

Features

- Transceiver unit with independent
 - 1310nm DFB Laser diode transmitter
 - InGaAs PIN photodiode receiver
- Duplex SC connector ,1×9 pin package and plastic package
- +5V or +3.3V Single power supply, PECL or LVPECL interface logic level
- Operates data rates 1250Mb/s(NRZ)
- Class I laser product complies with IEC 60825-1
- Complies with Telcordia GR-468-CORE
- Operating case temperature:
 - Standard : 0 to +70°C
 - Industrial : -40 to +85°C
- Compliant ROHS and lead free

Application

- SONET/SDH
- ATM
- Ethernet

Performance Specifications

Table1. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	
Storage Temperature	Tst	-40	+85	°C	
Input Voltage	Vin	GND	Vcc	V	
Power Supply Voltage	Vcc-Vee	CS513D5-2*-13	0	+6.0	V
		CS313D5-2*-13	0	+3.6	
Lead Soldering Temperature/Time	-	-	240/10	°C/S	

Note: Stress in excess of maximum absolute ratings can cause permanent damage to the module

Table2. Operating Environment

Parameter	Symbol	Min	Max	Unit	
Power Supply Voltage	Vcc	CS513D5-2*-13	+4.75	+5.25	V
		CS313D5-2*-13	+3.1	+3.5	
Ambient Operating Temperature	TA	CS*13D5-21-13	0	+70	°C
		CS*13D5-22-13	-40	+85	

Table3. Optical and Electrical Characteristics

(T=25°C, 5V:Vcc=+4.75~+5.25V, 3.3V:Vcc=+3.1~+3.5V Input and output PECL or LVPECL signal)

Parameter	Symbol	Min	Typ	Max	Unit	Note
Transmitter						
Center Wavelength	λ_D	1260	1310	1360	nm	-
Spectral Width	$\Delta\lambda(-20dB)$	-	-	1	nm	-
Output Power	Po	-3	-	+2	dBm	-
Extinction Ratio	Er	8.2	-	-	dB	-
Side Mode Suppression Ratio	SMSR	30	-	-	dB	-
Power Supply Current	Icc	-	70	180	mA	1
Output Eye	Compliant with IEEE802.3Z					
Data Inputs	PECL/LVPECL					
Receiver						
Parameter	Symbol	Min	Typ	Max	Unit	Note
Sensitivity	Pr	-	-	-23	dBm	2

CS513D5-21-13 Product Data sheet VER0.1/9-9-2008

Maximum Input Power	Ps	-3	-	-	dBm	2
Signal Detect Assert Level	Pa(SD H-L)	-35	-	-	dBm	Low-level: Alarm
Signal Detect Deassert Level	Pd(SD L-H)	-	-	-23	dBm	
Signal Detect Hysteresis	-	-	2	-	dB	
Operating Current	Icc	-	80	180	mA	1
Data Outputs			PECL/LVPECL			
Alarm Output			PECL/LVPECL			

PECL or LVPECL Input Pins TD+ and TD-

Parameter	Symbol	Min	Typ	Max	Unit	Note
Input High Voltage	V _{IH}	VCC - 1165	-	VCC - 880	mV	3
Input Low Voltage	V _{IL}	VCC - 1810	-	VCC - 1475	mV	3

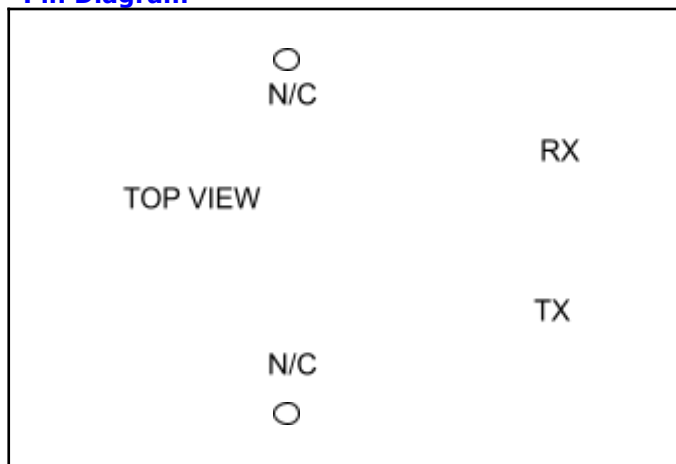
PECL or LVPECL Output Pins SD, RD+ and RD-

