

SBN34CBPDG3D000

MSA and TAA 2.4Gbs/1.2Gbs-B+ GPON SFP Transceiver (SMF, 1310nmTx/1490nmRx, 20km, SC, DOM)

Product Description

This MSA compliant SFP transceiver provides 2.4Gbs/1.2Gbs-B+ throughput up to 20km over single-mode fiber (SMF) at a wavelength of 1310nmTx/1490nmRx using an SC connector. This easy to install, hot swappable transceiver has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. Digital optical monitoring (DOM) support is also present to allow access to real-time operating parameters. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

Skylane's transceivers are RoHS compliant and lead-free.

Features:

- Integrated Single fiber bi-directional optical subassembly
- 1310nm DFB laser Burst-mode Transmitter and 1490nm APD Continuous receiver(with WDM)
- 3.3V single power supply
- Low power consumption
- Single SC receptacle optical interface compliant
- CML compatible data output
- LVPECL compatible data input
- Operating Temperature: 0 Celsius to 70 Celsius
- Class 1 Laser eye safety
- Excellent EMI and EMC characteristics
- RoHS Compliant and Lead-Free

Applications:

- GPON
- Access and Enterprise

For your product safety, please read the following information carefully before any manipulation of the transceiver:



ESD

This transceiver is specified as ESD threshold 1kV for SFI pins and 2kV for all others electrical input pins, tested per MIL-STD-883G, Method 3015.4 /JESD22-A114-A (HBM). However, normal ESD precautions are still required during the handling of this module.



LASER SAFETY

This is a Class1 Laser Product according to IEC 60825-1:2007. This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated (June 24, 2007).

The optical ports of the module need to be terminated with an optical connector or with a dust plug in order to avoid contamination.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Storage Temperature	Tstg	-40		85	°C	
Operating Case Temperature	Tc	0		70	°C	
Relative Humidity	RH	5		95	%	
Power Supply Voltage	Vcc	0		4.6	V	
Data Rate			1244.16 2488.32		Mbps	

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	Vcc	3.13	3.3	3.47	V	
Pin Input Voltage		GND		Vcc	V	
Receiver Damage Threshold		0			dBm	
Supply Current				350	mA	
LVPECL Single-Ended Data Input Swing		100		800	mV	1
CML Single-Ended Data Output Swing		400		600	mV	2
Differential Data Input Impedance			100		Ω	1
Signal Level (LVTTTL-H)		2.4		Vcc	V	
Signal Level (LVTTTL-L)		0		0.8	V	

Notes:

1. DC coupled internally.
2. CML output. AC coupled internally.

Optical Characteristics

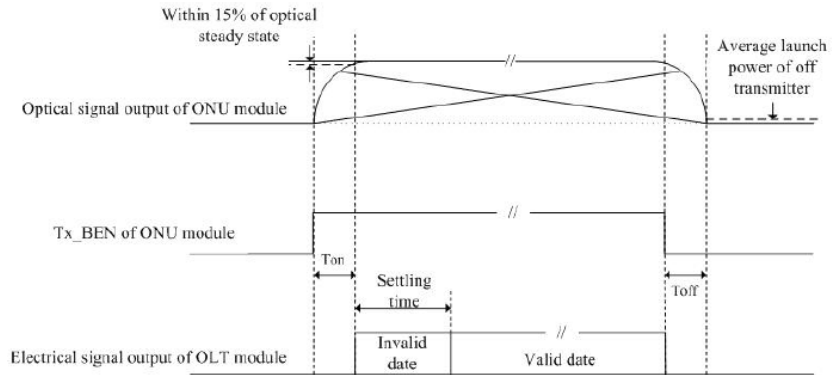
Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter							
Center Wavelength Range		λ_C	1290		1330	Mbps	
Spectral Width (@-20dB)		$\Delta\lambda$			1	nm	
Side-Mode Suppression Ratio			30			nm	
Launch Optical Power		Po	0.5		+5	dB	1
Off-Level Light					-45	dBm	
Extinction Ratio		ER	10			dBm	2
Burst On/Off Time		Ton/Toff			12.8	dB	3
Rise/Fall Time (20-80%)		Tr/Tf			260	ns	4
RIN ₁₅ OMA					-115	ps	
Optical Return Loss Tolerance					15	dB/Hz	
Maximum Reflectance					-12	dB	$\lambda=1.31\mu\text{m}$
Transmitter Dispersion Penalty		TDP			1	dB	5
Tx_SD Delay		Ttx_sd_delay			1000	dB	8
Tx_SD Response Error					350	ns	9
Eye Diagram			Compliant with ITU-T G.984.2				6
Receiver							
Receiver Sensitivity		S			-28	dBm	
Overload Input Optical Power		PIN	-8			dBm	7
Center Wavelength Range		λ_C	1480	1490	1500	nm	7
Receiver Reflectance					-20	dB	$\lambda=1.49\mu\text{m}$
SD (LVTTL)	Optical De-Assert		-44			dBm	
	Optical Assert				-31	dBm	
SD Hysteresis			0.5		6	dB	
1310nm Tx to 1490nm Rx Crosstalk					-47	dB	
1555nm Rx to 1490nm Tx Isolation			30			dB	
G.984.5 Wavelength-Blocking Filter (WBF)			7			dB	1530nm to 1539nm
			22			dB	1540nm to 1625nm

