Product Specification

SDH/SONET STM-4/OC-12 622Mbps 15Km 0-70°C
2x9 Receptacle Duplex SC Transceiver

ETRS622-31AR1S

ePHOTON

Ver A

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SDH/SONET STM-4/OC-12 622Mbps 15Km
2X9 Duplex SC Receptacle Transceiver

1 Features

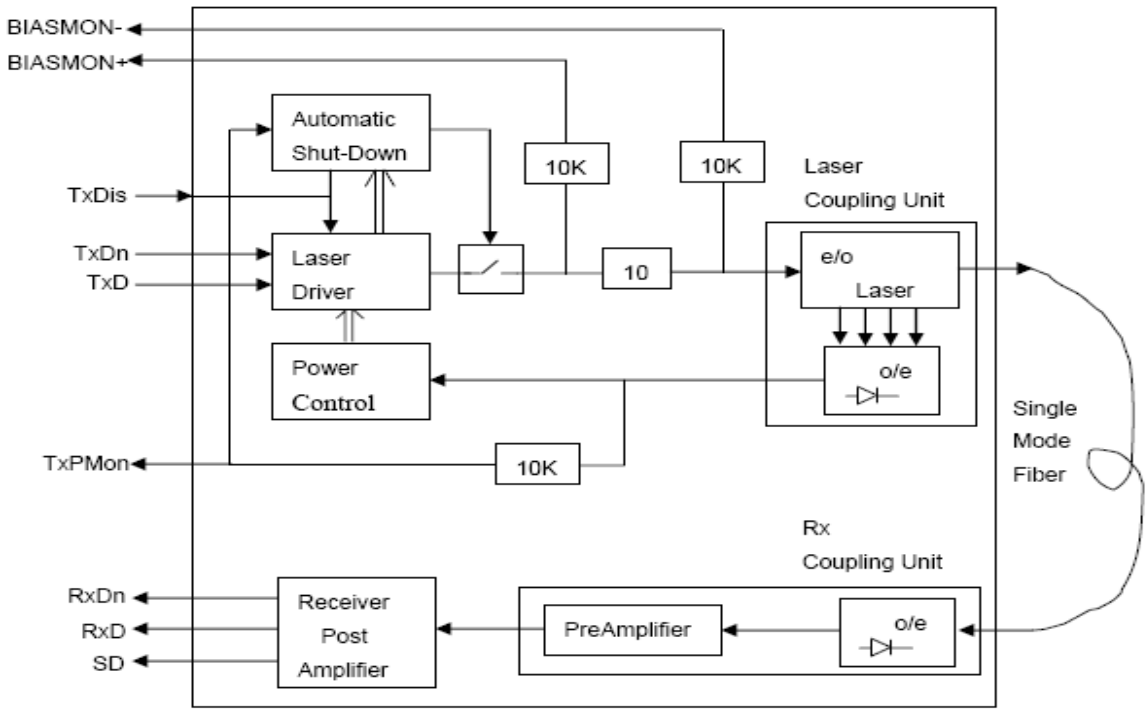
1.1 Transceiver unit with independent
- 1310nm FP Laser diode transmitter
- InGaAs PIN photodiode receiver

1.2 Duplex SC receptacle optical interface
1.3 Single +3.3V power supply
1.4 Standard 2x9 package
1.5 LVPECL compatible data input/output interface
1.6 0°C to 70°C operating temperature range optional
1.7 Compliant with ITU-T G.957

2 Applications

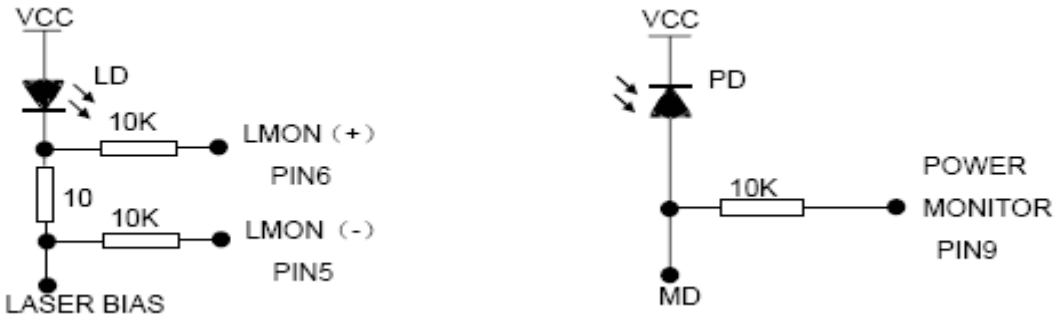
2.1 SDH STM-4 S4.1
2.2 SONET
2.3 ATM

3 General



3.1 Transmitter Section

Transmitter is designed for single mode fiber and operates at a nominal wavelength of 1310nm. The transmitter module uses a FP laser diode and full IEC825 and CDRH class 1 eye safety. It contains APC function, temperature compensation circuit, PECL data inputs interface. It provides laser bias monitor and power monitor and transmitter disable.



