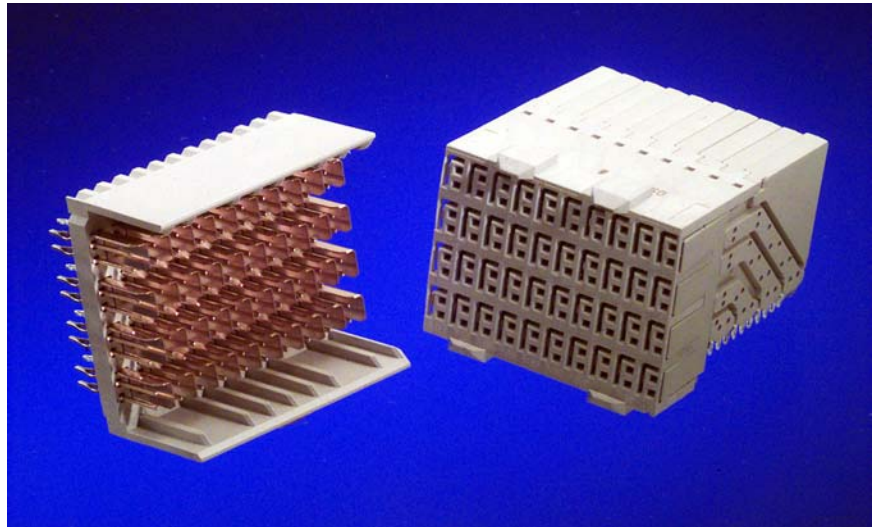


10 Gigabit Ethernet

Positioned as a high-speed, unifying technology for networking applications in LANs, MANs, and WANs, 10 Gigabit Ethernet will provide simple, high bandwidth at relatively low cost. In LAN applications, 10 Gigabit Ethernet will enable organizations to scale their packet-based networks from 10 Mbps to 10,000 Mbps, thereby leveraging their investments in Ethernet. In MAN and WAN applications, 10 Gigabit Ethernet will enable service providers and others to create extremely high-speed links at very low cost.



XAUI HM-Zd Interoperability Platform

- A common platform for interoperability testing supported by members of the 10GEA XAUI Interoperability Group and the 10 Gigabit Ethernet Consortium
- Full duplex link testing
- 3 link lengths
 - 5 inches
 - 20 inches
 - 34 inches
- XAUI signals run in a system-like environment
 - FR-4
 - multi-layer connections
 - 0.200" backplane thickness
 - MDIO / MDC Support

Z-PACK HM-Zd

- Fully modular system- standard size is 25 mm
- Available in two versions:
 - 2 signal pairs per column (20 pairs per 25 mm)
 - 4 signal pairs per column (40 pairs per 25 mm)
- Dual beam contact system with fully encompassing grounds
- Robust mating interface with integral prealignment and mating built-in
- Optimized footprint for improved electrical performance

XAUI Interoperability – Industry Support

The 10 Gigabit Ethernet Alliance has formed a working group, which is chaired by Tyco Electronics, to examine interoperability between different vendors' XAUI implementation. This group selected the Tyco Electronics XAUI HM-Zd Interoperability Platform as a common platform for interoperability testing. The work completed by this group has been adopted by the 10 Gigabit Ethernet Consortium, which will perform future interoperability testing.

Texas Instruments, a member of the 10GEA, is testing their XAUI family with the XAUI HM-Zd Interoperability Backplane. Robert Pace, World Wide Marketing Manager, High Speed Transceivers, Texas Instruments, stated, "Texas Instruments has tested & documented the impact connectors have on the performance of its devices in XAUI applications. We have surpassed IEEE 802.3ae specified XAUI distance requirements and achieved a superior BER implementing the Tyco Electronics Z-PACK HM-Zd connectors."

For further details regarding the operation of the Texas Instruments Product Family with the XAUI HM-Zd Interoperability Backplane, please contact Robert Pace at rp@ti.com.

Texas Instruments XAUI Product Family

Texas Instruments is a leading supplier of Ethernet and SONET serial electrical transceivers for use in high-speed bi-directional point-to-point data transmission systems. The following products are for 10 Gbps backplane applications-

TLK3114SA – Texas Instrument's 2nd generation quad serial transceiver for 10 Gigabit Ethernet XAUI connections and other applications requiring up to 10 Gbps of data transmission capacity. The TLK3114SA is fully IEEE 802.3ae 10Gbps Ethernet draft compliant. The device supports serial data rates from 2.5 Gbps to 3.125 Gbps, and has receive equalization and programmable transmit pre-emphasis for extended transmission distance applications.

