

## M21111/21 3.2 Gbps 17x17/34x34 Crosspoint Switch

### Product Overview

#### M21111 3.2 Gbps 17x17 and M21121 3.2 Gbps 34x34 Crosspoint Switch

The M21111/21, designed for today's demanding video, telecom and datacom switching applications are low-power, high-speed crosspoint switches with input equalization and integrated pattern generator/checker. With all channels operational, the M21111 and M21121 typically consume 2.6 Watts and 4 Watts of power respectively, making them ideal for use in low power systems. The PowerScaler™ feature provides dynamically scalable switch settings for further power reduction. With the use of the SmartPower™ feature, unused portions of the core may be automatically turned off without affecting the operational channels. In addition, individual input and output buffers may be manually powered down for more power consumption control.

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. Built-in system test features simplify design, verification, and production testing of the system. The crosspoint switches includes an integrated pseudo-random bit sequence generator (PRBS TX) and checker (RX).

The M21111 and M21121 are non-blocking switches with multi-cast and broadcast abilities. All inputs and outputs are differential positive current mode logic (PCML) with 2.5V or 3.3V supply. The M21111 and M21121 both have a common footprint and share the same software control methodology enabling a single PCB design to support both 17x17 and 34x34 system solutions. The devices are offered in a 404 ball, 23 mm Plastic Ball Grid Array (PBGA) package 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 2.5V supply: 2.6W for M21111 and 4W for M21121	Low thermal and power management costs
Extended temperature operations: 0° C to 85° C	Provides higher tolerance and additional design margin
Common footprint for M21111 and M21121	Design and layout flexibility saving development costs
Smart Power™ and PowerScaler™	Optimized power consumption based on system requirements

Specification	M21111	M21121
Switch Matrix	17x17	34x34
Power at 1.2V (W)	2.6	4
Package (mm)	23 mm, 404 ball PBGA	23 mm, 404 ball PBGA

