

M21141/61 4.25 Gbps 72x72/144x144 Crosspoint Switch

Product Overview

M21141 4.25 Gbps 72x72 and M21161 4.25 Gbps 144x144 Crosspoint Switch

The M21141/61, designed for today's demanding SAN, enterprise, datacom, and telecom applications are low power CMOS, high-speed 72x72/144x144 crosspoint switches with signal conditioning and built-in system test features. The devices consume 11 Watts and 20 Watts of power (typical) with all channels operational. In addition, the PowerScaler™ features offer dynamically scalable switch settings to further reduce power consumption. Unused portions of the core can be automatically (SmartPower™) or manually turned off, without affecting the operation of the remaining channels.

In order to improve signal integrity, each input buffer features programmable trace equalization (IE), which removes ISI jitter that is usually caused by board trace skin effect losses. The input equalizer circuit opens the data eye in applications where long PCB traces and cables are used. The input equalizer can be enabled on a per channel basis, allowing maximum flexibility. The output de-emphasis feature provides a boost for the high frequency content of the output signal, such that the data eye remains open after passing through long board traces. There are two de-emphasis levels, as well as two output amplitude settings, selectable on a global basis. The de-emphasis may be enabled per-channel.

All inputs and outputs are differential PCML (positive current mode logic) with supply voltages ranging from 1.2V to 2.5V. The output levels are programmable at 500mV, 900mV, and 1200mV. The various options and state of the crosspoint switch can be configured with registers accessed through an I²C, SPI, or parallel interfaces. Three-stage switch fabrics with up to 10,368 x 10,368 ports, carrying up to 44 terabits per second of traffic, can be designed using these non-blocking switches, with multi-cast and broadcast abilities. The devices support data rates from 0 to 4.25 Gbps on each channel, allowing any combination of SDI video, Fibre Channel (1x, 2x, 4x, and 10x), SONET, InfiniBand, Gigabit Ethernet and 10 Gbps Ethernet traffic. M21141/61 are available in 1156-terminal, 35 mm, Ceramic Ball Grid Array (CBGA) packages and are RoHS compliant. Non-RoHS versions of the devices are available upon request.

Features	Benefits
➤ Programmable per lane input equalization	Allows control in removing deterministic jitter (ISI)
➤ Fully non-blocking array switch matrices	Ultimate flexibility for switching and multicasting signals
➤ Protocol agnostic	One device supports multiple applications
➤ Support for video pathological patterns	Robust solution for SDI applications
➤ Low power consumption at 1.2V supply: 11W for M21141 and 20W for M21161	Low thermal and power management costs
➤ Extended temperature operations: 0° C to 85° C	Provides higher tolerance and additional design margin
➤ Common footprint for M21141 and M21161	Design and layout flexibility saving development costs
➤ Smart Power™ and PowerScaler™	Optimized power consumption based on system requirements

Specification	M21141	M21161
Switch Matrix	72x72	144x144
Power at 1.2V (W)	11	20
Package (mm)	35 mm, 1156 terminal CBGA	35 mm, 1156 terminal CBGA

