

1.25Gbps Burst Mode GEPON ONU Small Form Factor BIDI Transceiver

Features

- Compliant with IEEE 802.3ah
- Burst mode transmitter
- Continuous mode receiver
- Industrial standard SFF 2 X 5 pin footprint
- SC/ST/FC connector interface
- Transmitter disable function
- Receiver signal detect function
- Single supply 3.3V



Specifications

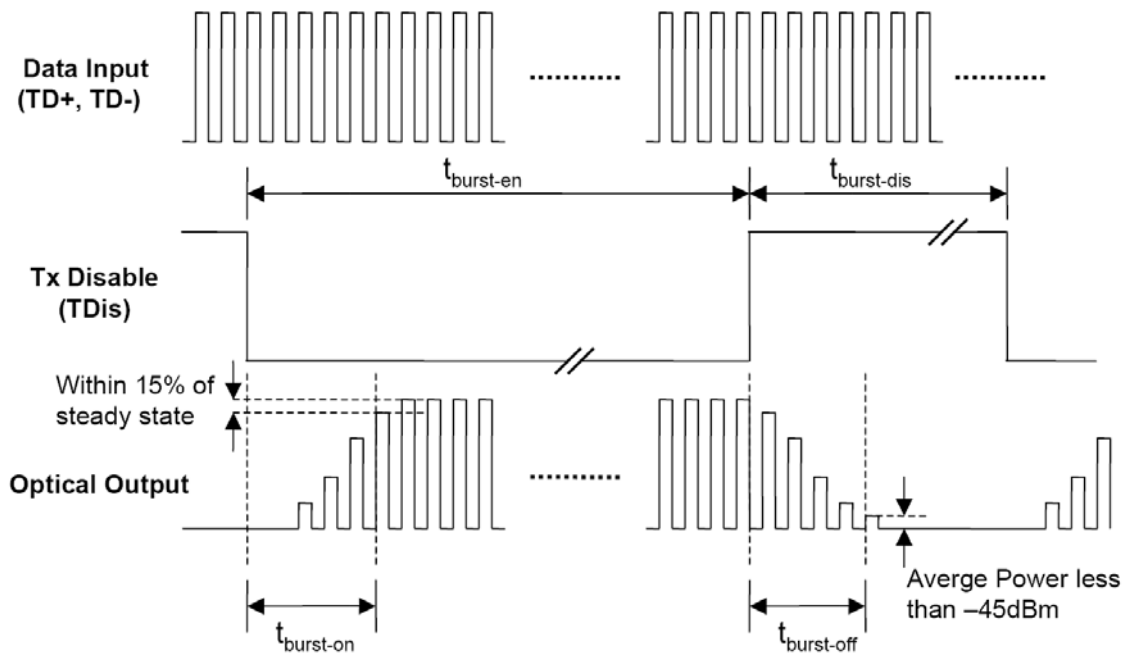
Parameter	Symbol	Min.	Typ.	Max.	Unit
Transmitter					
Data Rate (NRZ)	B	-	1.25	-	Gb/s
Optical Output Power (avg.) ^{(1) (2) (3)}	P _O	-3	-	+2	dBm
Extinction Ratio	ER	6	-	-	dB
Optical Wavelength	λ_C	1270	1310	1360	nm
Spectral Width					
1310nm FP LD (RMS)	$\Delta\lambda$	-	-	2.5	nm
1310nm DFB LD (-20dB)	$\Delta\lambda$	-	-	1	nm
Side Mode Suppression Ratio					
1310nm DFB LD	SMSR	30	-	-	dB
Output Rise Time (20-80%)	t _r	-	-	0.26	ns
Output Fall Time (20-80%)	t _f	-	-	0.26	ns
Burst Turn On Time ⁽⁸⁾	t _{burst-on}	-	-	64	ns
Burst Turn Off Time ⁽⁸⁾	t _{burst-off}	-	-	64	ns
Burst Enable Time ⁽⁸⁾	t _{burst-en}	600	-	-	ns
Burst Disable Time ⁽⁸⁾	t _{burst-dis}	100	-	-	ns
Data Input ⁽⁶⁾	V _{IL} V _{IH}	V _{CC} -1.810 V _{CC} -1.165	- -	V _{CC} -1.475 V _{CC} -0.88	V
Tx Disable Input	V _{DIL} V _{DIH}	0 2	- -	0.8 V _{CC}	V
Optical Output Power (avg.) of Tx Disable	P _{Off}	-	-	-45	dBm
Supply Voltage	V _{CC}	3.10	3.3	3.50	V
Supply Current	I _{CC}	-	-	110	mA