TLK3124SA (Available 3Q02) – Texas Instrument's 3rd generation XAUI transceiver is designed in its advanced 130 nm CMOS technology and consumes less than 750 mW of total power with all 4 channels operating. The TLK3124SA is 802.3ae 10Gbps Ethernet draft and 10 Gbps Fibre Channel draft compliant, incorporates extensive link test patterns, is pin compatible to the TLK3114SA, and implements receive equalization and programmable transmit pre-emphasis for extended transmission distance applications.

Other XAUI devices for non-backplane applications are also available from Texas Instruments.

Key Specifications

	Function	Data rate	Serial I/F	Parallel I/F	Power	Special features
TLK1501	Single-ch. 16:1 Serdes	0.6-1.5 Gbps	1 CML ch.	16 LVTTTL lines	200 mW	Built-in testability
TLK2501	Single-ch. 16:1 Serdes	1.6-2.5 Gbps	1 CML ch.	16 LVTTTL lines	300 mW	Built-in testability
TLK2701	Single-ch. 16:1 Serdes	1.6-2.7 Gbps	1 CML ch.	16 LVTTTL lines	300 mW	Built-in testability and K character control
TLK3101	Single-ch. 16:1 Serdes	2.5-3.125 Gbps	1 VML ch.	16 LVTTTL lines	350 mW	Built-in testability
TLK2201	Single-ch.	1.0-1.6 Gbps	1 LVPECL ch.	10 LVTTTL lines	200 mW	JTAG; 5-bit DDR mode
TLK2201I	Single-ch. 10:1 Gigabit Ethernet Xcvr	1.2-1.6 Gbps	1 LVPECL ch.	10 LVTTTL lines	200 mW	JTAG; 5-bit DDR mode, industrial temp. qualified
TLK2201JR	Single-ch. 10:1 Gigabit Ethernet Xcvr	1.0-1.6 Gbps	1 LVPECL ch.	10 LVTTTL lines	200 mW	MicroStar Jr. .5x5 Land Grid Array (LGA)
TLK3104SA	Four ch. of 10/8:1 Xcvr	2.5-3.125 Gbps	4X 3.125 Gbps LVPECL (XAUI)	4X 10/8-bit SSTL2 lines	700 mW/ch.	JTAG; programmable pre-emphasis and XAUI I/F
TLK3114SA	Four ch. of 10/8:1: Xcvr	2.5-3.125 Gbps	4X 3.125 Gbps LVPECL (XAUI)	4X 8/10 SSTL/HSTL (XGMII)	600 mW	IEEE 802.3ae backplane transceiver Draft 2.1 compliant
TLK3104SC	Four ch. of 4:1: Xcvr	3.0-3.125 Gbps	4X LVPECL ch.	20X622 LVDS lines	700 mW/ch.	JTAG, 8b/10b on/off
DLKPC192H & DLKPC192S	Physical Coding Sublayer for 10-Gigabit Ethernet	10.3-Gbps, aggregate	16-bit LVDS XSBI	4X 8/10 SSTL/HSTL (XGMII)	700 mW	PCS layer with MDIO control
SLK2501	Single-ch. 4:1 multirate Sonet Tcwr with CDR	OC-3/12/24/48	1 LVPECL ch.	4X622 LVDS lines	700 mW	Auto-rate detection local and remote loop back
SLK2501CD1	OC-48/24/12/3 CDR	OC-3/12/24/48	1 PECL ch.	N/A	500 mW	Multi-rate capable
SLK2504	Four-ch. Sonet OC-48 Xcvr	OC-48 and OC-48 with FEC	4 LVPECL ch.	4-bit LVDS 622MHz/Ch	1.5 W	Supports VSR applications
SLK9901	Integrated OC-192 Xcvr	9.95 Gbps, 10.3 Gbps	Low-jitter CML	16-bit LVDS OIF99.102 compliant	800 mW	OC-192 and 10-Gigabit ethernet support
TLK10001	10-Gigabit Ethernet LAN	10.3 Gbps	Low-jitter CML	4X 3.125 Gbps LVPECL (XAUI)	2 W	PMA, PCS, and XAUI functions integrated
ONET3201LD	3.2 Gbps Laser Driver	2.5-3.2 Gbps	PECL	NA	250 mW	Automatic power control (APC), fault detection and current monitor
ONET2501PA	2.5 Gbps Limiting Amplifier	2.5 Gbps	PECL	NA	260 mW	Low power; min 32-Db gain
ONET2501TA	2.5 Gbps Transimpedance Amplifier	2.5 Gbps	NA	NA	165 mW	2.2-GHz bandwidth and a 4-k Ohm transimpedance
TLK3101SAB	Infiniband Serdes	2.5-3.125 Gbps	Infiniband Compliant Differential	10 Bit SSTL2/HSTL	350 mW	8b/10b bypass; PRBS generation and verification

