

### GP-SFP-10GBX-D-10-PRO

Dell Force10<sup>®</sup> GP-SFP-10GBX-D-10 Compatible TAA Compliant 10GBase-BX SFP+ Transceiver (SMF, 1330nmTx/1270nmRx, 10km, DOM, 0 to 70C, LC)

### Features

- SFF-8432 and SFF-8472 Compliance
- Uncooled DFB transmitter and PIN receiver
- Simplex LC Connector
- Commercial Temperature 0 to 70 Celsius
- Single-mode Fiber
- Hot Pluggable
- Excellent ESD Protection
- Metal with Lower EMI
- RoHS Compliant and Lead Free



### Applications:

- 10GBase-BX Ethernet
- 8x/10x Fibre Channel
- Access, Metro and Enterprise

## **Product Description**

This Dell Force10<sup>®</sup> GP-SFP-10GBX-D-10 compatible SFP+ transceiver provides 10GBase-BX throughput up to 10km over single-mode fiber (SMF) using a wavelength of 1330nmTx/1270nmRx via an LC connector. It is guaranteed to be 100% compatible with the equivalent Dell Force10<sup>®</sup> 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. 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.

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

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S. – made or designated country end products.



Rev. 031924

# **Regulatory Compliance**

- ESD to the Electrical PINs: compatible with MIL-STD-883E Method 3015.4.
- ESD to the LC Receptacle: compatible with IEC 61000-4-3.
- EMI/EMC: compatible with FCC Part 15 Subpart B Rules, EN55022:2010.
- Laser Eye Safety: compatible with FDA 21CFR, EN60950-1& EN (IEC) 60825-1, 2.
- RoHS: compliant with EU RoHS 2.0 directive 2015/863/EU.

#### **Absolute Maximum Ratings**

Parameter	Symbol	Min.	Тур.	Max.	Unit	Notes
Maximum Supply Voltage	Vcc	-0.5		4.0	V	1
Storage Temperature	Tstg	-40		85	°C	2
Operating Case Temperature	Тс	0		70	°C	3
Data Rate	DR	9.83		11.3	Gbps	4
Bit Error Rate	BER			10-12		
Supply Current	lcc		200	350	mA	1

#### Notes:

- 1. For electrical power interface.
- 2. Ambient temperature.
- 3. Case Temperature.
- 4. IEEE 802.3ae.

### **Electrical Characteristics**

Parameter	Symbol	Min.	Тур.	Max.	Unit	Notes
Power Supply Voltage	Vcc	3.14	3.3	3.46	V	
Power Dissipation	P <sub>DISS</sub>		0.65	1.2	W	
Transmitter						
Input Differential Impedance	RIN		100		Ω	
Differential Data Input Swing	VIN,pp	180		700	mV	
Transmit Disable Voltage	VD	2.0		Vcc	V	
Transmit Enable Voltage	VEN	Vee		Vee+0.8	V	
Receiver				·		
Differential Data Output Swing	VOUT,pp	300		850	mV	
Data Output Rise Time/Fall Time (20-80%)	Tr/Tf	28			ps	
LOS Assert	LOSA	2		Host_Vcc	V	
LOS De-Assert	LOSD	Vee		Vee+0.5	V	

# **Optical Characteristics**

Parameter	Symbol	Min.	Тур.	Max.	Unit	Notes
Transmitter						
Output Optical Power	Ptx	-8.2		0.5	dBm	1
Optical Center Wavelength	λC	1320	1330	1340	nm	
Extinction Ratio	ER	3.5			dB	
Spectral Width (-20dB)	Δλ			0.6	nm	
Side-Mode Suppression Ratio	SMSR	30			dB	
Relative Intensity Noise	RIN			-128	dB/Hz	
Transmitter Dispersion Penalty	TDP			3.2	dB	
Launch Power of Off Transmitter	Poff			-30	dBm	1
Transmitter Jitter		According to IEEE 802.3ae Requirement				
Receiver						
Receiver Overload		0.5			dBm	
Optical Center Wavelength	λC	1260	1270	1280	nm	
Receiver Sensitivity	S			-14.4	dBm	2
Receiver Reflectance	TRrx			-12	dB	
LOS Assert	LOSA	-30			dBm	
LOS De-Assert	LOSD			-17	dBm	
LOS Hysteresis	LOSH	0.5			dB	