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Parameter	Symbol	Min.	Typ.	Max.	Unit
Receiver					
Data Rate (NRZ)	B	-	-	1.3	Gb/s
Optical Input (avg.) Sensitivity ⁽¹⁾ ⁽⁵⁾	P_{IN}	-	-	-25	dBm
Saturation	P_{SAT}	-3	0	-	dBm
Optical Wavelength	λ	1100	-	1600	nm
Output Rise Time (20-80%)	t_r	-	-	0.4	ns
Output Fall Time (20-80%)	t_f	-	-	0.4	ns
Data Output ⁽⁶⁾	V_{OL} V_{OH}	$V_{CC} - 1.840$ $V_{CC} - 1.045$	- -	$V_{CC} - 1.62$ $V_{CC} - 0.88$	V
Signal Detect Asserted (avg.)	P_A	-	-	-25	dBm
Signal Detect Deasserted (avg.)	P_D	-35	-	-	dBm
Hysteresis	P_{HYS}	-	2	-	dB
Supply Voltage	V_{CC}	3.10	3.3	3.50	V
Supply Current	I_{CC}	-	-	100	mA

Note:

- (1) With 0.275 NA, 9/125 μ m fiber.
- (2) Driven with a differential signal.
- (3) Class 1 eye safe per FDA and IEC.
- (4) Eye mask diagram is compliant to IEEE802.3ah Eye Diagram
- (5) $2^7 - 1$ PRBS, BER= 10^{-12} .
- (6) Compatible with LVPECL logic levels.
- (7) The transmitter output should not be viewed directly.
- (8) Timing parameter define :



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Absolute Maximum Ratings

Parameter	Min.	Max.	Unit
Operating Temperature	0	70	°C
Storage Temperature	-40	85	°C
Lead Soldering Limits	-	240/10	°C/sec
Supply Voltage	-0.2	4	V

Ordering Information

T R R 4 9 - 3 - 3 - 2 3 N 1

Data Coupling & SD Output Level :

Symbol	Tx Coupling	Rx Coupling	SD
G	DC	DC	PECL
H	DC	DC	TTL
I	DC	AC	PECL
J	DC	AC	TTL

Connector Type :

SC : SC Connector
FC : FC Connector
ST : ST Connector

Package Type :

P : Pigtail
R : Receptacle

Transmitter Wavelength / Laser Type :

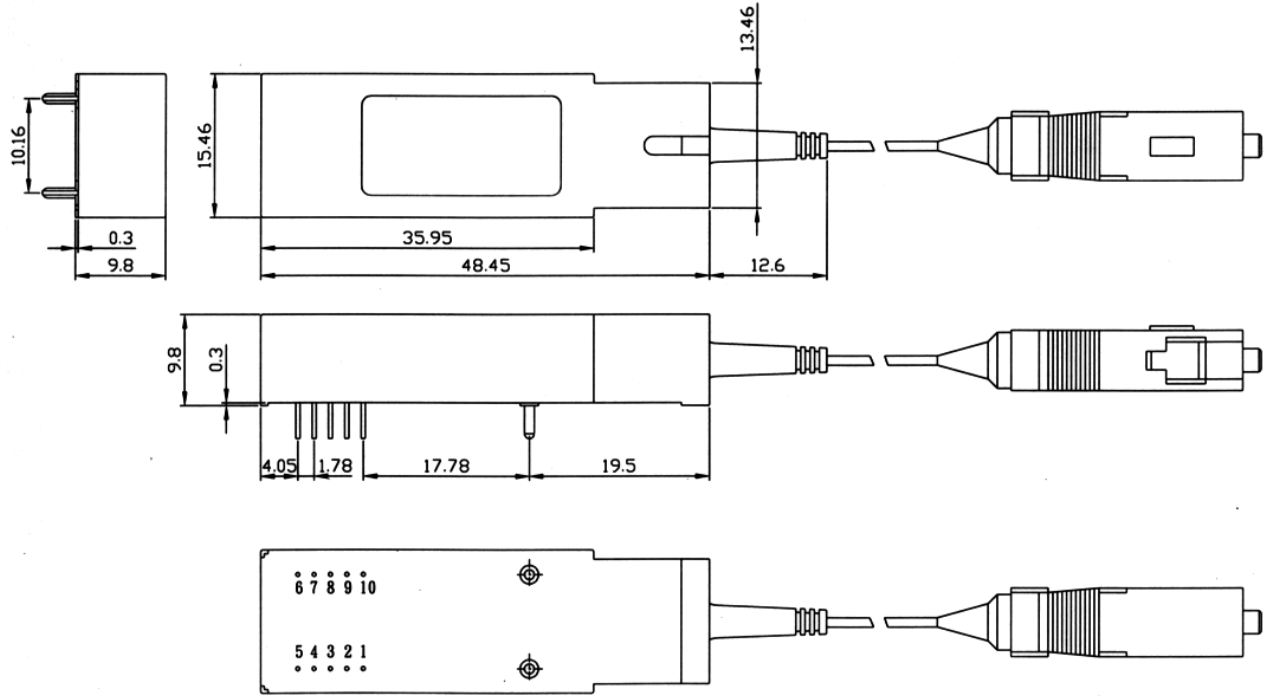
13 : 1310nm (FP LD)
31 : 1310nm (DFB LD)

