels. 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 MSB0140 is connected through its four-lane MoChi Interconnect (MCi) interface to Marvell's MCi-enabled Application Processor (AP) with a raw bandwidth of 32 Gbps. This bandwidth is more than sufficient even for today's high-performance video requirements. The MCi interface is transparent and, therefore, MSB0140 appears to the application as an integrated function in the AP.

## BLOCK DIAGRAM



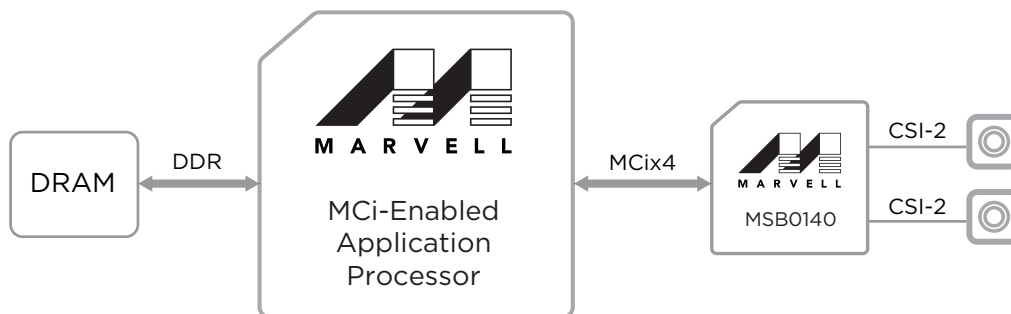
Marvell MSB0140 Block Diagram

## KEY FEATURES AND BENEFITS

| FEATURES                     | BENEFITS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Package                      | <ul style="list-style-type: none"> <li>• Small footprint 6x6 mm DRQFN (76 pin, 0.5/0.4 mm pitch)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                         |
| MCi Interface                | <ul style="list-style-type: none"> <li>• 4 lanes (up to 8 Gbps per lane)</li> <li>• 25, 26, 30, or 40 MHz shared MCi clock</li> </ul>                                                                                                                                                                                                                                                                                                                                                                               |
| Power Supply                 | <ul style="list-style-type: none"> <li>• 1.2V and 1.8V supplies required</li> <li>• Built in, on-chip LDO regulator for internal core supply</li> </ul>                                                                                                                                                                                                                                                                                                                                                             |
| CSI-2 Camera Port            | <ul style="list-style-type: none"> <li>• 2 CSI-2 camera ports</li> <li>• 4 data lanes/port</li> <li>• 2 Gbps/lane</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                        |
| Image Signal Processor (ISP) | <ul style="list-style-type: none"> <li>• 2 stereo cameras, 4Kx2K video streams at 30 fps</li> <li>• Sensors of up to 20 megapixels, ISP processing at 5 fps in burst mode and simultaneous raw capture at 30 fps</li> <li>• Bypass ISP to memory</li> <li>• Zero or negative shutter lag</li> <li>• Advanced chrome noise reduction and 3D DNS for video and still image</li> <li>• Integrated embedded Microcontroller Unit (MCU) to support native 3A control and settings/commands for ISP parameters</li> </ul> |
| Machine Vision               | <ul style="list-style-type: none"> <li>• Multiple target detection by category</li> <li>• Image field sizes up to qHD (960x540)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                          |

## TARGET APPLICATIONS

- I/O expansion in any Marvell MoChi platform
- Consumer electronic devices
- Internet of Things (IoT)
- Digital entertainment (set-top boxes and DTV)
- Imaging platforms (printers, cameras)
- Gaming platforms
- Personal computers (laptops)



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