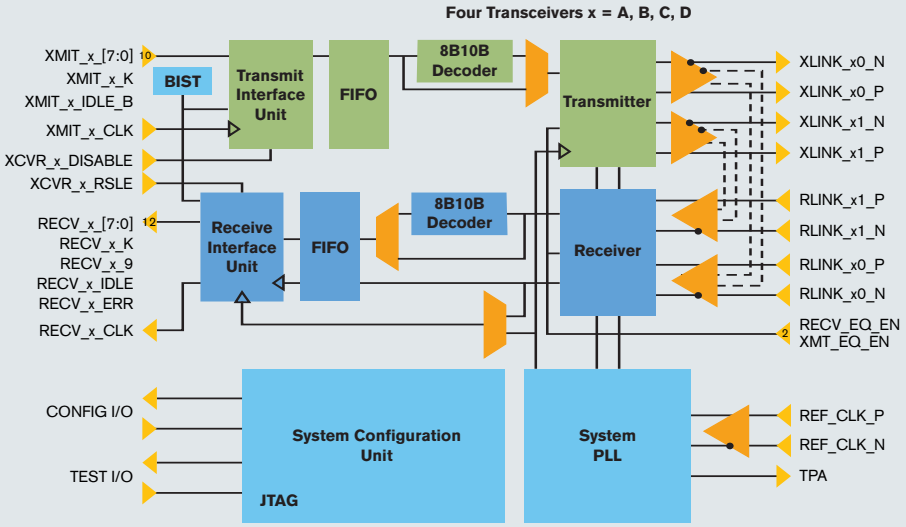
ibaud SERDES Transceiver

MC92610 QUAD

The MC92610 Quad is a high-speed, full-duplex, serializer/deserializer (SERDES) data interface that can be used to transmit data between chips across a board, through a backplane, or through cabling. Four transceivers transmit and receive coded data at a rate of 2.5 gigabit per second (Gbps) through each 3.125 gigabaud link. A rich feature set makes it easily adaptable to many broadband applications. The MC92610 is the latest generation in Freescale's SERDES product line. Like its predecessors, it features a very low power 0.25 micron CMOS implementation that nominally consumes less than 1800 mW with all links operating at full speed.

MC92610 QUAD SERDES BLOCK DIAGRAM



Product highlights

> Four full-duplex differential data links

> 20 Gbps data aggregate transfer speed

> Dual speed range: 3.125 Gbaud or 1.25 Gbaud

> Low power: 1800 mW, under typical conditions, with all transceivers operating at full speed

> Transceiver channels may be individually disabled

> IEEE Std 1149.1 JTAG support and full-speed built-in self test, BIST, functions

Typical applications

High-speed data transfer applications in high-bandwidth backplane and chassis-to-chassis networking

> High-end router systems

> Backbone switches

> Access switches

> Storage Area Network equipment

> High-speed Automatic Test Equipment

Launched by Motorola

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Data interface

> Internal Fibre Channel 8B/10B encoder/decoder accessed through Byte Interface or bypassed in Ten-Bit Interface mode

> Double DataRate (DDR), source synchronous, 8-bit and 10-bit HSTL parallel data interfaces

> Link Multiplex Mode enables operation of two links with Single Data Rate (SDR), source synchronous, 16-bit and 20-bit parallel data interfaces

> Selectable Idle character alignment mode enables transfers with automatic realignment or unaligned data transfers

> Link-to-link synchronization supports aligned, 32-bit, word transfers. Synchronization mechanism tolerates up to 40-bit times of link-to-link media delay skew

> Multi-chip link synchronization supports aligned multi-word transfers. Up to four devices may be combined to provide 128-bit, four-word, synchronized transfers

> Each channel has dedicated input clock (≥156.25 MHz)

> Received data may be clocked at the recovered clock or the reference clock frequency

Link interface

> Links drive 50-ohm media (100-ohm differential), backplane or cable

- On-chip link termination (no external terminating resistors needed)
- On-chip coupling capacitors provide expanded input common mode range

> Link inputs are “hot-swap” compatible

> Selectable transmit and receive equalization

> Repeater mode configures the device into a four-link receive-transmit repeater

> Redundant transmitter link outputs and receiver link inputs

> Redundant links are selectable per transceiver

> Broadcast mode enables all transmit links

Technical specifications

> All channels have:

- 8B/10B encoder/decoder that can be enabled or bypassed
- Clock generation/recovery
- Idle/control character generation/detection
- Independent 8-bit or 10-bit system I/F with parallel-to-serial, serial-to-parallel conversion

> Transceiver Links operate over 50-ohm media (100-ohm differential) for lengths of up to 1 meter of FR-4 board/back-plane, or six meters of coax

> No external loop filter or termination components required

> In-system BIST test modes

> At speed, in circuit, with error counter

> In-system loopback BIST isolated from link inputs and outputs

> IEEE Std 1149.1 JTAG boundary scan support

> Differential reference clock input with single-ended reference clock input option (156.25 MHz max)

> Tolerates REF_CLK frequency offset in excess of ± 200 ppm

> Technology: High-performance 0.25 µ CMOS Process, five-layer metal

Parametrics

> Power Supply

- Core Power Supply: 1.8 V ± 0.15 Vdc
- HSTL I/O Power Supply: 1.5 V ± 0.10 Vdc or 1.8 V ± 0.15 Vdc
- Link I/O Power Supply: 1.8 V ± 0.15 Vdc

> Power Dissipation Typical operation: <450 mW per channel at maximum speed

Package

> 324 pin MAPBGA (19x19 mm body size, 1.0 mm ball pitch)

Learn More: **For more information about Freescale products, visit www.motorola.com/semiconductors**

MC92610FS/D
REV 1

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