

## 407-BCHI-C

Dell® 407-BCHI Compatible 25GBase-SR SFP28 Transceiver Dual Rate 10/25G Capable (MMF, 850nm, 100m, LC, DOM, -40 to 85C)

### Features:

- SFF-8402 and SFF-8472 Compliance
- Duplex LC Connector
- Multi-mode Fiber
- Extended Temperature -20 to 85 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free



### Applications:

- 25GBase Ethernet
- Access and Enterprise

### Product Description

This Dell® 407-BCHI compatible SFP28 transceiver provides 25GBase-SR throughput up to 100m over multi-mode fiber (MMF) using a wavelength of 850nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Dell® 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.

ProLabs'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."



## 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.	Typ.	Max.	Unit
Maximum Supply Voltage	V <sub>CC</sub>	-0.3		4.0	V
Storage Temperature	T <sub>S</sub>	-40		85	°C
Operating Case Temperature	T <sub>C</sub>	-20		85	°C
Relative Humidity	RH	0		85	%
Receiver Power	R <sub>MAX</sub>	-10.3		2.4	dBm
Bit Rate	BR		25		Gbps
Bit Error Ratio	BER			5*10E-5	
Max Supported Link Length	L			100	m

## Electrical Characteristics (TOP=25°C, V<sub>CC</sub>=3.3Volts)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	V <sub>CC</sub>	3.14	3.30	3.46	V	
Power Supply Current	I <sub>CC</sub>			230	mA	
Power Consumption	P <sub>DISS</sub>			800	mW	
<b>Transmitter</b>						
Single Ended data input swing	V <sub>in</sub>	90		500	mVp-p	
Input differential impedance	R <sub>in</sub>	80	100	120	Ω	1
Transmit Disable Voltage	V <sub>DIS</sub>	2		V <sub>CCHOST</sub>	V	
Transmit Enable Voltage	V <sub>EN</sub>	V <sub>EE</sub>		V <sub>EE</sub> +0.8	V	
Transmit Fault Assert Voltage	V <sub>F A</sub>	2		V <sub>CCHOST</sub>	V	
Transmit Fault De-Assert Voltage	V <sub>F D A</sub>	V <sub>EE</sub>		V <sub>EE</sub> +0.8	V	
<b>Receiver</b>						
Single Ended data output swing	V <sub>OD</sub>	200		500	mVp-p	
LOS Fault	V <sub>LOSFT</sub>	2		V <sub>CCHOST</sub>	V	
LOS Normal	V <sub>LOSNR</sub>	V <sub>EE</sub>		V <sub>EE</sub> +0.8	V	

**Notes:**

1. Differential between TD+ / TD-

**Optical Characteristics**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
<b>Transmitter</b>						
Nominal Wavelength	$\lambda$	840		860	nm	
Spectral Width	$\Delta\lambda$			0.6	nm	
Optical Modulation Amplitude	POMA	-6.4		3	dBm	
Optical Output Power	Pav	-8.4		2.4	dBm	
Extinction Ratio	ER	2			dB	
Transmitter and Dispersion Penalty	TDP			4.3	dB	
Average launch power of OFF transmitter	POFF			-30	dBm	
<b>Receiver</b>						
Center Wavelength	$\lambda$	840		860	nm	
Average Receiver Power	PAVG	-10.3		3	dBm	1
Stressed Receiver Sensitivity (OMA)	RSENSE			-5.2	dBm	2
Receiver Reflectance	RREFL			-12	dB	
Assert LOS	LOSA	-30			dBm	
De-Assert LOS	LOSD			-13	dBm	
LOS Hysteresis		0.5			dB	

**Notes:**

1. Sensitivity for 25G PRBS 231-1 and BER better than or equal to  $5 \times 10^{-5}$ .
2. The stressed sensitivity value in the table are for system level BER measurements which include the effects of CDR circuit.

## Pin Descriptions

Pin	Symbol	Name/Descriptions	Ref.
1	VeeT	Transmitter Ground (Common with Receiver Ground).	1
2	TX Fault	Transmitter Fault. LVTTTL-O	2
3	TX Disable	Transmitter Disable. Laser output disabled on high or open. LVTT-I.	3
4	SDA	2-Wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i). LVTTTL-I/O.	
5	SCL	2-Wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i). LVTTTL-I.	
6	MOD_ABS	Module Absent, Connect to VeeT or VeeR in Module.	4
7	RS0	Rate Select 0, optionally controls SFP28 module receiver LVTTTL-I.	5
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation. LVTTTL-O.	2
9	RS1	Rate Select 1, optionally controls SFP28 module transmitter. LVTTTL-I.	5
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. CML-O.	
13	RD+	Receiver Non-inverted DATA out. AC Coupled. CML-O.	
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. CML-I.	
19	TD-	Transmitter Inverted DATA in. AC Coupled. CML-O.	
20	VeeT	Transmitter Ground (Common with Receiver Ground).	1