* CML (Current Mode Logic)

TLK2201, but it is housed in an ultra-small 5mm x 5mm MicroStar Jr. BGA™ package (.5 mm ball pitch). The device is intended for high-port-density applications, where board space and power are limited.

TLK3104SA

A four-channel transceiver, the TLK3104SA accepts input on four selectable 10- or 8-bit SSTL2/HSTL interfaces (parallel side) and drives out four channels of LVPECL signaling (serial side) at 3.125 Gbps. The device also operates in 10 Gigabit Ethernet

mode and supports an aggregate bandwidth of 12.5 Gbps at approximately 700 mW per channel.

TLK3114SA

The TLK3114SA is a flexible quad serial transceiver for 10 Gigabit Ethernet backplane applications, delivering high-speed, bi-directional, point-to-point data transmissions to provide up to 10 Gbps of data transmission capacity. The TLK3114SA is pin compatible to the TLK3104SA quad serial transceiver and supports an operating range of serial data rates from 2.5 Gbps to 3.125 Gbps per channel

(IEEE 802.3ae Draft 3.1 compliant).

TLK3104SC

The TLK3104SC is a four-channel transceiver that accepts Low-Voltage Differential Signaling (LVDS) 622-Mbps inputs on 20 channels (parallel side) and drives out four channels of LVPECL signaling at 3.125 Gbps. The device supports an aggregate bandwidth of 12.5 Gbps at approximately 700 mW per channel.

SLK2501

The SLK2501 is a multi-rate Synchronous Optical Network (SONET) transceiver with integrated

Clock Data Recovery (CDR) that supports data rates of OC-3/12/24/48 and Gigabit Ethernet payloads. The device also features auto-rate detection, local and remote loop backs and PRBS generation and verification.

DLKPC192S/H

The DLKPC192S performs all Physical Coding Sublayer (PCS) functions for Proposed IEEE 802.3ae 10 Gbps Ethernet serial Local Area Network (LAN) connections standard. The DLKPC192S connects to the Media Access Control (MAC) and all higher layers of the OSI protocol stack via the 10 Gigabit Media Independent Interface (XGMII). The XGMII consists of two uni-directional buses, each with 36 information bits (32 data bits, 4 control bits) plus a clock. The XGMII interface is implemented utilizing SSTL Class 2 technology. The DLKPC192S connects to physical media via the 10 Gigabit Sixteen Bit Interface (XSBI). The XSBI bus consists of two uni-directional buses, each with 16 data bits plus a clock. The XSBI interface is implemented utilizing LVDS technology. The DLKPC192S will encode and decode data using the 64-/66-bit coding algorithm and provides clock tolerance compensation when needed. The DLKPC192H an HSTL version, is also available.

SLK2501CD1

The SLK2501CD1 is a complete multi-rate clock and data recovery device for data rates ranging from OC-3 to OC-48. The device's main function is to derive high-speed timing signals for clock and data. The device is suitable for SONET/SDH and Gigabit Ethernet applications.

SLK2504

The SLK2504 is a single chip four-channel OC-48 transceiver IC used to derive high-speed timing signals for SONET-/SDH-based equipment. The chip performs

clock and data recovery, serial-to-parallel, parallel-to serial conversion and frame detection functions conforming to the SONET/SDH standards on four separate channels. A user-selectable external reference clock operating at 622.08MHz or 155.52MHz is required for the recovery loop. The reference clock also provides a stable clock source in the absence of serial data transitions. The SLK2504 accepts four sets of 4-bit LVDS parallel data/clock and generates four NRZ SONET-/SDH-compliant signals at OC-48 rates (OC-48 FEC rate of 2.7 Gbps is also supported). It also recovers the data and clock from serial SONET streams and de-multiplexes it into four sets of 4-bit LVDS parallel data for full duplex operation. The four serial channels have a low jitter Voltage Mode Logic (VML) differential interface that is compatible with PECL.