Parameter	Symbol	Min	Typ	Max	Unit	Note
Low-level Output Voltage	V _{oL}	VCC - 1840	-	VCC - 1600	mV	3
High-level Output Voltage	V _{oH}	VCC - 1100	-	VCC - 900	mV	3

Note:

1. The current excludes the output load current.
2. Minimum Sensitivity and saturation levels for a 2⁷ -1 PRBS test pattern@ 1.25Gb/s.
3. RL=50 R (Ohms) connected to a level of VCC-2V

**Pin Definitions
Pin Diagram**

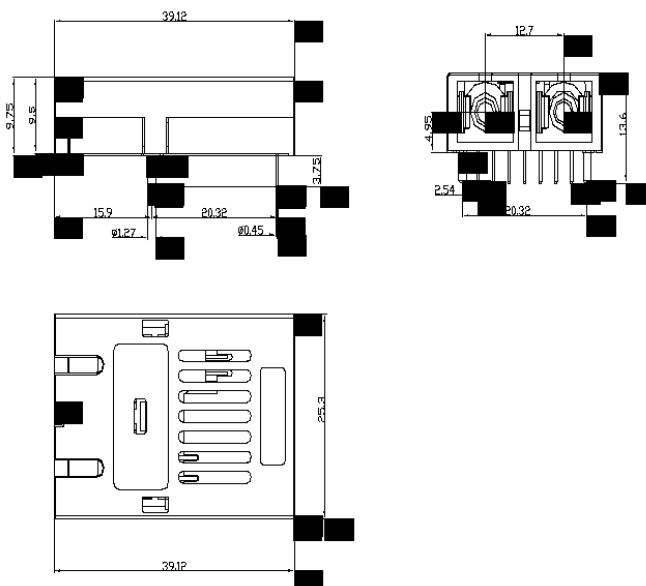


Pin Description

Pin#	Pin Name		Logic Level	Description
N/C	Mounting Studs		-	The two pins are not connected to the transceiver internal circuit.
1	VEER	RX Ground	N/C	Directly connect this pin to receiver

