

SFPP-Dxx-40-10GD

10GBASE, SFP+, ER, SMF CDR TRANSCEIVER

1528.77-1563.86nm, 40km REACH, DUPLEX LC CONNECTOR

Product Features

- Up to 11.3Gb/s data links
- DWDM EML transmitter and PIN receiver
- 100 GHz ITU channel spacing with integrated wavelength locker
- Up to 40km on 9/125µm SMF
- Hot-pluggable SFP+ footprint
- Duplex LC/UPC pluggable optical interface
- RoHS-10 compliant and lead-free
- Support Digital Diagnostic Monitoring
- Single +3.3V power supply
- Compliant with SFF+MSA and SFF-8472
- Metal enclosure, for lower EMI
- Meet ESD requirements.
- Case operating temperature:
 - Commercial: 0 ~ +70°C
 - Industrial: -40 ~ +85°C



Product Applications

- 10GBASE-ER & 10G Ethernet
- OTN / FC / CPRI
- Other Optical Links

I. Maximum Ratings

Exceeding the limits below may damage the transceiver module permanently.

Parameter	Symbol	Min.	Typ.	Max.	Units
Power Supply Voltage	Vcc	-0.5		3.6	V
Storage Temperature	TS	-40		85	°C
Relative Humidity	RH	5		95	%
Damage Threshold	TH _d	5			dBm

II. Operating Specifications

Parameter	Symbol	Min.	Typ.	Max.	Units	Notes
Operating Case Temperature	T _{OP}	0		+70	°C	Commercial
		-40		+85		Industrial
Power Supply Voltage	V _{CC}	3.135	3.3	3.465	V	
Data Rate			10.3125		Gb/s	
Control Input Voltage HIGH		2		V _{CC}	V	
Control Input Voltage LOW		0		0.8	V	
Link Distance (SMF)	D			40	km	9/125um

III. Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Optical Wavelength	λ_c	1528.77~1563.86 (peak, Ch:17-61)			nm	1
Center Wavelength Spacing			100		GHz	
Optical Spectral Width	$\Delta\lambda$			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Average Optical Power	P_{AVG}	0		4	dBm	2
Optical Extinction Ratio	ER	8.2			dB	
Transmitter and Dispersion Penalty	TDP			2	dB	
Transmitter OFF Output Power	POff			-30	dBm	
Transmitter Eye Mask		Compliant with IEEE802.3ae				
Receiver						
Center Wavelength	λ_c	1270		1610	nm	
Receiver Sensitivity (Average Power)	Sen.			-15.8	dBm	3
Input Saturation Power (overload)	Psat	0.5			dBm	
LOS Assert	LOSA	-30			dB	
LOS De-assert	LOSD			-19	dBm	
LOS Hysteresis	LOSH	0.5			dBm	

Notes:

- 100GHz spacing; DWDM ITU Grid channel selection from 1528.77~1563.86 (peak, Ch:17-61)
- Class 1 Laser Safety per FDA/CDRH and IEC-825-1 regulations.
- Measured with Light source 1528.77~1563.86nm, ER=8.2dB; BER =<10⁻¹² @10.3125Gbps,

IV. Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Consumption	p			1.5	W	
Supply Current	Icc			450	mA	
Transmitter						
Single-ended Input Voltage Tolerance	Vcc	-0.3		4.0	V	
AC Common Mode Input Voltage Tolerance (RMS)		15			mV	
Differential Input Voltage Swing	V _{in,pp}	120		820	mVpp	
Differential Input Impedance	Z _{in}	90	100	110	Ohm	1
Transmit Disable Assert Time				10	Us	
Transmit Disable Voltage	V _{dis}	Vcc -1.3		Vcc	V	
Transmit Enable Voltage	V _{en}	V _{ee}		V _{ee} +0.8	V	2
Receiver						
Differential Output Voltage Swing	V _{out,pp}	350		850	mVpp	
Differential Output Impedance	Z _{out}	90	100	110	Ohm	3
Data output rise/fall time	Tr/Tf	28			Ps	4
LOS Assert Voltage	V _{losH}	Vcc -1.3		Vcc	V	5
LOS De-assert Voltage	V _{losL}	V _{ee}		V _{ee} +0.8	V	5
Power Supply Rejection	PSR	100			mVpp	6

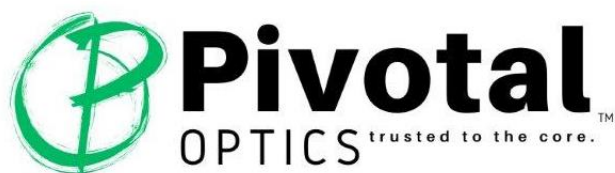
Notes:

1. Connected directly to TX data input pins. AC coupled thereafter.
2. Or Open circuit.
3. Input 100 ohms differential termination.
4. These are unfiltered 20-80% values.
5. Loss of Signal is LVTTTL. Logic 0 indicates normal operation; logic 1 indicates no signal detected.
6. Receiver sensitivity is compliant with power supply sinusoidal modulation of 20 Hz to 1.5 MHz up to specified value applied through the recommended power supply filtering network.

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V. Ordering Information

Pivotal Part Number	Description
SFPP-Dxx-40-10GD	SFP+, DWDM, ER SMF 40km, 10G DDM, C-Temp
SFPP-Dxx-40-10GDI	SFP+, DWDM, ER SMF 40km, 10G DDM, I-Temp

Notes:

1. Please contact sales for specific OEM Platform part numbers to fit your network.

Channel #	Frequency GHz	Wavelength nm	Part # D(XX)	Channel #	Frequency GHz	Wavelength nm	Part # D(XX)
17	191700	1563.86	D17	40	194000	1545.32	D40
18	191800	1563.05	D18	41	194100	1544.53	D41
19	191900	1562.23	D19	42	194200	1543.73	D42
20	192000	1561.42	D20	43	194300	1542.94	D43
21	192100	1560.61	D21	44	194400	1542.14	D44
22	192200	1559.79	D22	45	194500	1541.35	D45
23	192300	1558.98	D23	46	194600	1540.56	D46
24	192400	1558.17	D24	47	194700	1539.77	D47
25	192500	1557.36	D25	48	194800	1538.98	D48
26	192600	1556.56	D26	49	194900	1538.19	D49
27	192700	1555.75	D27	50	195000	1537.4	D50
28	192800	1554.94	D28	51	195100	1536.61	D51
29	192900	1554.13	D29	52	195200	1535.82	D52
30	193000	1553.33	D30	53	195300	1535.04	D53
31	193100	1552.52	D31	54	195400	1534.25	D54
32	193200	1551.72	D32	55	195500	1533.47	D55
33	193300	1550.92	D33	56	195600	1532.68	D56
34	193400	1550.12	D34	57	195700	1531.9	D57
35	193500	1549.32	D35	58	195800	1531.12	D58
36	193600	1548.52	D36	59	195900	1530.33	D59
37	193700	1547.72	D37	60	196000	1529.55	D60
38	193800	1546.92	D38	61	196100	1528.77	D61
39	193900	1546.12	D39				
Non-ITU: Peak wavelength between 1563.86-1528.77nm [Channel: 17-61]							

Warranty

<https://pivotaloptics.com/warranty/>

Disclaimer

External physical characteristics are subject to variation. This may include, but is not limited to, external case designs, pull tab colors and/or shapes, removal latch styles or colors, and label sizes and placement. These variations do not affect the function or characteristics of the transceivers.