*Product Overview*

# *MIPI Switches*

## Introduction

TI's portfolio of signal switches include several 6 GHz bandwidth devices that can support high-speed signal standards such as Mobile Industry Processor Interface (MIPI). These devices come in various channel counts and package options which enables designers to easily scale their system's video throughput and form factor.

The following diagrams show that multiple high-speed signal standards (C-PHY, D-PHY, and so forth) can be supported with a single device. Because these *MIPI* branded devices are low capacitance passive FET switches, many other high data rate protocols can be supported. Some examples include: LVDS, RGMII, LAN, DDR4, Ethernet, and so forth.

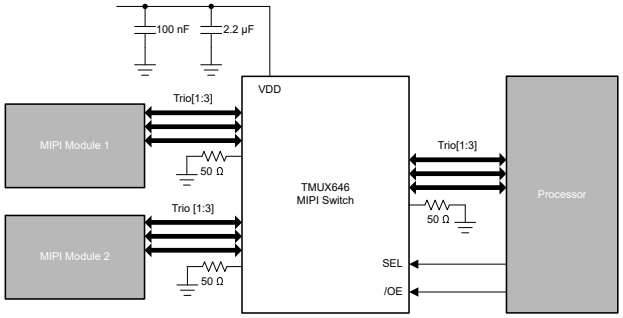


**Figure 1-1. Simplified C-PHY Schematic**

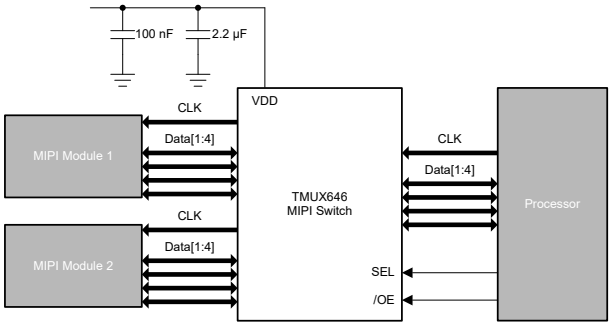


**Figure 1-2. Simplified D-PHY Schematic**

Each high bandwidth multiplexer includes s-parameter models and eye diagram comparisons for easy signal integrity simulation analysis.

The figures below show the comparison between a 6 Gbps signal passing through a low capacitance signal switch like the TMUX646 compared to a through path trace.

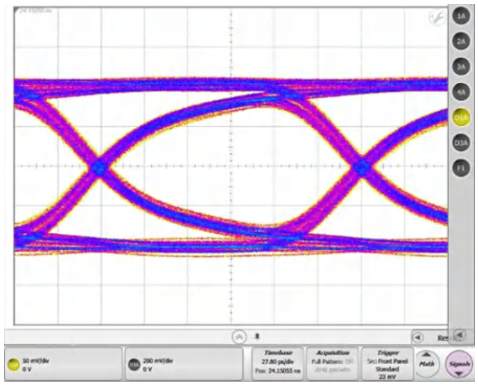

**Figure 1-3. 6 Gbps with TMUX646 (200-mVpp) Eye Diagram**

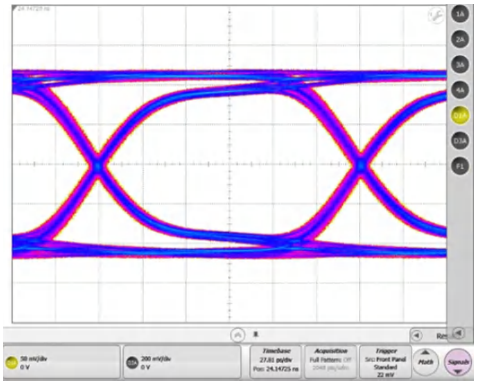

**Figure 1-4. 6 Gbps Through Path (200-mVpp) Eye Diagram**

For more information about multiplexing MIPI signals, see TI precision lab video Switches and muxes: Getting started multiplexing MIPI.

## Recommended Parts

| Part Number | Configuration | # of Channels | Per Channel Bandwidth (-3 dB) | Max D-PHY Data Rate | Package Size |
|---|---|---|---|---|---|
| TMUX1575 | 2:1 SPDT | 4 | 1.8 GHz | 3.6 Gbps | 1.77 $mm^2$ 1.33 mm × 1.33 mm (WCSP 16) |
| TMUX646 | 2:1 SPDT | 10 | 6.0 GHz | 48 Gbps | 6.00 $mm^2$ 2.45 mm × 2.45 mm (nFBGA 36) |
| TS3DDR4000 | 2:1 SPDT | 12 | 6.0 GHz | 58 Gbps | 24.00 $mm^2$ 3.00 mm × 8.00 mm (DSBGA 36) |
| TS3DV642-Q1 (1) | 2:1 SPDT | 12 | 5.8 GHz | 58 Gbps | 31.50 $mm^2$ 3.50 mm × 9.00 mm (WQFN 42) |

(1) Automotive AEC Q100

For more devices, browse through the online parametric tool where you can sort by desired voltage, channel numbers, and other features.

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