



SBM43CBPDG3D578

Calix® 100-01782 Compatible 2.4Gbs/1.2Gbs-B+ SFP Transceiver (SMF, 1490nmTx/1310nmRx, 20km, SC)

Product Description

This Calix® 100-01782 compatible SFP transceiver provides 2.4Gbs/1.2Gbs-B+ throughput up to 20km over single-mode fiber (SMF) using a wavelength of 1490nmTx/1310nmRx via a SC connector. It is guaranteed to be 100% compatible with the equivalent Calix® transceiver. 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. It is built to meet or exceed the specifications of Calix®, as well as to comply with MSA (Multi-Source Agreement) standards to ensure seamless network integration. 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:

- 1310nm Burst-Mode APD/TIA Receiver and 1490nm Continuous DFB Laser Transmitter
- Integrated Single Fiber Bi-Directional Optical Sub-Assembly
- Low Power Consumption
- Digitized Burst-Mode Optical Power Monitoring
- Single SC Receptacle Optical Interface
- Excellent EMI and EMC
- Operating Temperature: 0 to 70 Celsius
- Hot-Pluggable
- CML Compatible Data Input and Output Interface
- RoHS Compliant and Lead-Free
- Operating Temperature: -40 to 85 Celsius
- RoHS Compliant and Lead-Free



Applications:

- GPON OLT
- 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
Maximum Supply Voltage	V _{cc}	-0.5		4.0	V	1
Storage Temperature	T _{sto}	-40		85	°C	2
Operating Case Temperature	T _{op}	0		70	°C	
Data Rate	DR		2488/1244		Mbps	3
Bit Error Rate	BER			10 ⁻¹⁰		

Notes:

1. For electrical power interface
2. Ambient temperature
3. Downstream/Upstream

Electrical Characteristics (V_{cc}=3.14V to 3.46V, T_c=0°C to 70°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Input Voltage	V _{cc}	3.14	3.30	3.46	V	
Power Supply Current	I _{cc}			450	mA	
Differential data input swing	V _{in,pp}	200		1600	mV	
Input differential impedance	R _{in}		100		Ω	
Differential data output swing	V _{out, pp}	400		1600	mV	
Input Signal Level (LVTTL H)	V	2.0		V _{CC}	V	
Input Signal Level (LVTTL L)	V	0		0.8		
Output Signal Level (LVTTL H)	V	2.4		V _{CC}	V	
Output Signal Level (LVTTL L)	V	0		0.4	V	

Optical Characteristics ($V_{CC}=3.14V$ to $3.46V$, $T_C=0^{\circ}C$ to $70^{\circ}C$)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Transmitter Type	1490nm DFB Laser with Isolator					1
Downstream Signaling Speed	STX		2488		Mb/s	
Output Optical Power	PTX	1.5		5	dBm	2
Optical Output with TX OFF	Pout_off			-40	dBm	
Optical Extinction Ratio	ER	8.2			dB	
Optical Center Wavelength	λc	1480		1500	nm	
Spectral Width (-20dB)	Δλ			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Output Eye	Compliant with G.984. 2			Data Rate=2488Mb/s		
Receiver						
Receiver Type	1310nm APD/TIA burst-mode Receiver					
Signaling Speed	Srx		1244		MB/s	
Optical Center Wavelength	λc	1280	1310	1360	Nm	
Average Rx Sensitivity @1244Mb/s	Rx_sen			-28	dBm	3
Burst Sensitivity Receiver Overload	Pmax	-8			dBm	
Receiver Burst Mode Dynamic Range		15			dB	
LOS Assert	LOS_A	-45			dBm	
LOS De-Assert	LOS_D			-30	dBm	
LOS Hysteresis	LOS_H	0.5			dB	

Notes:

1. Continuous-mode
2. Class 1 Product
3. @BER 10^{-10} PRBS $2^{23}-1$

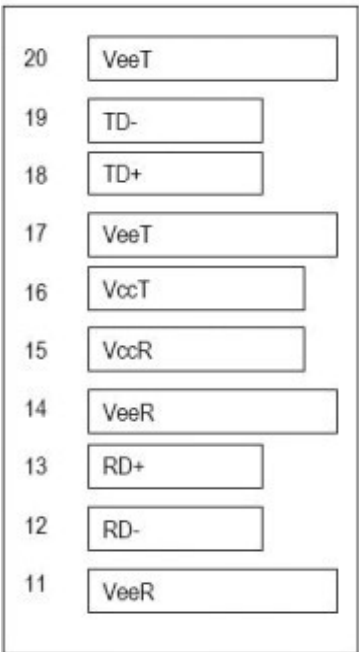
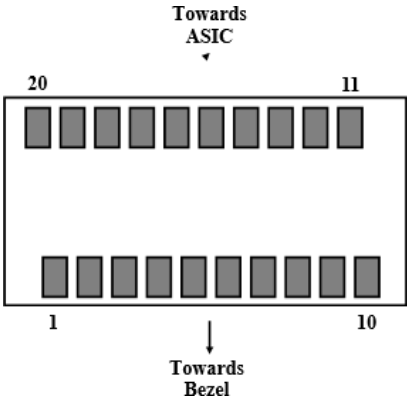
Pin Descriptions

Pin	Symbol	Name/Descriptions	Ref.
1	VEET	Transmitter ground (common with receiver ground)	1
2	TFAULT	Transmitter Fault.	
3	TDIS	Transmitter Disable. Laser output disabled on high or open	2
4	MOD_DEF (2)	Module Definition 2. Data line for serial ID	3
5	MOD_DEF (1)	Module Definition 1. Clock line for serial ID	3
6	MOD_DEF (0)	Module Definition 0. Grounded within the module	3
7	RESET	Receiver Reset	4
8	BPD	Burst Packet Detect	5
9	RSSI Trigger	RSSI Trigger Signal From Host	6
10	VEER	Receiver ground (common with transmitter ground)	1
11	VEER	Receiver ground (common with transmitter ground)	1
12	RD-	Receiver Inverted DATA out. AC coupled	
13	RD+	Receiver Non-inverted DATA out. AC coupled	
14	VEER	Receiver ground (common with transmitter ground)	1
15	VCCR	Receiver power supply	
16	VCCT	Transmitter power supply	
17	VEET	Transmitter ground (common with receiver ground)	1
18	TD+	Transmitter Non-Inverted DATA in. AC coupled	
19	TD-	Transmitter Inverted DATA in. AC coupled	
20	VEET	Transmitter ground (common with receiver ground)	1

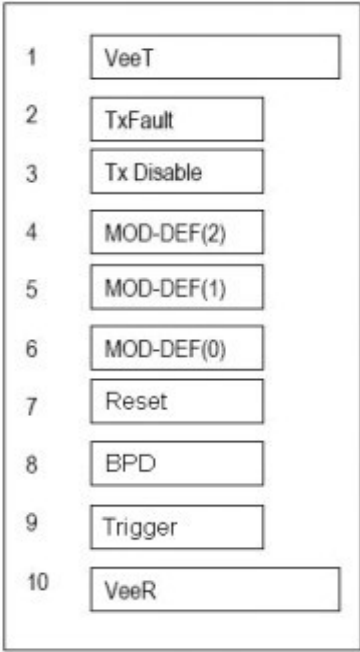
Notes:

1. Circuit ground is isolated from chassis ground
2. Disabled: $T_{DIS} > 2V$ or open, Enabled: $T_{DIS} < 0.8V$
3. Should Be pulled up with 4.7k – 10k ohm on host board to a voltage between 2V and 3.6V
4. Reset is a LVTTTL input which is used to clear receiver status before receiving the next burst packet
5. BPD is a LVTTTL output. High Level indicates that burst packet is detected by the receiver
6. RSSI Trigger is a LVTTTL input from host for starting ADC of digital RSSI circuit to sample the analog RSSI signal

Electrical Pad Layout



Top of Board



Bottom of Board (as viewed thru top of board)

Digital Diagnostic Functions

This transceiver supports the 2-wire serial communication protocol as defined in the SFP MSA. Digital diagnostic information is accessible over the 2-wire interface at the address 0xA2. Digital diagnostics for this module are internally calibrated by default. A micro controller unit inside the transceiver gathers the monitoring information and reports the status of transceiver.

Transceiver Temperature, internally measured, represented as a 16 bit signed twos complement value in increments of 1/256 degrees Celsius, Temperature accuracy is better than ± 3 degrees Celsius over specified operating temperature and voltage.