The analog current is monitored by measuring the voltage drop across a 10 ohm resistor placed between 10k resistors connected to pin 5 and 6 to the transceiver.

The analog voltage measured at 10k ohm resistor output provides an indication of whether the optical power of the laser diode is operating within the normal specified power range, the transmitter power monitor voltage can be estimated as follows:

$Vpmon=KXP_0$

Vpmon: The transmitter optical power monitor voltage

P_0: The transmitter optical power

K: It is a constant coefficient

3.2 Receiver Section

The receiver section uses a hermetic packaged front end receiver (InGaAs PIN and preamplifier).The post amplifier is ac coupled to preamplifier through a capacitor and a low pass filter. The capacitor and LPF are enough to pass the signal from 5Mb/s to 622Mb/s without significant distortion or performance penalty. The LPF limits the preamplifier bandwidth to improve receiver sensitivity. As the input optical is decreased, LOS will switch from high to low. As the input optical power is increased from very low levels, LOS will switch back from low to high.

4 Performance Specifications

4.1 Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature (Non-Operating)	Tstg	-40	+85	°C
Relative Humidity	RH	0	95	%
Lead Solder Temperature/Duration	-	-	260/10	°C/S
Input/Output Voltage	-	GND	Vcc	V
Power Supply Voltage	Vcc-Vee	0	+3.6	V

4.2 Operating Environmentty

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Power Supply Voltage	V_{CC}	+3.1	+3.3	+3.5	V	-
Case Temperature (Operating)	T_C	0	-	70	°C	-
Data Rate	-	-	622	-	Mb/s	-
LVPECL Input Voltage-Low (TD)	V_{IH}	V_{CC}-1165	-	V_{CC}-880	mV	3

LVPECL Input Voltage-High (TD)	V_{IL}	V_{CC}-1810	-	V_{CC}-1475	mV	3
LVPECL Output Voltage-Low (SD,RD)	V_{OL}	-1.810	-	-1.620	V	3
LVPECL Output Voltage-High (SD,RD)	V_{OH}	-1.025	-	-0.880	V	3

4.3 Transmitter E-O characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Center Wavelength	λ	1274	1310	1356	nm	-
Spectral Width (RMS)	△λ	-	-	2.5	nm	-
Average Optical Ouput Powerer	Po	-15	-	-8	dBm	-
Extinction Ratio	Er	8.2	-	-	dB	-
Power Supply Current	Icc	-	70	180	mA	1
Laser Bias Monitor	Lmon(+)-Lmon(-)	5	50	900	mV	
Power Monitor	Pmon	0.05	0.5	2.1	V	
Transmitter Disable Voltage	VD	2	-	Vcc	V	
Transmitter Enable Voltage	VEN	0	-	0.8	V	
Transmitter Disable Optical Output Power	Pooff	-	-	-45	dBm	
Output Eye Diagram	Compliant with ITU recommendation G.957 STM-4/OC-12					

4.4 Receiver O-E Characteristics

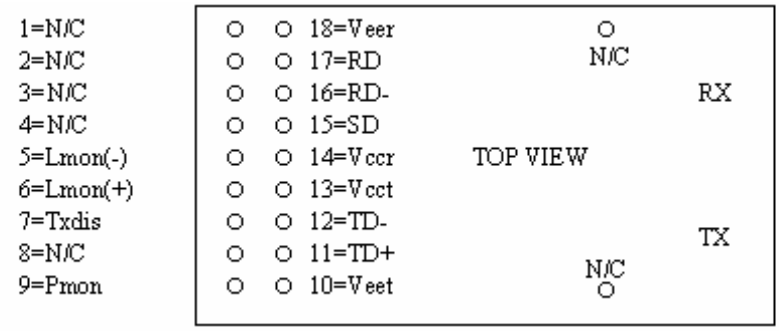
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Operate Wavelength	-	1260	-	1580	nm	-
Sensitivity	Sen	-	-31	-28	dBm	2
Saturation	Psal	-3	0	-	dBm	2
LOS Asserted	-	-40	-	-	dBm	High Level: Alarm
LOS De-Asserted	-	-	-	-28	dBm	
LOS Hysteresis	-	0.5	-	5	dB	
Power Supply Current	Icc	-	80	100	mA	1

Notes:

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 (ITU recommendation G958)
3. Terminated with 50 ohms to Vcc-2V;