Fig. 1 - M21141/61 Product Selection Chart

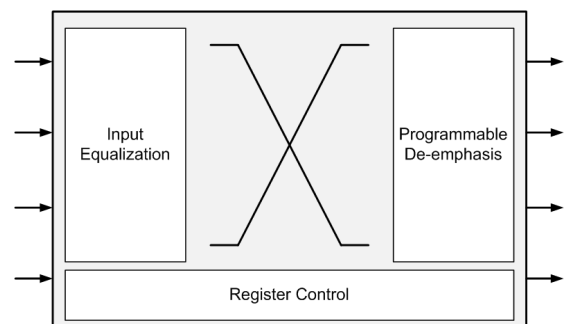


Fig. 2 - M21141/61 Device Architecture



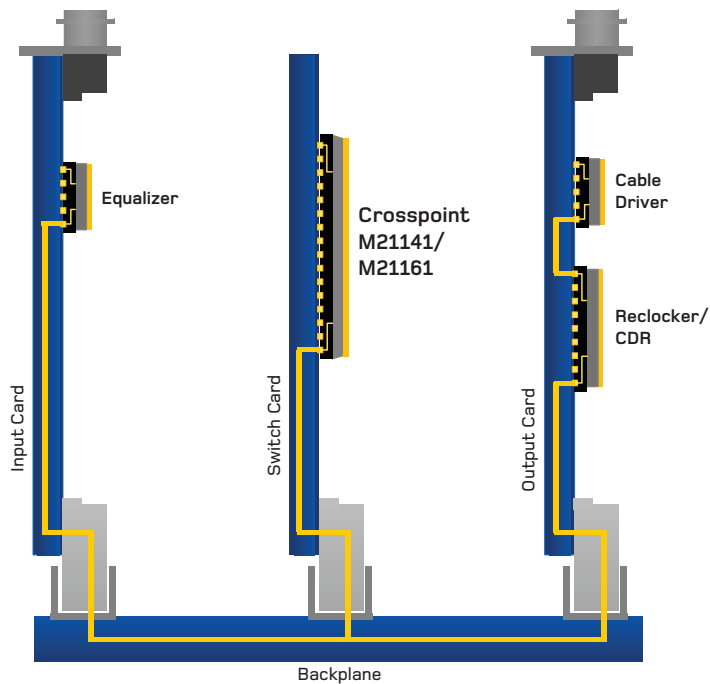


Fig. 3 - Routing Switcher Application Diagram

Product Features

Applications

- Storage area network (SAN) switches (1x, 2x, 4x, and 10x Fibre Channel)
- High-speed patch panels
- Telecom & datacom switches DWDM Switches
- 10 GbE parallel, GbE, and Infiniband networks
- Packet switching
- High-speed automated test equipment
- Fiber-optic telecom systems (OC-48/OC-48 FEC)
- Digital video switchers/routers
- SMPTE 424M, 292M, 344M, 259M, DVB-ASI (270 Mbps)

Package (RoHS Compliant)

- M21141: 35x35 mm, 1156 terminal CBGA
- M21161: 35x35 mm, 1156 terminal CBGA

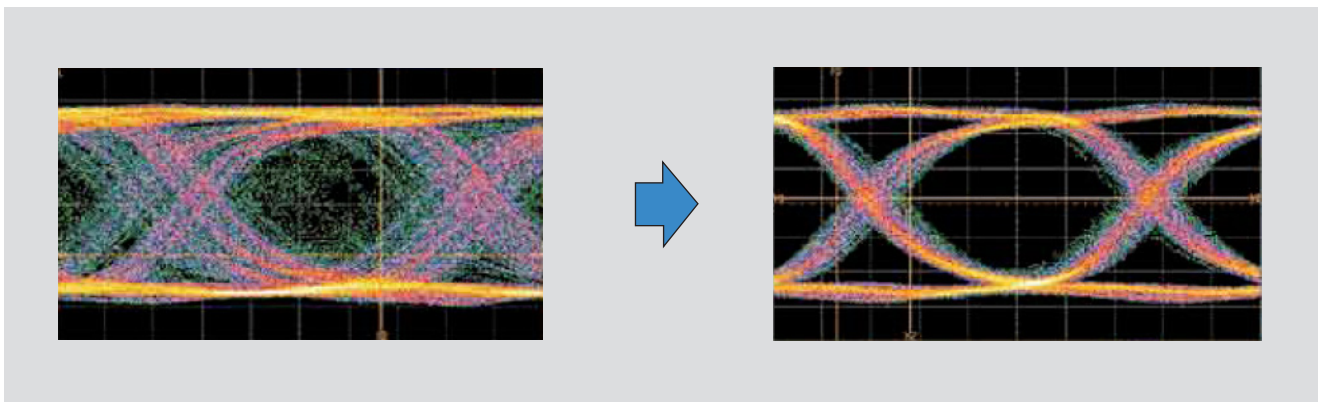


Fig. 4 - 4.25 Gbps Equalized After 46" FR-4 and Backplane Connectors

For more product information, please visit www.mindspeed.com

www.mindspeed.com/salesoffices
 General Information: (949) 579-3000
 Headquarters – Newport Beach
 4000 MacArthur Blvd., East Tower
 Newport Beach, CA 92660-3007
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