# Notes:

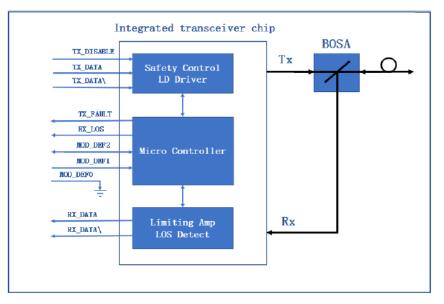
- 1. Average.
- 2. Average. Measured with worst ER: BER<  $10^{-12}$  and  $2^{31}$ -1 PRBS.

Pin Descriptions						
Pin	Symbol	Name/Descriptions	Notes			
1	VeeT	Transmitter Ground. Common with receiver ground.	1			
2	Tx_Fault	Transmitter Fault.	2			
3	Tx_Disable	Transmitter Disable. Laser output disabled on "high" or "open."	3			
4	SDA	2-Wire Serial Interface Data.	4			
5	SCL	2-Wire Serial Interface Clock.	4			
6	MOD_ABS	Module Absent. Grounded within the module.	4			
7	RSO	No connection required.				
8	LOS	Loss of Signal indication. "Logic 0" indicates normal operation.	5			
9	RS1	No connection required.	1			
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 the chassis ground.
- 2. Tx\_Fault is the open collector output and should be pulled up with  $4.7k\Omega$ -10k $\Omega$  on the host board to a voltage between 2V and Vcc+0.3V.
- 3. Disabled: TDIS>2V or open. Enabled TDIS<0.8V.
- 4. Should be pulled up with the  $4.7k\Omega$ -10k $\Omega$  on the host board to a voltage between 2V and Vcc+0.3V.
- 5. LOS is open collector output and should be pulled with  $4.7k\Omega$ -10k $\Omega$  on the host board to a voltage between 2V and Vcc+0.3V. The logic "0" indicated normal operation, and the logic "1" indicates that the receiver signal is lost.

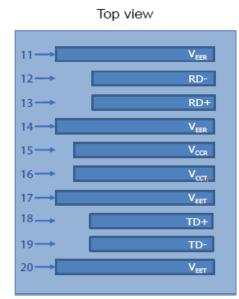
# **Transceiver Block Diagram**

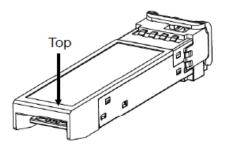


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# **Electical Pad Layout**

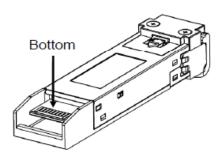




 $V_{\text{EET}}$ 2 • TX\_FAULT 3 TX\_DISABLE SDA 4 5 — SCL MOD\_ABS RS0 7 -LOS 9 —

RS1

 $V_{\text{EER}}$ 



Bottom view

# **Mechanical Specifications**



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## About Us:

Proline Options is one of North America's leading providers of transceivers and high speed cabling. With a reputation for quality, tested products that cover the connectivity spectrum, Proline Options has a solution for you regardless of the specification.

At Proline Options, every product is tested in its intended application - never batch or spec tested only. We run bandwidth, distance and IOS network tests. We have documented an impressive 0.03% failure rate over the last 10 years. To continue this rate of success we invest millions annually in our own on-site testing lab.



Tel: 855.933.3223 Email: sales@prolineoptions.com Email: techsupport@prolineoptions.com Web: https://www.prolineoptions.com