

## Features

- Transceiver unit with independent
  - 1310nm FP 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 up to 155Mb/s(NRZ)
- Class I laser product compiles with IEC 60825-1
- Complies with Telcordia GR-468-CORE
- Compliant ROHS and lead free
- Operating case temperature:
  - Standard : 0 to +70℃
  - Industrial : -40 to +85℃

## Performance Specifications

**Table1. Absolute Maximum Ratings**

Parameter	Symbol		Min	Max	Unit
Storage Temperature	Tst		-40	+85	℃
Input Voltage	-		GND	Vcc	V
Power Supply Voltage	Vcc-Vee	CM513F3-1*-11	0	+6	V
		CM313F3-1*-11	0	+3.6	
Lead Soldering Temperature/Time	-		-	240/10	℃/S
Operating Temperature	To	CM*13F3-11-11	0	+70	℃
		CM*13F3-12-11	-40	+85	

**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	CM513F3-1*-11	+4.75	+5.25	V
		CM313F3-1*-11	+3.1	+3.5	
Ambient Operating Temperature	TA	CM*13F3-11-11	0	+70	℃
		CM*13F3-12-11	-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	$\lambda_p$	1260	1310	1360	nm	-
Spectral Width	$\Delta\lambda$ (RMS)	-	-	3	nm	-
Average Optical Output Power	Po	-15	-	-8	dBm	-
Extinction Ratio	EXT	10	-	-	dB	-
Power Supply Current	Icc	-	70	180	mA	-
Output Eye	Compliant with ITU recommendation G.957					
Data InputS	PECL/LVPECL					
Receiver						
Parameter	Symbol	Min	Typ	Max	Unit	Note
Sensitivity	Pr	-	-	-28	dBm	2
Maximum input power	Ps	-3	-	-	dBm	2
Signal Detect Assert Level	Pa(SD H-L)	-50	-	-	dBm	Low-level: Alarm
Signal Detect Deassert Level	Pd(SD L-H)	-	-	-34	dBm	
Signal Detect Hysteresis		-	3	-	dB	
Operating Current	Icc	-	80	100	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 <sub>IH</sub>	VCC - 1165	-	VCC - 880	mV	3
Input LOW voltage	V <sub>IL</sub>	VCC - 1810	-	VCC - 1475	mV	3

**PECL Or LVPECL Output Pins SD, RD+ and RD-**

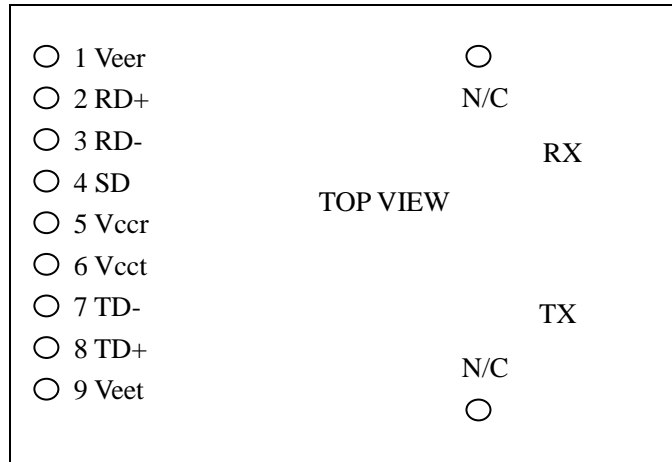
Parameter	Symbol	Min	Typ	Max	Unit	Note
LOW-level output voltage	V <sub>OL</sub>	VCC - 1840	-	VCC - 1600	mV	3
HIGH-level output voltage	V <sub>OH</sub>	VCC - 1100	-	VCC - 900	mV	3

**Note :**

1. The current excludes the output load current.
2. Minimum Sensitivity and saturation levels for a  $2^{23}-1$  PRBS with 72 ones and 72 zeros inserted
3. RL=50R connected to a level of Vcc -2V.