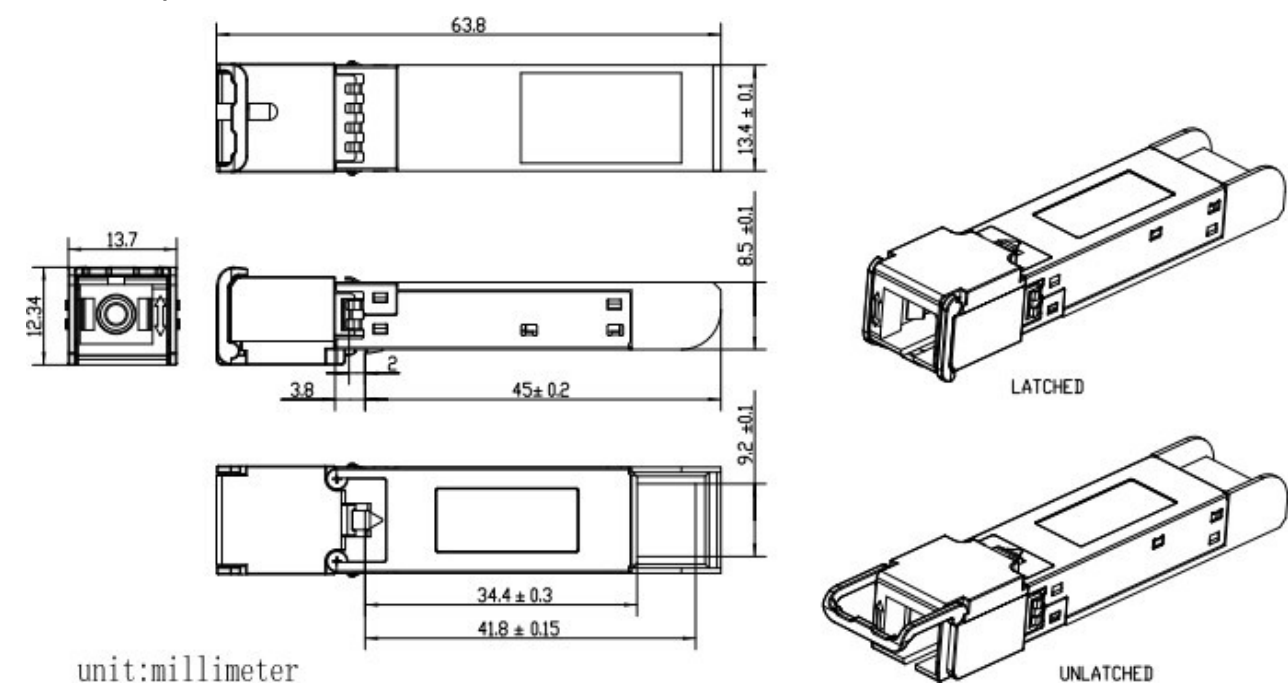
Transceiver Supply Power, internally measured, represented as a 16 bit unsigned integer with the voltage defined as the full 16 bit value (0 – 65535) with LSB equal to 100 μ Volt, yielding a total range of 0 to +6.55 Volts.

Transceiver TX bias current, internally measured, represented as a 16 bit unsigned integer with the current defined as the full 16 bit value (0 – 65535) with LSB equal to 2 μ A, yielding a total range of 0 to 131mA. Accuracy is better than $\pm 10\%$ over specified operating temperature and voltage.

Transceiver TX output power, internally measured, represented as a 16 bit unsigned integer with the power defined as the full 16 bit value (0 – 65535) with LSB equal to 0.1 μ W. Data is assumed to be based on measurement of laser monitor photodiode current. Accuracy is better than ± 3 dB over specified temperature and voltage. Data is not valid when the transmitter is disabled.

Transceiver RX received optical power, internally measured, represented as a 16 bit unsigned integer with the power defined as the full 16 bit 35 value (0 – 65535) with LSB equal to 0.1 μ W. Accuracy is better than ± 3 dB over specified temperature and voltage.

Mechanical Specifications



ALL DIMENSIONS ARE $\pm 0.2\text{mm}$ UNLESS OTHERWISE SPECIFIED UNIT: 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.