Notes:

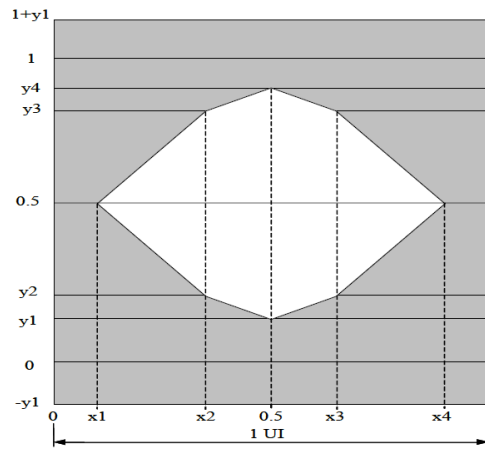
1. Coupled into 9/125 μm SMF.
2. Measured with PRBS 2²³-1 test pattern @1.25Gbps.
3. See "Burst-Mode Receiver Dynamic Range in GPON System" figure.
4. These are unfiltered 20-80% values.
5. Transmit on 20km SMF.

6. See "Mask of Diagram" figure.
7. Measured with PRBS $2^{23}-1$ test pattern @2.5Gbps with Tx on, ER=10dB, and BER=10E-12.
8. Tx_SD delay is the edge between Tx_SD and Tx_Burst_EN.
9. Tx_SD response error is the difference between Tx_SD and Tx_Burst_EN, defined by $T_{w_burst_en} - T_{w_tx_sd}$. See "Timing Diagram of Tx_SD."

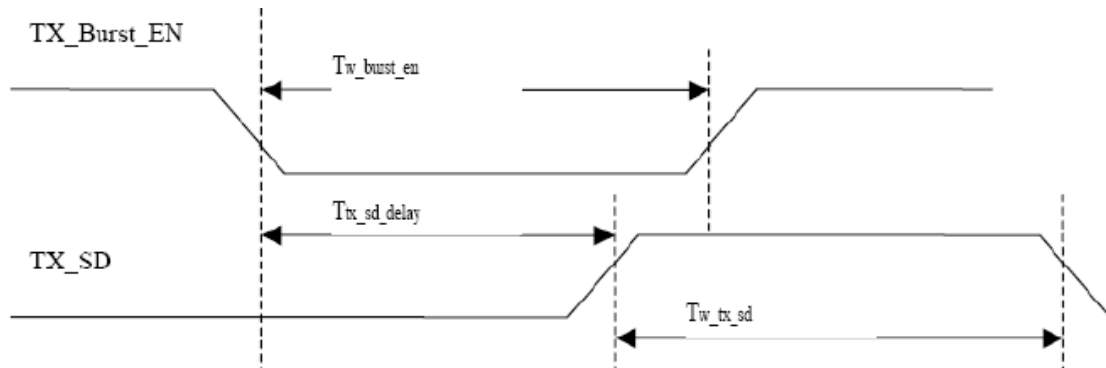
Burst-Mode Receiver Dynamic Range in GPON System