Part Number	Laser Type	Transmission distance	Compliant to IEEE 802.3ah
TR13R49-3-3-2 <input type="checkbox"/> <input type="checkbox"/> 3N <input type="checkbox"/> 1	1310nm, FP	≥10Km	1000BASE-PX-ONU-A
TR31R49-3-3-2 <input type="checkbox"/> <input type="checkbox"/> 3N <input type="checkbox"/> 1	1310nm, DFB	≥20Km	1000BASE-PX-ONU-B

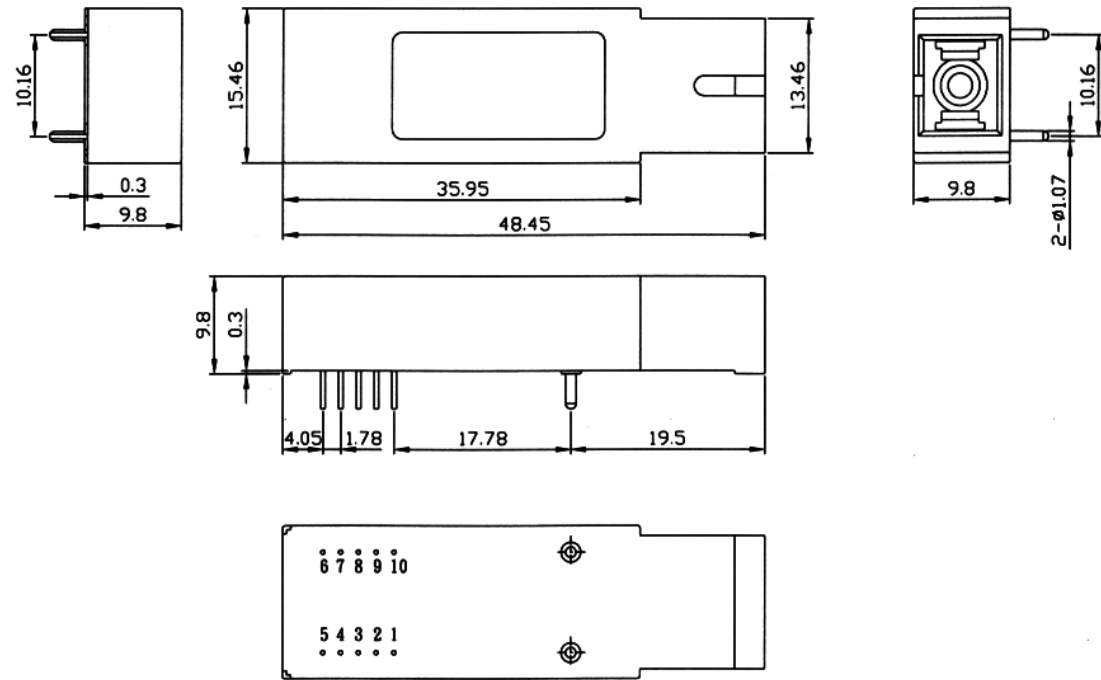
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Outline Drawing

