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

BIDI-155F2J1

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	Ts	-60		85	℃	
Lead Soldering Temperature	T_{SOLD}			260	℃	
Lead Soldering Time	t_{SOLD}			10	sec.	
Supply Voltage	Vcc	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	℃	
Supply Voltage	Vcc	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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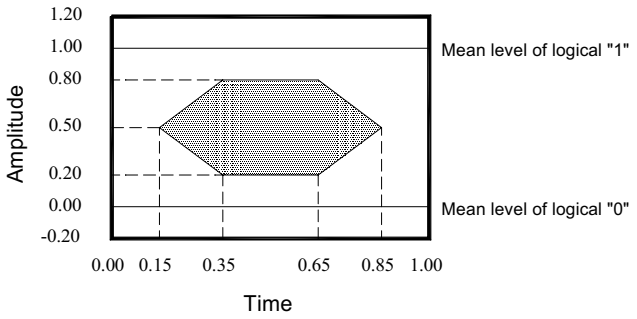
Transmitter Electro-Optical Performance Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Reference
Supply current	Icc			140	mA	Note (1)
Launched power (avg.)	Po	-15	-11	-8	dBm	Note (2)
Optical extinction ratio		10			dB	Note (2)
Center wavelength	λ c	1500	1550	1600	nm	
Spectral width (RMS)	σ			3	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	Icc			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	1260	1310	1360	nm	
Optical isolation		25			db	Note (2)

Note (1). With BER better than or equal to $1x10^{-10}$, measured in the center of the eye opening with 2^{23}-1 NRZ PRBS

Note (2). Receiver isolation between 1500nm ~1600nm

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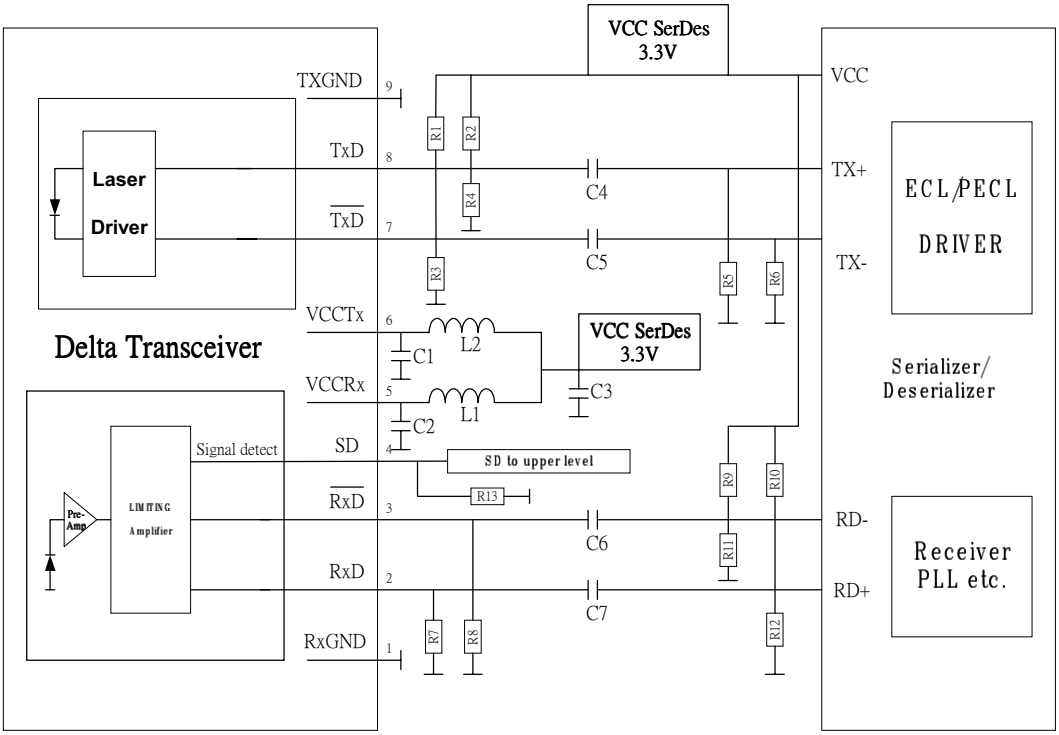
Recommended Circuit Schematic