Mask Of Diagram



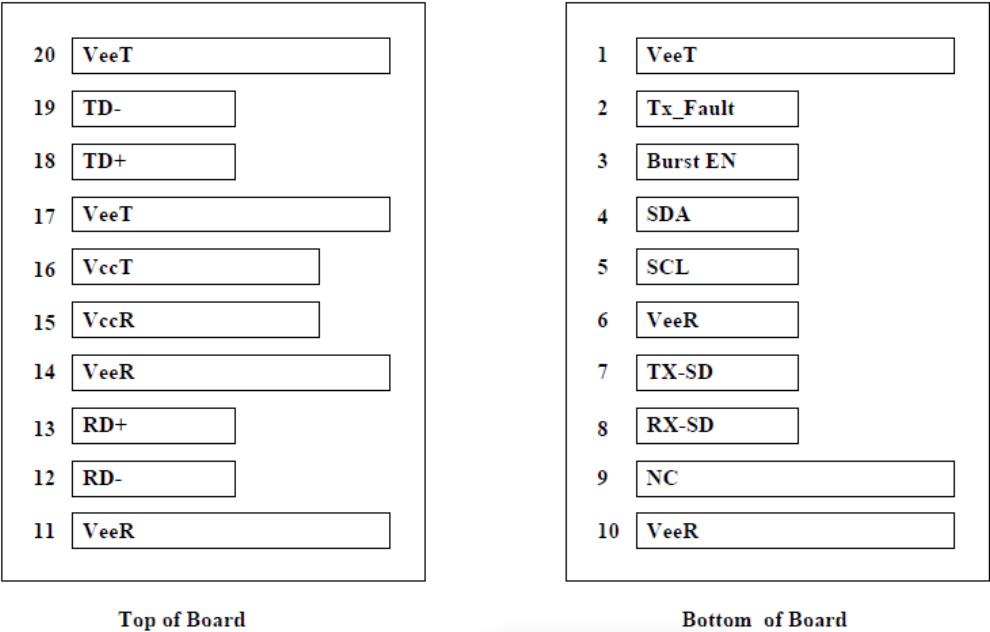
Timing Diagram of Tx_SD



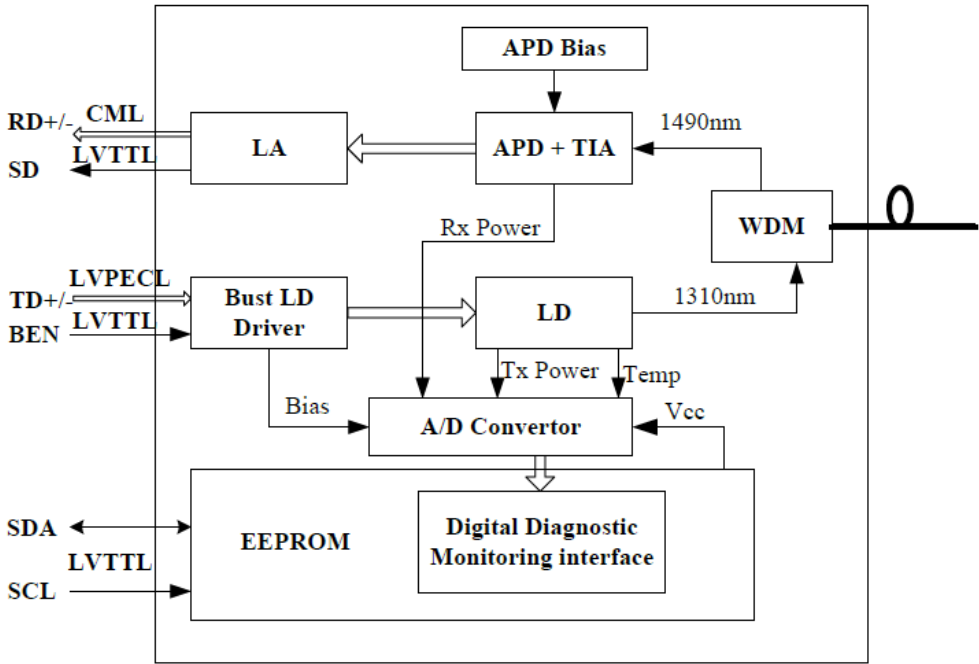
Pin Descriptions

Pin	Symbol	Name/Description	Notes
1	VeeT	Transmitter Ground.	
2	Tx_Fault	LVTTTL Transmitter Fault. Internally pulled up. Asserts "high" when the fault is detected by the laser driver.	
3	Burst EN	LVTTTL Transmitter Burst-Mode Control. "L": Tx ON. Internally pulled up.	
4	SDA	2-Wire Serial Interface Data. LVTTTL. Internally pulled up.	
5	SCL	2-Wire Serial Interface Clock. LVTTTL. Internally pulled up.	
6	VeeR	Receiver Ground.	
7	Tx-SD	Tx Transmitter State Indication. Tx_Indication. Asserts "high" when the transmitter is on.	
8	Rx-SD	LVTTTL Signal Detect Output. Internally pulled up. Asserts "high" when the input optical power level is above the threshold.	
9	NC	Not Connected.	
10	VeeR	Receiver Ground.	
11	VeeR	Receiver Ground.	
12	RD-	Receiver Data Output-. AC coupled internally.	
13	RD+	Receiver Data Output+. AC coupled internally.	
14	VeeR	Receiver Ground.	
15	VccR	Receiver Power Supply.	
16	VccT	Transmitter Power Supply.	
17	VeeT	Transmitter Ground.	
18	TD+	LVPECL Data Input+. DC coupled internally.	
19	TD-	LVPECL Data Input-. DC coupled internally.	
20	VeeT	Transmitter Ground.	