Fig. 1 - M21111/21 Product Selection Chart

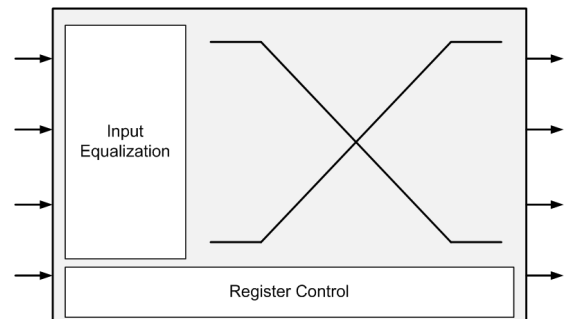


Fig. 2 - M21111/21 Device Architecture



Fig. 3 - Signal Conditioners and Crosspoints Matrix

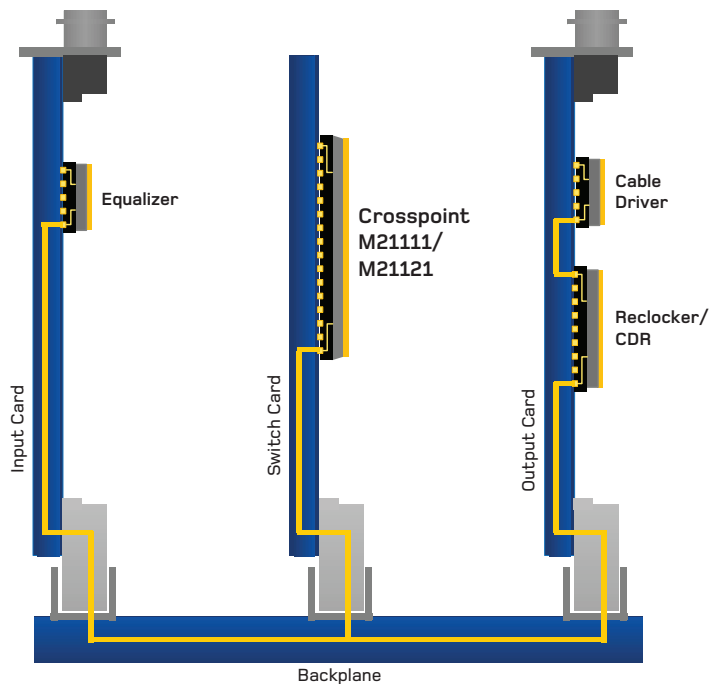


Fig. 3 - Routing Switcher Application Diagram

## Product Features

### Applications

- Large N x N cascaded switch fabrics
- Telecom & datacom switches
- Storage area network (SAN) switches
- Packet switching
- High-speed automated test equipment
- Digital video switchers/routers SMPTE 424M, 292M, 344M, 259M, DVB-ASI (270 Mbps)

### Package (RoHS Compliant)

- M21111: 23x23 mm, 404 ball PBGA
- M21121: 23x23 mm, 404 ball PBGA

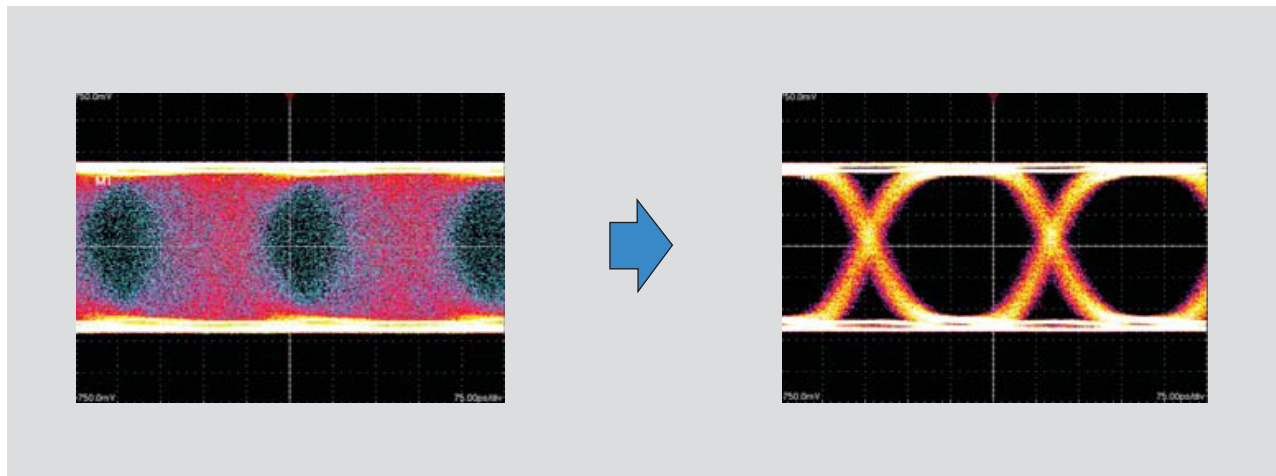


Fig. 4 - 3.2 Gbps Equalized After 84" Coax and 67.5" Microstrip

For more product information, please visit [www.mindspeed.com](http://www.mindspeed.com)

[www.mindspeed.com/salesoffices](http://www.mindspeed.com/salesoffices)  
 General Information: (949) 579-3000  
 Headquarters – Newport Beach  
 4000 MacArthur Blvd., East Tower  
 Newport Beach, CA 92660-3007  
 M21111-BRF-001-D.pdf

© 2009 Mindspeed Technologies, Inc. All rights reserved. Mindspeed and the Mindspeed logo are trademarks of Mindspeed Technologies. All other trademarks are the property of their respective owners. Although Mindspeed Technologies strives for accuracy in all its publications, this material may contain errors or omissions and is subject to change without notice. This material is provided as is and without any express or implied warranties, including merchantability, fitness for a particular purpose and non-infringement. Mindspeed Technologies shall not be liable for any special, indirect, incidental or consequential damages as a result of its use.

**MINDSPEED**  
 BUILD IT FIRST®