### Notes:

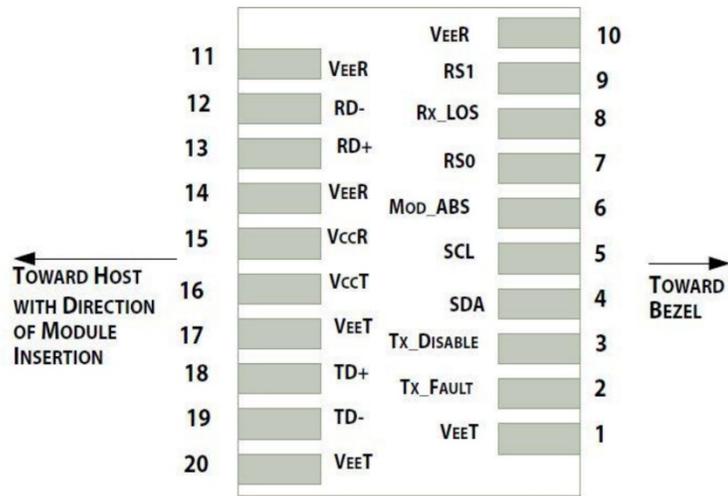
1. The module signal ground contacts, VeeR and VeeT, should be isolated from the module case.
2. This contact is an open collector/drain output and should be pulled up to the Vcc\_Host with resistor in the range 4.7KΩ to 10KΩ. Pull ups can be connected to one or several power supplies, however the host board design shall ensure that no module contract has voltage exceeding module VccT/R +0.5.V.
3. Tx\_Disable is an input contact with a 4.7KΩ to 10KΩ pull-up resistor to VccT inside module.
4. Mod\_ABS is connected to VeeT or VeeR in the SFP28 module. The host may pull the contract up to Vcc\_Host with a resistor in the range from 4.7KΩ to 10KΩ. Mod\_ABS is asserted “High” when the SFP28 module is physically absent from a host slot.
5. RS0 and RS1 are module inputs and are pulled low to VeeT with >30K resistors in the module. RS0 optionally selects the optical receive signaling rate coverage. RS1 optionally selects the optical transmit signaling rate coverage.

These contacts can also be used for RS0 and RS1 if implementing SFF8079. See SFF8079 for details. RS1 is commonly connected to VeeT or VeeR in the classic SFP modules. The host needs to ensure that it will

not be damaged if this contact is connected to VeeT or VeeR in the module.

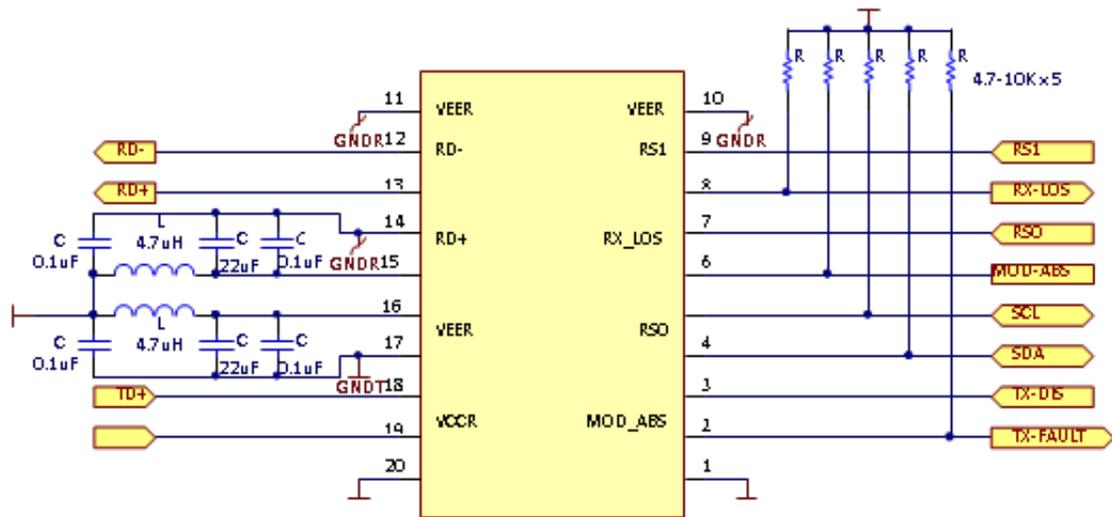
The SFP28 module provides two inputs RS0 and RS1 that can optionally be used for rate selection. RS0 controls the receive path signaling rate compatibility, and RS1 controls the transmit path signaling rate compatibility. The host and module may choose to use either, both, or none of these functions. Because contact 9 in the classic SFP INF-8074i is connected to VeeR, and SFP28 host utilizing RS1 must provide short circuit protection.