**Pin Definitions**

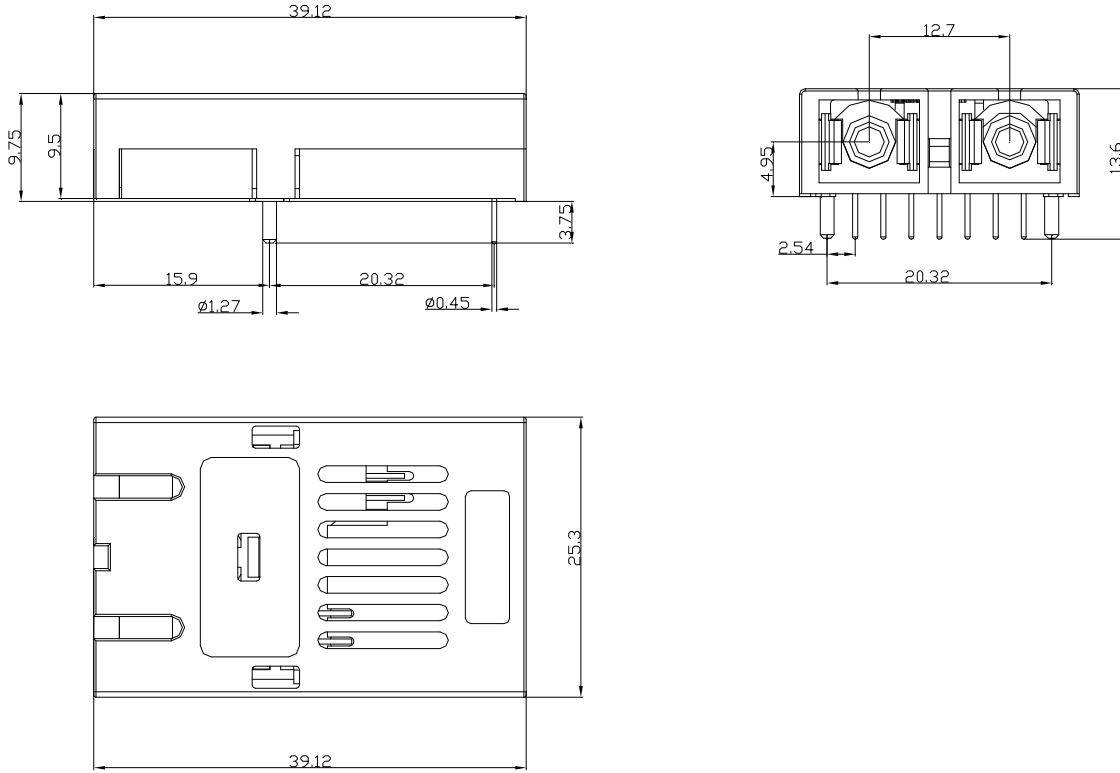
**Pin Out Diagram**



**Pin Description**

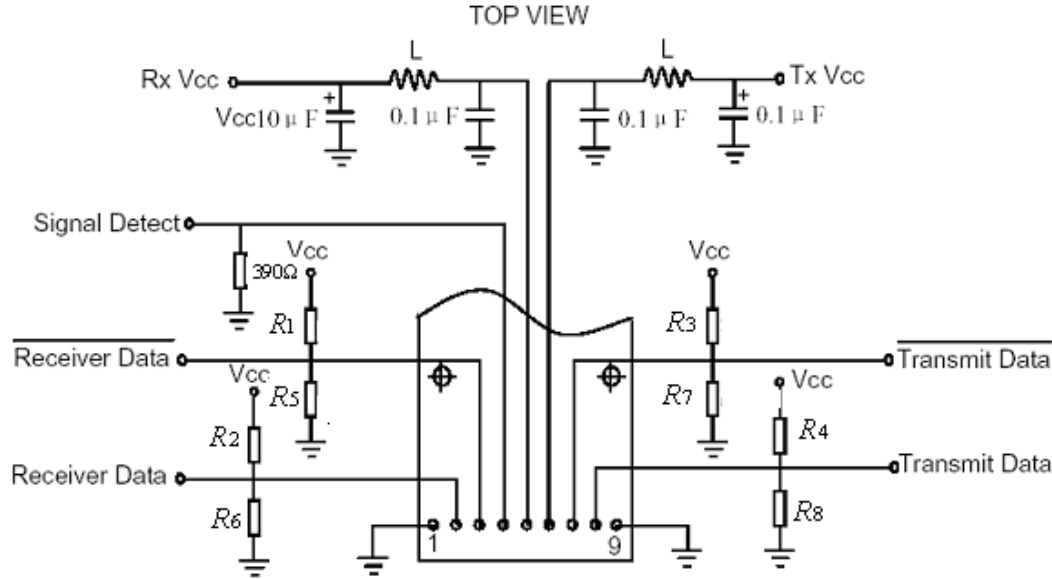
Pin#	Pin Name		Logic Level	Description
N/C	Mounting Studs			The two pins are not connected to the transceiver internal circuit.
1	VEER	RX Ground	N/C	Directly connect this pin to receiver signal ground plane.
2	RD+	RX Output Data	PECL/LVPE CL	
3	RD-	RX Output Invert Data	PECL/LVPE CL	
4	SD	RX Signal Detect	PECL/LVPE CL	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.
3V 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/LVPE CL	
8	TD+	TX Data Input	PECL/LVPE CL	
9	VEET	TX Ground	N/C	Directly connect this pin to transmitter signal ground plane.