5 Pin Definitions

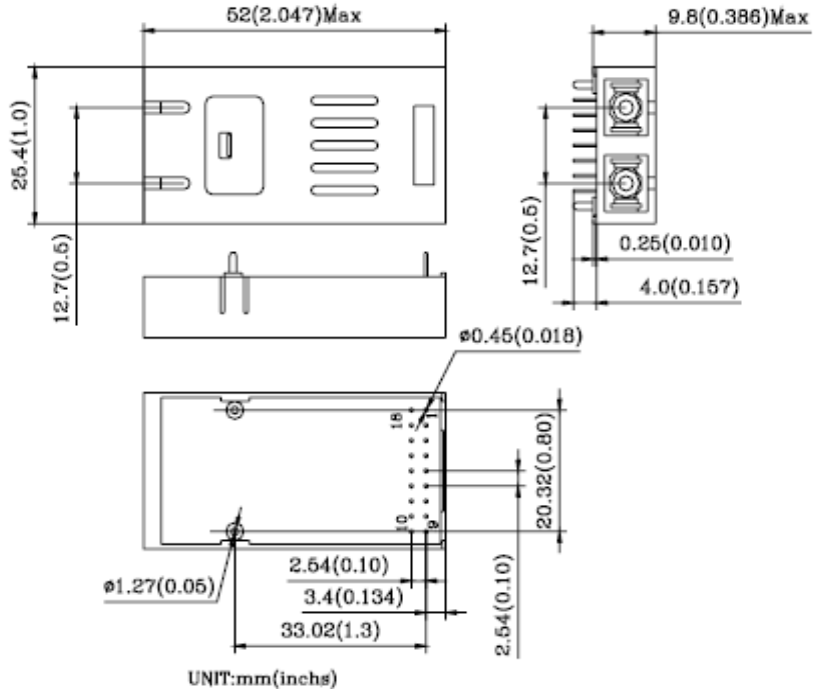
5.1 Pin Diagram



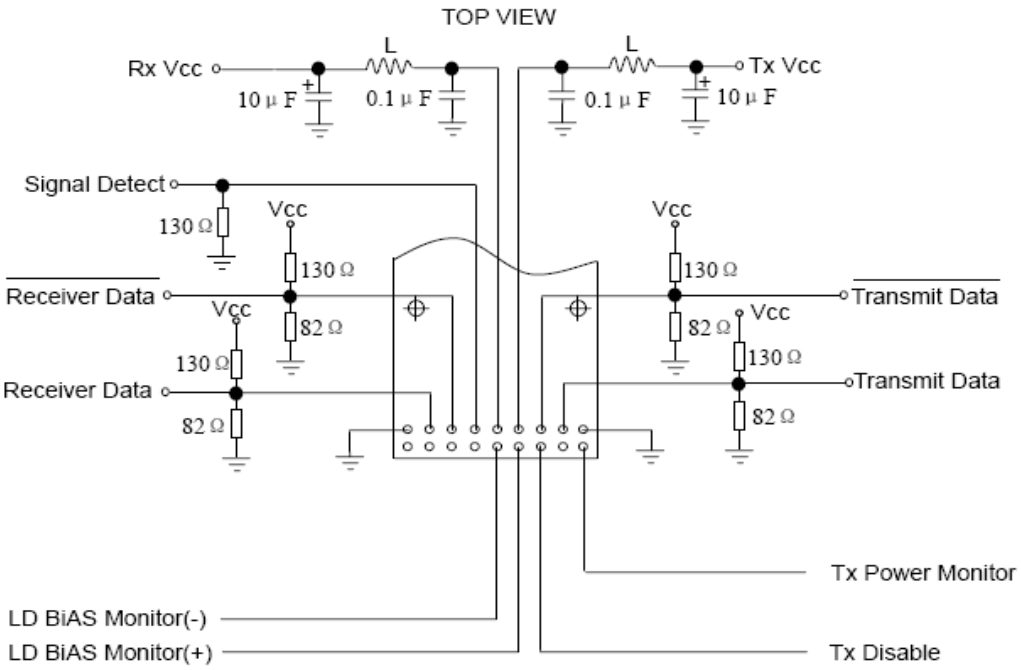
5.2 Pin Descriptions

Pin#	Pin Name		Pin#	Pin Name	
1	NC		10	Tx Ground	V_{EET}
2	NC		11	Tx Data Input	TD+
3	NC		12	Tx Inverted Data Input	TD-
4	NC		13	Tx Power Supply	V_{CCT}
5	Laser Bias Monitor	Lmon(-)	14	Rx Power Supply	V_{CCR}
6	Laser Bias Monitor	Lmon(+)	15	Rx Signal Detect	SD
7	Transmitter Disable	Txdis	16	Rx Output Inverted Data	RD-
8	NC		17	Rx Output Data	RD+
9	Tx Power Monitor	Pmon	18	Rx Ground	V_{EER}

6 Package Information



7 Recommended Circuit



8 Ordering Information

Part Number	Description
ETRS622-31AR1S	2x9, Duplex SC, 622Mb/s,3.3v,15km,0~70°C,

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