C1/2/3 = 4.7 uF
C4/5/6/7 = 100 nF
L1/2 = 1 uH
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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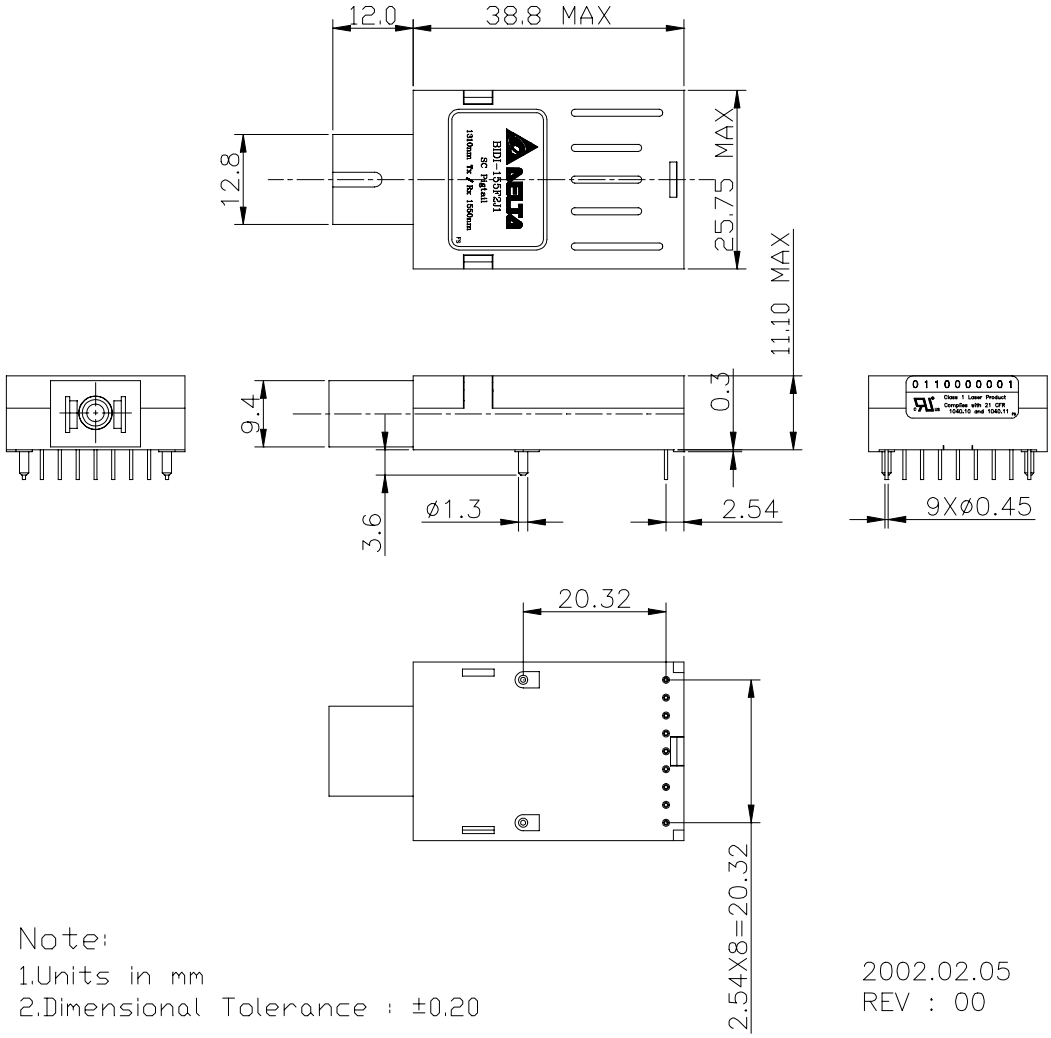
Mechanical Dimensions



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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