

155Mbps 1X9 SC Bi-Directional Transceiver Module for ATM, SONET OC-3/SDH STM-1, Fast Ethernet

BIDI-155E2J1

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
- BIDI-155Exxx series TX 1310nm /RX 1550nm;
BIDI-155Fxxx series TX 1550nm /RX 1310nm
- BIDI-155xxx1 series indicate for SC Receptacle; BIDI-155xxx3 series indicate for SC Pigtail
BIDI-155xxx6 series indicate for MU Pigtail

Applications

- SONET/SDH Equipment Interconnect
- WDM Application
- 100Base Fast Ethernet
- 155Mbps ATM

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	
Bit Rate		10		155.52	Mbit/s	

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	
Data input voltage -Low	V _{IL} - V _{CC}	-1.810		-1.475	V	
Data input voltage -High	V _{IH} - V _{CC}	-1.165		-0.880	V	
Data Output Load	R _{DL}		50		Ω	



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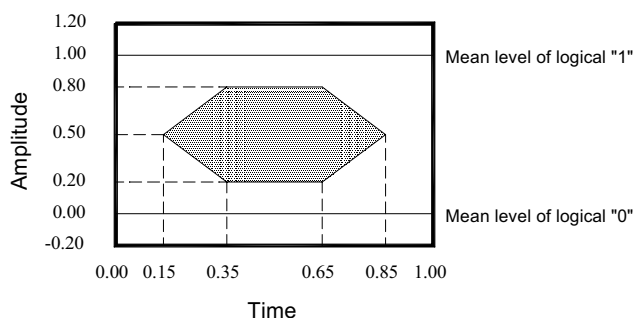
Transmitter Electro-Optical Performance Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Reference
Supply current	I _{cc}			140	mA	Note (1)
Launched power (avg.)	P _o	-15	-11	-8	dBm	Note (2)
Optical extinction ratio		8.2			dB	Note (2)
Center wavelength	λ_c	1261	1310	1360	nm	
Spectral width (RMS)	σ			6	nm rms	
Optical risetime	t _r			1.3	ns	Note (3)
Optical falltime	t _f			1.3	ns	Note (3)
Output Eye	Compliant with Bellcore TR-NWT-000253 and ITU recommendation G.957					

Note (1). Not include termination circuit

Note (2). Launched power is power coupled into a single mode fiber.

Note (3). These are 20-80% values.



Optical Pulse Mask with Bessel Filter Specified in ITU-T G.957

Mask of the eye diagram for the optical transmit signal

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Receiver Electro-Optical Performance Specifications:

Parameter	Symbol	Min.		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	P _{IN}			-31	dBm	Note (1)
Optical input saturation (Overload)	P _{SAT}	-7.5			dBm	Note (1)
Signal detect-Assert	P _A			-32	dBm	
Signal detect-Deassert	P _D	-45			dBm	
Optical wavelength	λ	1500	1550	1600	nm	
Optical isolation		25			dB	Note (2)

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

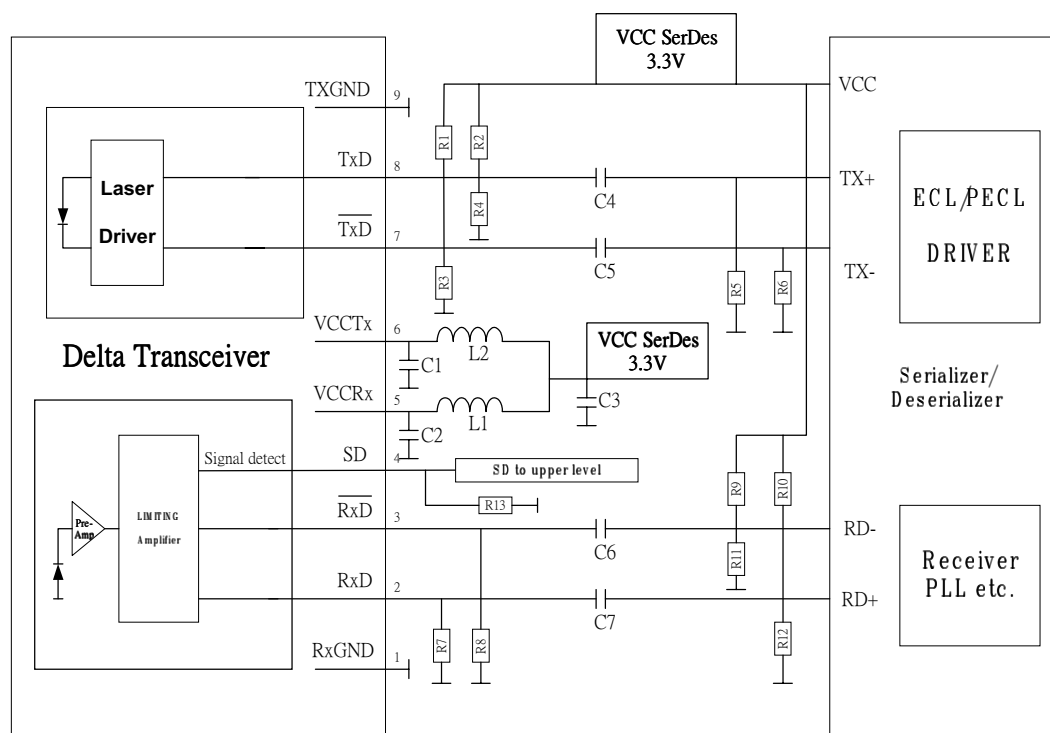
Note (2). Receiver isolation between 1260nm ~1360nm