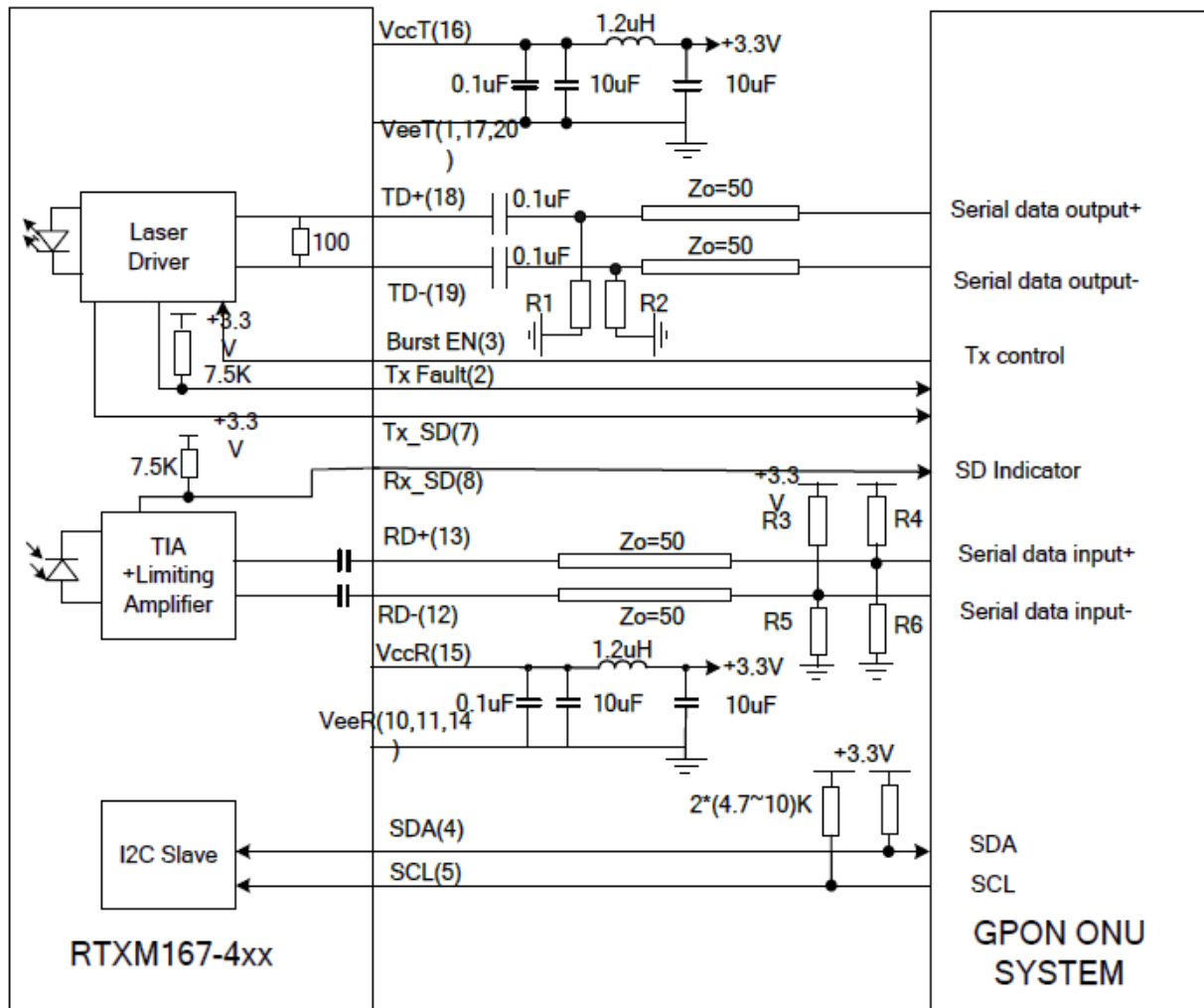
Electrical Pad Layout



Block Diagram

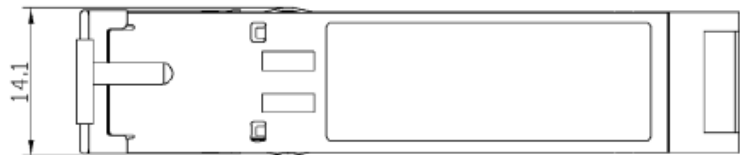
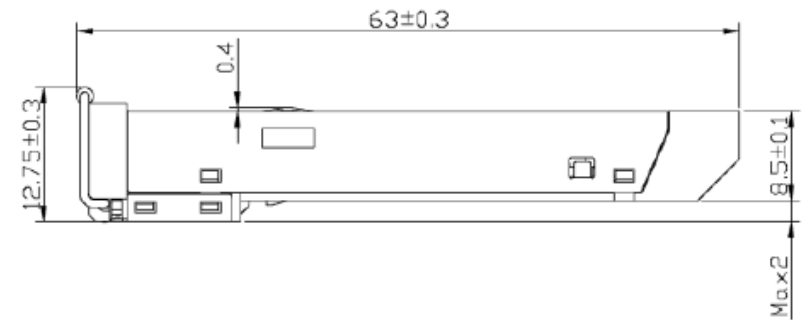


Recommended Circuit Schematic



$R1=R2=150\Omega$
 $R3=R4=82\Omega$ $R5=R6=130\Omega$

Mechanical Specifications



Unit: mm
Unspecified Tolerance: $\pm 0.2\text{mm}$

About Skylane Optics

Skylane is a leading provider of transceivers for optical communication.

We offer an extensive portfolio for the enterprise, access, datacenter and metropolitan fiber optical market as well as for smart home applications and home networks.

We cover the European, South American and North American market with a strong partner network and have offices in Belgium, Brazil, Sweden and USA.

Our offerings are characterized by high quality and performance. In combination with our strong technical support, we enable our customers to build cost optimized network solutions.

We offer an extensive range of high-quality products including transceivers (Optical and copper), Active Optical Cable (AOC), Direct Attach Cable (DAC), Mux/Demux, Coding Box.