SLK9901

The SLK9901 is a single chip multi-rate transceiver IC for both OC-192 SONET/SDH and 10 Gigabit Ethernet (LAN and WAN) applications. The chip performs clock and data recovery, serial-to-parallel conversion and parallel-to serial conversion with high-speed clock generation. Through the rate configuration pins, the device supports two different operating line rates for different applications. The line rates the device supports are 9.953 Gbps for OC-192 and 10.3 Gbps for 10G Ethernet (IEEE 802.3ae). The SLK9901 accepts 16-bit LVDS parallel data/clock and generates a nonreturn-to-zero (NRZ) serial signal at 16 times the parallel data rate. It also recovers the data and the clock from serial stream and demultiplexes it into 16-bit LVDS parallel data for full duplex operation. The serial I/O signaling is low jitter Current Mode Logic (CML) interface.

TLK10001

The TLK10001 contains the four channels of 3.125-Gbaud SERDES functions necessary to connect to the IEEE 802.3ae XAUI interface, including lane deskew and inter-packet gap (IPG) management. The TLK10001 performs all Physical Coding Sublayer (PCS) functions for Proposed IEEE 802.3ae 10 Gbps Ethernet serial Local Area Network (LAN) connections.

The TLK10001 then performs Physical Media Attach (PMA) function by way of the 16-bit Mux/Demux function at the IEEE 802.3ae line rate of 10.3125 Gbaud. The TLK10001 requires a reference clock of 156.25 Mhz for the XAUI interface and a reference clock of 644.53125 MHz for the PMA interface. The TLK10001 connects to the Media Access Control (MAC) and all higher layers of the OSI protocol stack via the 10 Gigabit XAUI Interface. The XAUI consists of four full-duplex serial busses, each at 3.125 Gbaud. The XAUI interface is implemented utilizing a reduced-swing LVPECL-compatible technology. The TLK10001 connects to physical media via a full-duplex 10.3125-Gbaud, reduced-swing LVPECL-compatible serial interface. The TLK10001 will perform the 8-/10-bit encode/decode functions after the XAUI interface. Then it will encode and decode data using the 64-/66-bit coding algorithm, providing clock tolerance compensation when needed. Finally, it will then perform the necessary gearbox function to send data to/from an integrated 16:1 Mux/Demux.

ONET3201LD

The ONET3201LD is a laser driver for SONET/SDH applications up to 3.2 Gbps. The device accepts PECL data and clock inputs and provides bias and modulation currents for driving a laser diode. Also provided are automatic power control (APC), fault detection and current monitor features. The ONET3201LD device

comes in a 32-lead LQFP package and requires a single 3.3-V supply (+5%, -10%). The device is very power efficient and dissipates less than 250 mW of power.

ONET2501TA

The ONET2501TA is a high-speed transimpedance amplifier for SDH/SONET systems with support for data rates up to 2.5 Gbps. It features a low input referred noise, 2.2-GHz bandwidth and a 4-k Ohm transimpedance. The ONET2501TA device comes in a 10-lead VSSOP package and requires a single +3.3-V supply (+5%, -10%). It is also available in die form. It is very power efficient and dissipates less than 165 mW of power.

ONET2501PA

The ONET2501PA is a high-speed limiting amplifier used as a post amplifier following the transimpedance amplifier in fiber-optic links with data rates supported up to 2.5 Gbps. It provides a minimum gain of 32 dB and ensures a full PECL output swing at minimum input sensitivity. The ONET2501PA device comes in a 10-lead plastic small-outline package and requires a single 3.3-V supply (+5%, -10%). It is very power efficient and dissipates less than 260 mW of power.

TLK3101SAB

The TLK3101SAB performs the data parallel-to-serial, serial-to-parallel conversion, and clock extraction functions for an

InfiniBand™ physical layer interface device. The TLK3101SAB incorporates a 10 bit SSTL2/HSTL parallel interface and high speed serial outputs that are compatible with InfiniBand. The TLK3101SAB also provides a selectable 8B/10B encode/decode function. The serial transceiver interface operates at a maximum speed of 3.125 Gbps.

For More Information

TI's Serial Gigabit Transceiver family combines low-power dissipation and multi-gigabit transmission speeds for tomorrow's most advanced systems. If you would like more information, please contact your local TI field sales representative, or visit:

www.ti.com/sc/docs/products/msp/interface/index.htm

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	Hong Kong	800-96-1111	-800-800-1450
	India	000-117	-800-800-1450
	Indonesia	001-801-10	-800-800-1450
	Korea	080-551-2804	-
	Malaysia	1-800-800-011	-800-800-1450
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