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Recommended Circuit Schematic



C1/2/3 = 4.7 μ F

C4/5/6/7 = 100 nF

L1/2 = 1 μ H

R1/2 = 82 Ω (If C4/5=0, then R1/2 = 130 Ω)

R3/4 = 130 Ω (If C4/5=0, then R3/4 = 82 Ω)

R7/8 = 150 Ω

R5/6/9/10/11/12 Depend on SerDes chip used

R13 = 270 Ω When we want PECL output in SD pin we use R13= 270 Ω

Value of R5/6/9/10/11/12 may vary as long as proper 50 Ω termination or 100 Ω differential is provided. For good EMI performance, the power supply filter is required. Use short tracks from the inductor L1/2 to the module VccTx/VccRx.



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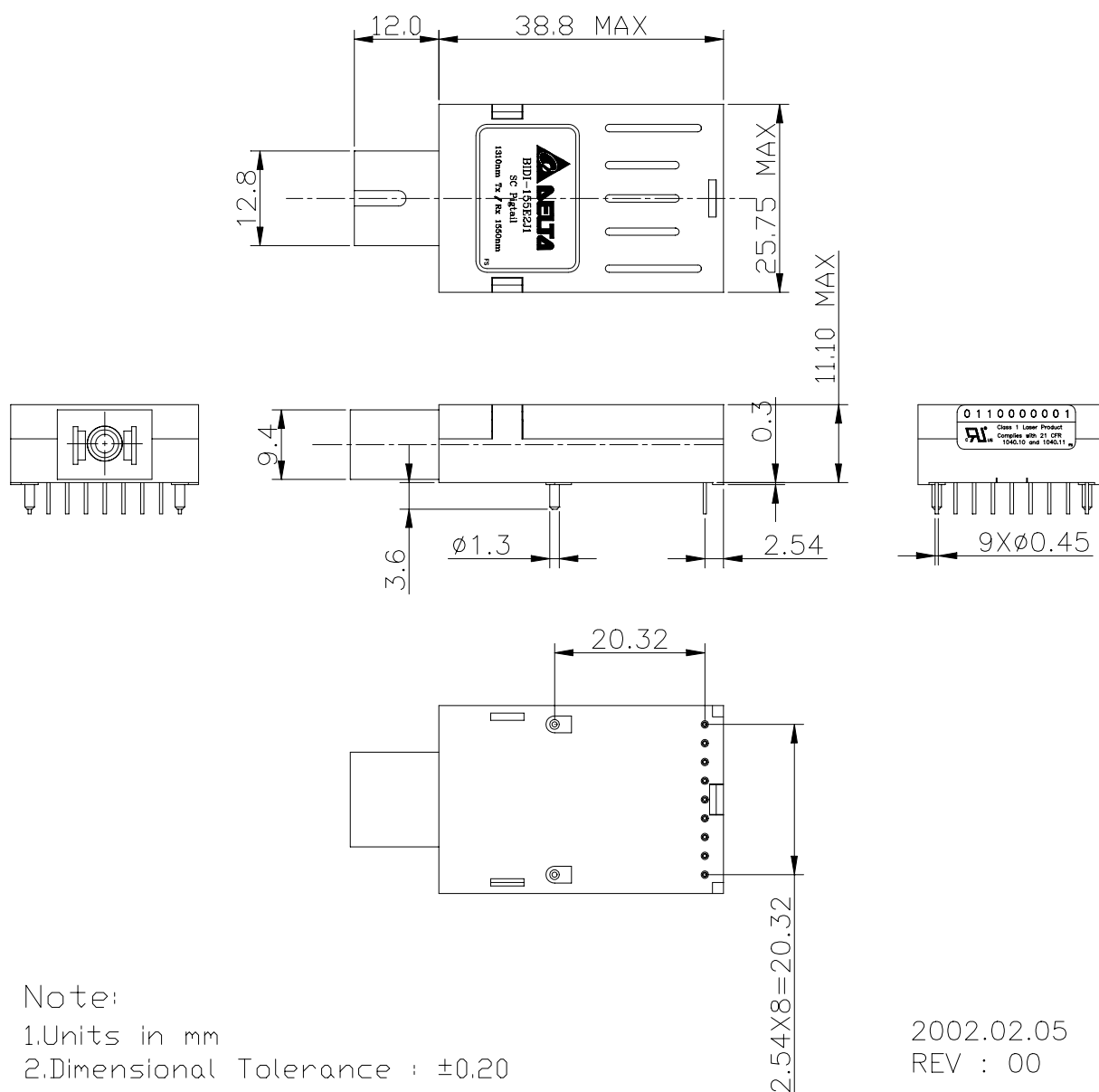
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Mechanical Dimensions



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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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