This rate select functionality can also be controlled by software as defined by SFF-8472. Optionally the rate select methods of Part 2 SFF-8079 may be used instead of the method described here by setting the management declaration bit (A0h byte 93 bit 2) to 1, see SFF-8472.

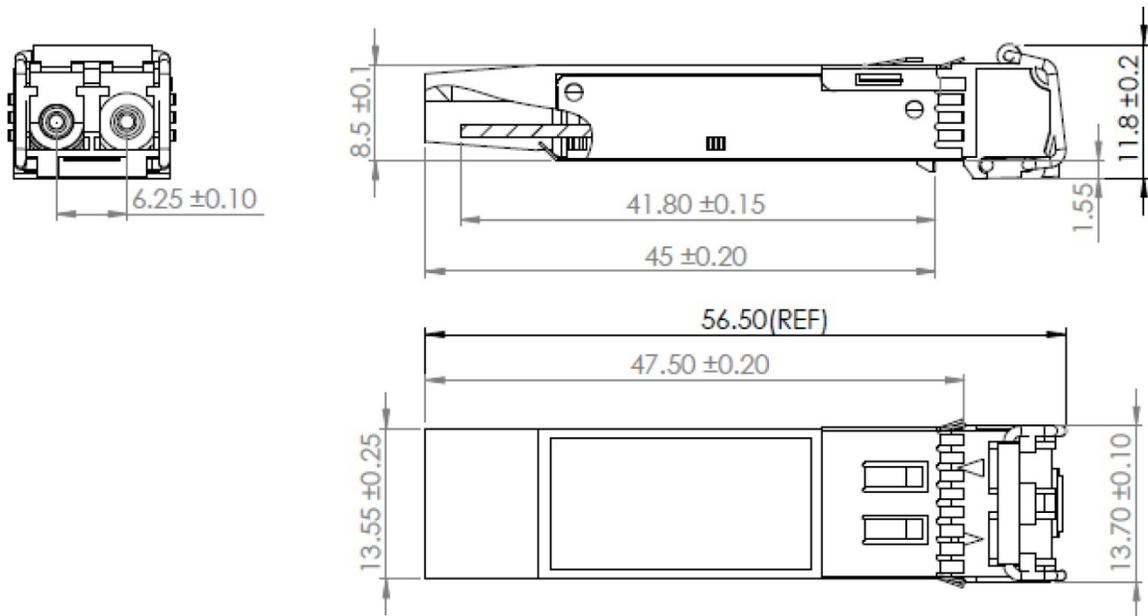


Pin-out of connector Block on Host board

## Typical Application Circuit

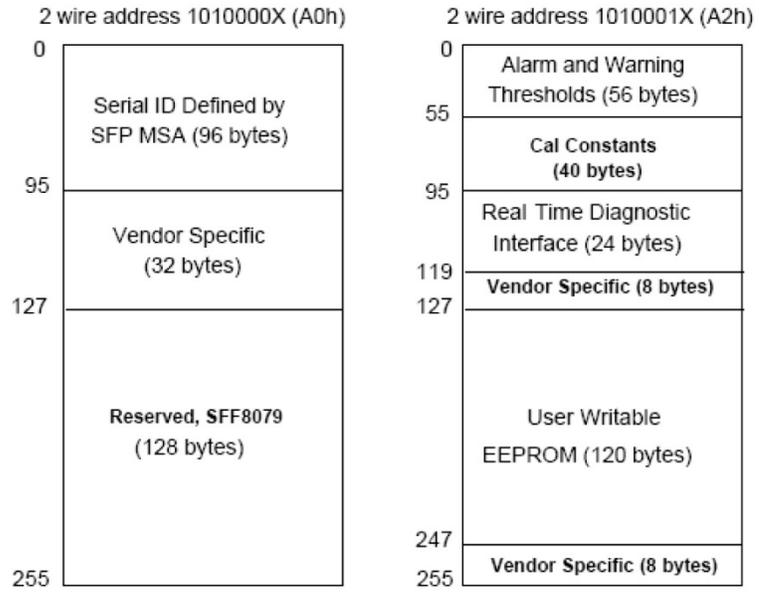


## Mechanical Specifications



## EEPROM Information

EEPROM memory map specific data field description is as below:



## **About ProLabs**

Our experience comes as standard; for over 15 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with over 90 optical switching and transport platforms.

## **Complete Portfolio of Network Solutions**

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 400G while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

## **Trusted Partner**

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure that you get immediate answers to your questions and compatible product when needed. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.

## **Contact Information**

ProLabs US

Email: [sales@prolabs.com](mailto:sales@prolabs.com)

Telephone: 952-852-0252

ProLabs UK

Email: [salessupport@prolabs.com](mailto:salessupport@prolabs.com)

Telephone: +44 1285 719 600