

155Mbps 1X9 SC Duplex Single Mode Laser Transceiver for ATM, SONET OC-3/SDH STM-1

155B2L1

Feature

- Industry Standard 1 x 9 Footprint
- Compliant with existing standards
- Single +3.3 V Power Supply
- PECL Differential Inputs and Outputs
- Wave Solderable and Aqueous Washable
- Class 1 Laser International Safety Standard IEC 825 Compliant
- OPT-155B2L1 for 30km Links;

Applications

- ATM 155Mb/s Links
- SONET/SDH Equipment Interconnect
- WDM Application

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Reference
Storage temperature	T _s	-60		85	°C	
Lead soldering temperature	T _{SOLD}			260	°C	
Lead soldering time	t _{SOLD}			10	sec.	
Supply voltage	V _{cc}	0		5	V	

Recommended Operating Conditions:

Parameter	Symbol	Min.	Typ.	Max.	Unit	Reference
Ambient Operating Temperature	T _A	0		70	°C	
Supply voltage	V _{cc}	3.135	3.3	3.465	V	
Transmitter Data input voltage-Low	V _{IL} - V _{CC}	-1.810		-1.475	V	
Transmitter Data input voltage-High	V _{IH} - V _{CC}	-1.165		-0.880	V	
Data Output Load	R _{DL}		50		Ω	

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	Yuhong	Teddy Kuo	Y.Y Tsai			

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Transmitter Electro-Optical Performance Specifications:

Parameter	Symbol	Min.	Typ.	Max.	Unit	Reference
Supply current	I _{cc}			140	mA	
Launched power(avg.)	P _O	-8		-2	dBm	Note(1)
Optical extinction ratio		10			dB	Note(1)
Center wavelength	λ_c	1274	1310	1355	nm	
Spectral width(RMS)	σ			3	nm rms	
Optical risetime	t _r			1.3	ns	Note(2)
Optical falltime	t _f			1.3	ns	Note(2)
Output Eye	Compliant with Bellcore TR-NWT-000253 and ITU recommendation G.957					

Note(1).Launched power is power coupled into a single mode fiber.

Note(2).These are 10-90% values.

Receiver Electro-Optical Performance Specifications:

Parameter	Symbol	Min.	Typ.	Max.	Unit	Reference
Supply current	I _{cc}			130	mA	
Data output voltage-Low	V _{OL} - V _{CC}	-1.950		-1.620	V _{CC}	
Data output voltage-High	V _{OH} - V _{CC}	-1.045		-0.740	V _{CC}	
Optical input sensitivity(avg.)	P _{IN}			-32	dBm	Note(1)
Optical input saturation(avg.)	P _{SAT}	-7.5			dBm	Note(1)
Optical wavelength	λ		1310		nm	
Signal detect-Assert	P _A			-33	dBm	
Signal detect-Deassert	P _D	-48			dBm	
Signal detect-Hysteresis	P _A -P _D	0.5			dB	

Note(1).With BER better than or equal to 1×10^{-12} , measured in the center of the eye opening with $2^{23}-1$ NRZ PRBS

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The schematic diagram illustrates the internal architecture of a Delta Transceiver, showing its connection to various external components and power supplies.

Internal Components:

- Transmitter Section:** Includes a **Laser Driver** and a **Pre-Amp** (Pre-Amplifier).
- Receiver Section:** Includes a **LIMITING Amplifier**.
- Control Logic:** Includes a **SD to upper level** block.

External Connections and Power Supplies:

- VCC SerDes 3.3V:** Provides power to the transmitter and receiver sections.
- VCC:** Provides power to the ECL/PECL DRIVER.
- TX+ and TX-:** Transmitter output signals.
- RD- and RD+:** Receiver input signals.
- RxD and TxD:** Bidirectional data signals.
- TXGND and RXGND:** Ground connections for the transmitter and receiver.
- VCCTx and VCCRx:** Transmitter and receiver supply pins.
- SD:** Signal detect pin.

External Components:

- ECL/PECL DRIVER:** Receives signals from the transmitter and drives the TX+ and TX- lines.
- Serializer/Deserializer:** Interfaces with the RD- and RD+ lines.
- Receiver PLL etc.:** Receives signals from the RD- and RD+ lines.