Pigtail 2x5 pins SFF



Receptacle 2x5 pins SFF



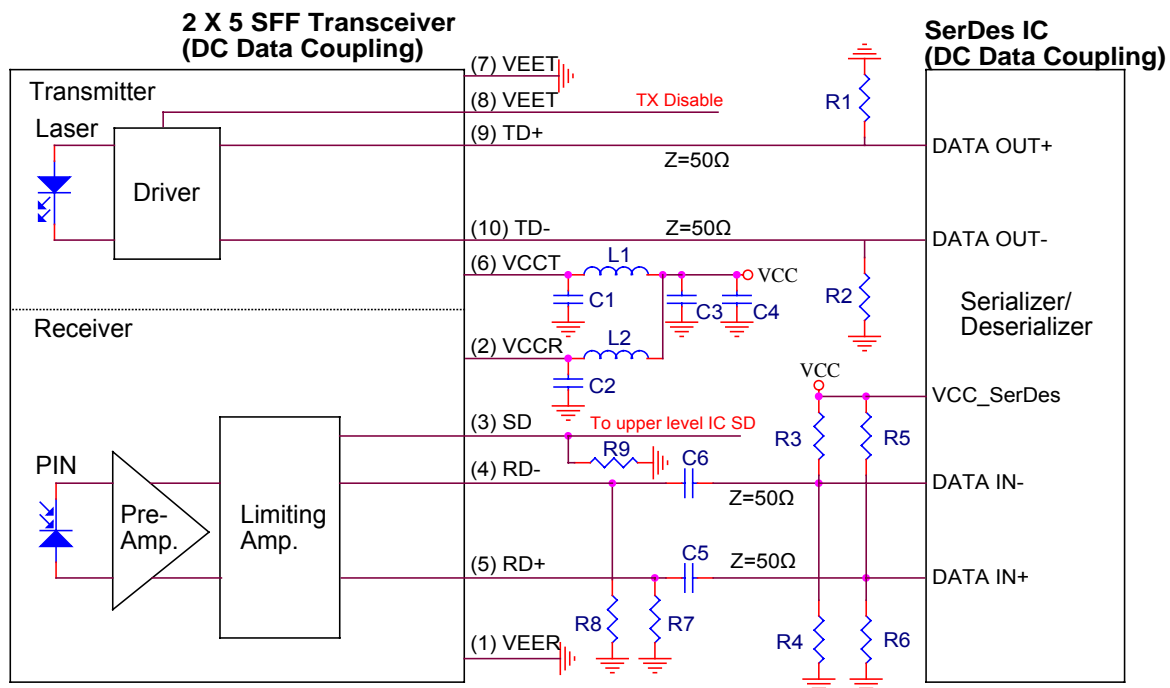
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Pinout Description

Pin No.	Symbol	Description
1	V_{EER}	Receiver Ground
2	V_{CCR}	Receiver Power Supply
3	SD	Receiver Signal Detect
4	RD-	Receiver Data Out (Inverted)
5	RD+	Receiver Data Out
6	V_{CCT}	Transmitter Power Supply
7	V_{EET}	Transmitter Ground
8	TDis	Input Logic Low Level to Switch Laser "ON" Input Logic High Level to Switch Laser "OFF"
9	TD+	Transmitter Data in
10	TD-	Transmitter Data In (Inverted)

Application Notes

Recommended DC Coupling Interface Circuit :



$L1=L2=1\mu\text{H}$ or ferrite bead

$C1=C2=C3=C5=C6=0.1\mu\text{F}$

$C4=10\mu\text{F}$

R1, R2, R3, R4, R5, R6 depends on SerDes IC specification.

(Consult the SerDes IC application information)

$R7=R8=270\Omega$

$R9=510\Omega$

NOTE :

1. Transmission line characteristic impedance $Z=50\Omega$.
2. R1, R2, R3, R4, R5, R6 as close to SerDes IC as possible
3. R7, R8 as close to 2X5 Transceiver as possible.

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