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M21131/51 3.2 Gbps 72x72/144x144 Crosspoint Switch

Product Brief

Product Overview

M21131 3.2 Gbps 72x72 and M21151 3.2 Gbps 144x144 Crosspoint Switch

Built on three generations of industry-leading crosspoint switches, the M21131 and M21151 are low-power, high-speed, 72x72 and 144x144 crosspoint switches designed for today's demanding video, telecom and datacom applications. With all the channels operational, the M21131 and M21151 typically consume 8 and 15 Watts of power respectively. The Power-Scaler™ feature provides dynamically scalable switch settings for further power reduction. With the use of the Smart-Power™ feature, unused portions of the core may be automatically turned off without affecting the operational channels.

These large crosspoints come equipped with signal conditioning features designed to ease signal integrity concerns in large systems. The devices both include per channel programmable input equalization (IE) for FR4 traces and output de-emphasis (DE). Input trace equalization helps remove ISI jitter, which is usually caused by skin effect losses across the board. There are four levels of equalization available, which may be programmed for each channel, allowing performance optimization in different systems. 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. The various options and state of the crosspoint switch can be configured with registers accessed through an I²C, SPI, or parallel interfaces.

The M21131 and M21151 support data rates up to 3.2Gbps making them ideal for a range of applications such as SDI video, SONET, Fibre Channel (1x, 2x, 10x), InfiniBand, Gigabit Ethernet and parallel 10 Gbps Ethernet traffic. The devices are offered 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
Programmable output de-emphasis	Improves system jitter budget and drive reach
Protocol agnostic	One device supports multiple applications
Support for video pathological patterns	Robust solution for SDI applications
Low power consumption at 1.2V supply: 7W for M21131 and 13W for M21151	Low thermal and power management costs
Extended temperature operations: 0° C to 85° C	Provides higher tolerance and additional design margin
Common footprint for M21131 and M21151	Design and layout flexibility saving development costs
Smart Power™ and PowerScaler™	Optimized power consumption based on system requirements

Specification	M21131	M21151
Switch Matrix	72x72	144x144
Power at 1.2V (W)	7	13
Package (mm)	35 mm, 1156 terminal CBGA	35 mm, 1156 terminal CBGA

Fig. 1 – M21131/51 Product Selection Chart

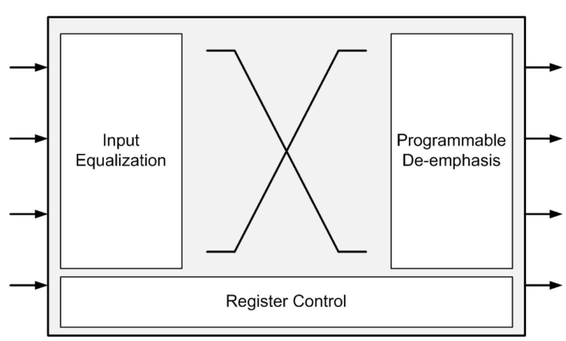

Fig. 2 – M21131/51 Device Architecture

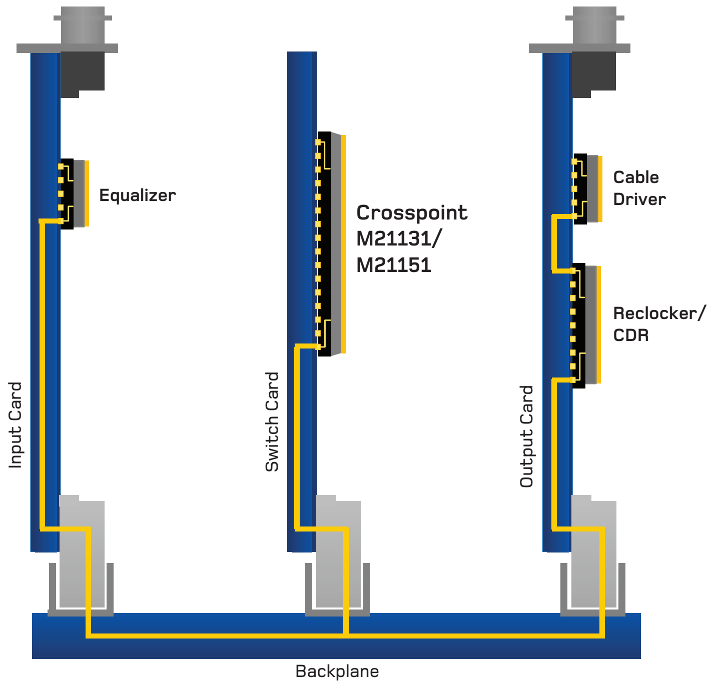

Fig. 3 – Routing Switcher Application Diagram

Product Features

Applications

- Large N x N cascaded switch fabrics, up to 33 Terabits/second
- DWDM switches
- Fiber-optic telecom systems (OC-48/OC-48 FEC).
- Telecom & datacom switches
- Storage area network (SAN) switches (1x, 2x, and 10x Fibre Channel)
- 10 GbE parallel, GbE, and Infiniband networks
- Packet switching
- High-speed automated test equipment
- Digital video switchers/routers
- SMPTE 424M, 292M, 344M, 259M, DVB-ASI (270 Mbps)

Package (RoHS Compliant)

- M21131: 35x35 mm, 1156 terminal CBGA
- M21151: 35x35 mm, 1156 terminal CBGA

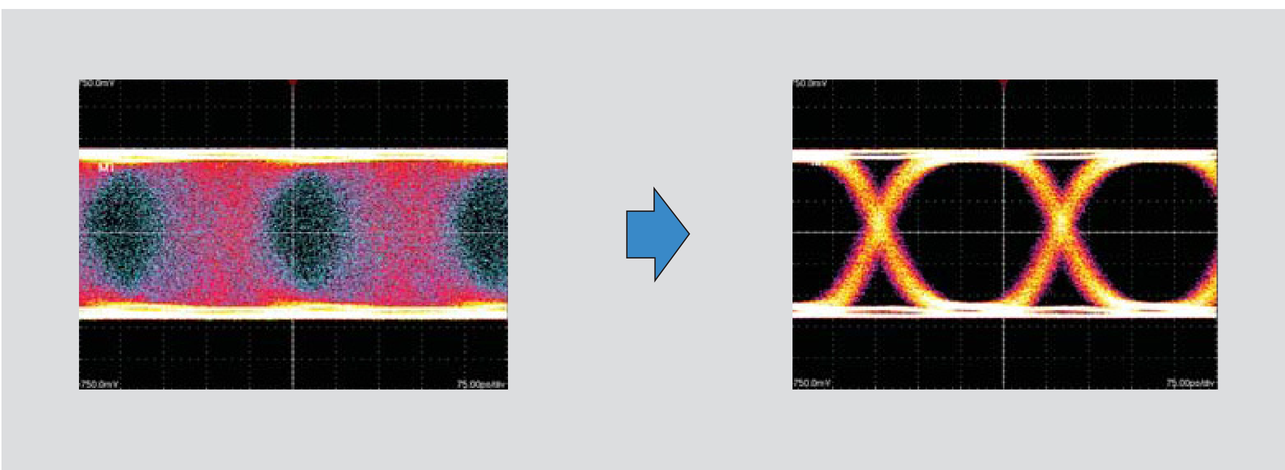

Fig. 4 – 3.2 Gbps Equalized After 84” Coax and 67.5” Microstrip

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

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