Internal Connections:

- The **Laser Driver** is connected to the **TxD** pin.
- The **Pre-Amp** is connected to the **RxD** pin.
- The **LIMITING Amplifier** is connected to the **RxD** pin.
- The **SD to upper level** block is connected to the **SD** pin.
- The **VCCTx** and **VCCRx** pins are connected to the **VCC SerDes 3.3V** supply.
- The **TXGND** and **RXGND** pins are connected to ground.
- The **TX+** and **TX-** pins are connected to the **ECL/PECL DRIVER**.
- The **RD-** and **RD+** pins are connected to the **Serializer/Deserializer** and **Receiver PLL etc.**.

R13 =Open (For TTL output).



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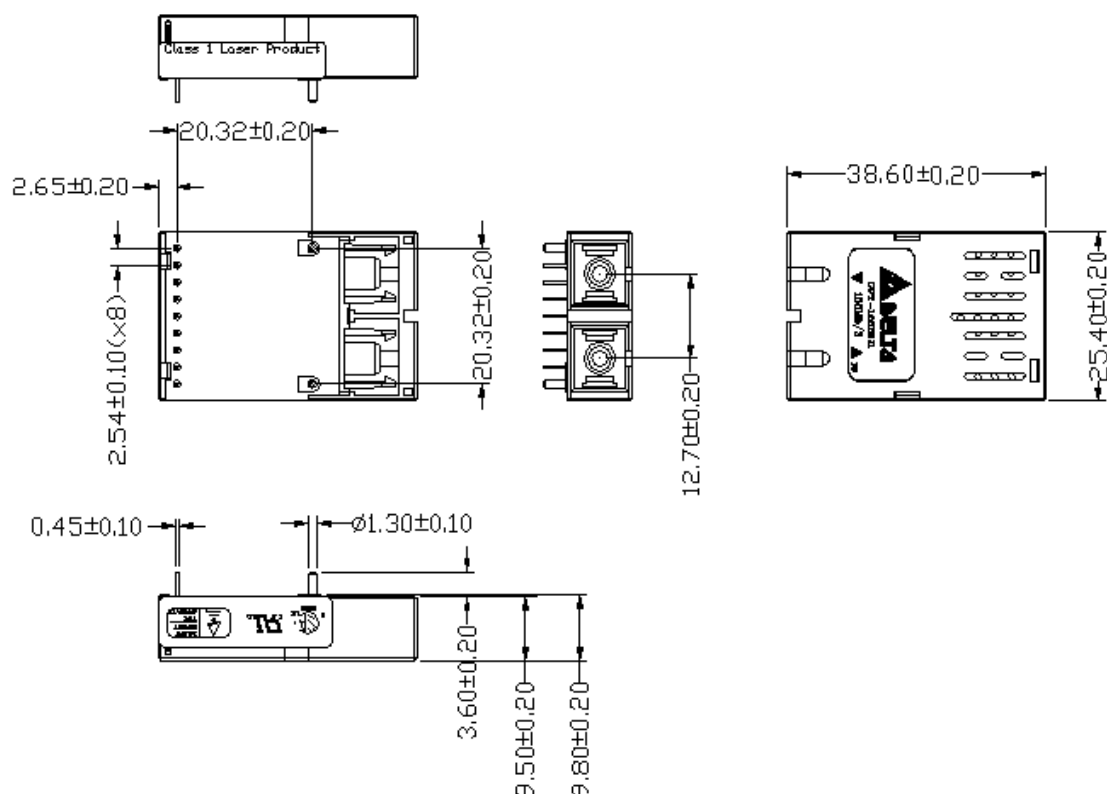
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Mechanical Dimensions

Unit : mm



LASER SAFETY

This single mode transceiver is a Class 1 laser product. It complies with IEC 825 and FDA 21 CFR 1040.10 and 1040.11. The transceiver must be operated within the specified temperature and voltage limits. The optical ports of the module shall be terminated with an optical connector or with a dust plug.

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Regulatory Compliance

Test Item	Reference	Qty'	Evaluation
(#1) Electromagnetic Interference EMI	FCC Class B EN 55022 Class B CISPR 22	5	(1) Satisfied with electrical characteristics of product spec. (2) No physical damage
(#2) Immunity : Radio Frequency Electromagnetic Field	EN 61000-4-3 IEC 1000-4-3	5	
(#3) Immunity : Electrostatic Discharge to the Duplex SC Receptacle	EN 61000-4-2 IEC 1000-4-2 IEC 801.2	5	
(#4) Electrostatic Discharge to the Electrical Pins	MIL-STD-883C Method 3015.4 EIAJ#1988.3.2B Version 2, Machine model	5	

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