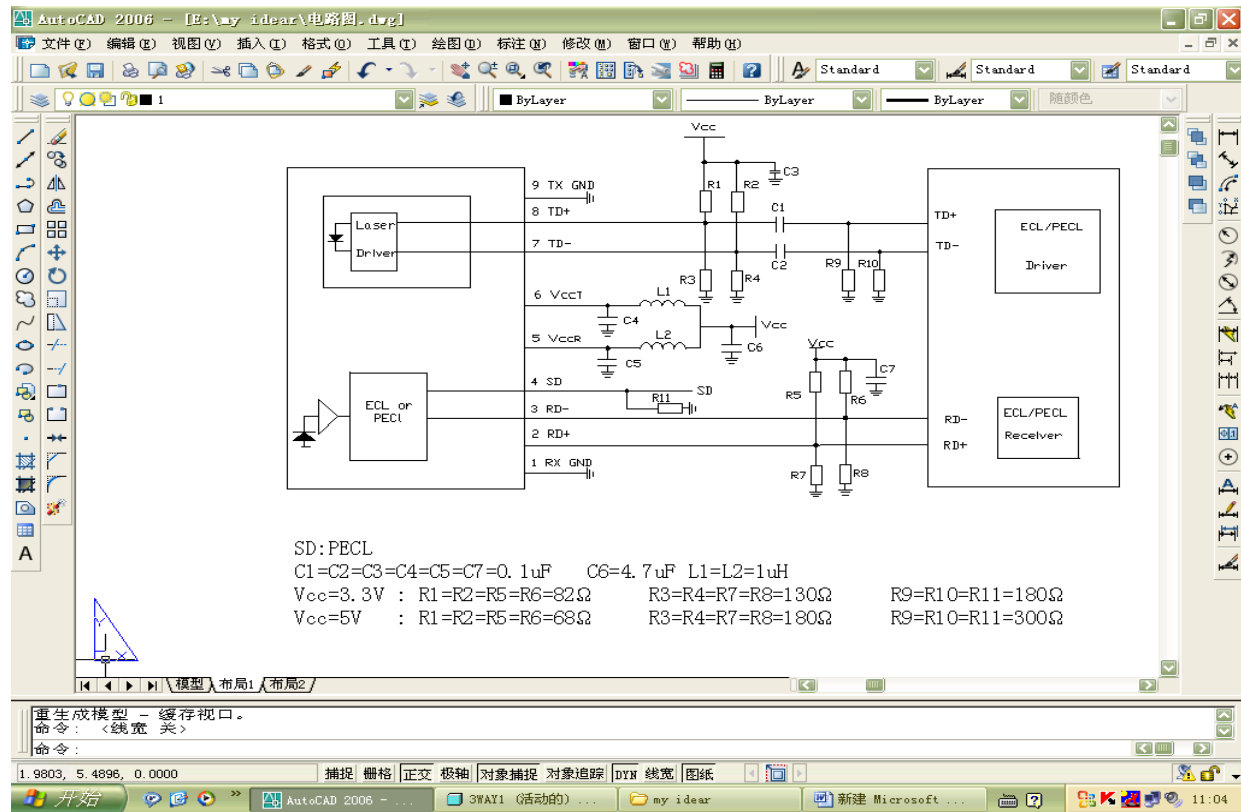
				signal ground plane.
2	RD+	RX Output Data	PECL/LVPECL	
3	RD-	RX Output Inverted Data	PECL/LVPECL	
4	SD	RX Signal Detect	PECL/LVPECL	Normal Operation: Logic "1" output, represents that optical is present at receiver input. Fault Condition: Logic "0" output
5	VCCR	RX Power Supply	N/C	Provide +5V/+3.3V DC through the recommended power supply filter circuit. Place the filter circuit as close as possible to the VCCR pin.
6	VCCT	TX Power Supply	N/C	Provide +5V/+3.3V DC through the recommended power supply filter circuit. Place the filter circuit as close as possible to the VCCT pin
7	TD-	TX Invert Data Input	PECL/LVPECL	-
8	TD+	TX Data Input	PECL/LVPECL	-
9	VEET	TX Ground	N/C	Directly connect this pin to transmitter signal ground plane.

Package Information



Unit: mm

Recommended Circuit



For More Information

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Ordering Information

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Product classification	LD/PD type:	Operating Temperature Range:	Connector Type:
S: Normal	F: FP/PIN	1: 0~70°C	1: FC/PC
C: CWDM	D: DFB/PIN	10~85°C	2: FC/APC
M: Multi-mode	V: VCSEL/PIN		3: SC/PC
Operate voltage:	L: LED/PIN		4: SC/APC
3: 3.3V	A: DFB/APD		5: LC/PC
5: 5V	Data Rate:		6: ST/PC
Normal wavelength:	1: DC~500K		
08: 850nm	2: 52M		
13: 1310nm	3: 155M		
15: 1550nm	4: 622M		
CWDM wavelength:	5: 1.25G		
47: 1470nm	6: 2.5G		
49: 1490nm			
51: 1510nm			
53: 1530nm			
55: 1550nm			
57: 1570nm			
59: 1590nm			
61: 1610nm			
		Logic level:	
		1: PECL Signal/PECL	
		SD 2: PECL Signal/TTL	
		SD	
		3: TTL Signal/TTL SD	