**Package Information**



Unit: mm

**Recommended Circuit**



For:  $V_{cc}=5V$  -,  $R_1 = R_2 = R_3 = R_4 = 82\Omega$ ,  $R_5 = R_6 = R_7 = R_8 = 130\Omega$   
 $V_{cc}=3.3V$  ,  $R_1 = R_2 = R_3 = R_4 = 130\Omega$ ,  $R_5 = R_6 = R_7 = R_8 = 82\Omega$

**For More Information**

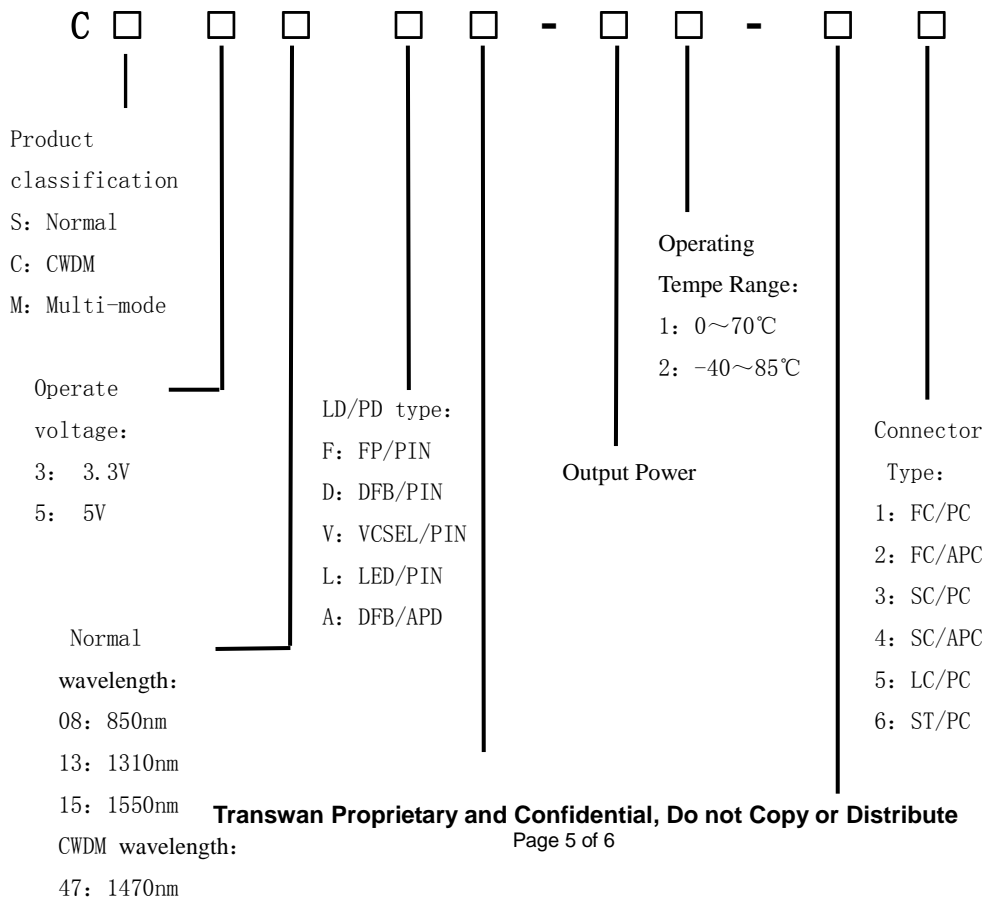
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**Ordering Information**



Data Rate:         

1: DC~500K

2: 52M

3: 155M

4: 622M

5: 1.25G

6: 2.5G

Logic Level:

1: PECL Signle/PECL SD

2: PECL Signle/TTL SD

3: TTL Signle/TTL SD