



S2DTU015250FO1V

Mellanox® Compatible 10/25GBase-DWDM SFP28 Transceiver Dual-Rate 100GHz (SMF, Tunable, 15km, LC, DOM)

Product Description

This Mellanox® compatible dual-rate SFP28 transceiver provides 10/25GBase-DWDM throughput up to 15km over single-mode fiber (SMF) using a tunable wavelength via an LC connector. Our transceiver is built to meet or exceed OEM specifications and is guaranteed to be 100% compatible with Mellanox®. It has been programmed, uniquely serialized, and tested for data-traffic and application to ensure that it will initialize and perform identically. All of our transceivers comply with Multi-Source Agreement (MSA) standards to provide seamless network integration. Additional product features include Digital Optical Monitoring (DOM) support which allows access to real-time operating parameters. 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:

- Operating Data Rate: 9.8 to 25.78Gbps
- C-Band 100GHz Tunable Tx(MZM-DBR)/Rx(APD)
- Compliant with SFF-8402 and SFF-8690
- Supports ASP (Automated Self-Pairing) Functions
- Supports ROD (Remote DDM) Functions
- Supports Optical and Electrical Loopback Functions
- Hot-Pluggable Electrical Interface
- Class 1 Laser Safety
- Operating Temperature: 0 to 70 Celsius
- Single 3.3V Power Supply
- RoHS Compliant and Lead-Free



Applications:

- 25GBase
- Access, Metro 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.

ITU Channel Wavelength Guide

ITU Channel	Frequency (THz)	Center Wavelength (nm)	ITU Channel	Frequency (THz)	Center Wavelength (nm)
14	191.40	1566.31	38	193.80	1546.92
15	191.50	1565.50	39	193.90	1546.12
16	191.60	1564.68	40	194.00	1545.32
17	191.70	1563.86	41	194.10	1544.53
18	191.80	1563.05	42	194.20	1543.73
19	191.90	1562.23	43	194.30	1542.94
20	192.00	1561.42	44	194.40	1542.14
21	192.10	1560.61	45	194.50	1541.35
22	192.20	1559.79	46	194.60	1540.56
23	192.30	1558.98	47	194.70	1539.77
24	192.40	1558.17	48	194.80	1538.98
25	192.50	1557.36	49	194.90	1538.19
26	192.60	1556.56	50	195.00	1537.40
27	192.70	1555.75	51	195.10	1536.61
28	192.80	1554.94	52	195.20	1535.82
29	192.90	1554.13	53	195.30	1535.04
30	193.00	1553.33	54	195.40	1534.25
31	193.10	1552.52	55	195.50	1533.47
32	193.20	1551.72	56	195.60	1532.68
33	193.30	1550.92	57	195.70	1531.90
34	193.40	1550.12	58	195.80	1531.12
35	193.50	1549.32	59	195.90	1530.33
36	193.60	1548.52	60	196.00	1529.55
37	193.70	1547.72	61	196.10	1528.77

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Relative Humidity (Non-Condensing)	%	5		95		
Operating Case Temperature	T _c	0		70	°C	
Storage Temperature	T _{stg}	-40		85	°C	
Supply Voltage	V	0		4		
Data Rate	DR ₂₅	24.3		25.78	Gbps	1
	DR ₁₀	9.8	10.3	12.5		2

Notes :

1. RS high logic.
2. RS low logic.

Electrical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage			3.135	3.3	3.465	Vcc	
Power Dissipation		PC			3.5	W	@3.3V
Power Supply Noise Tolerance		PSNT			66	mVp-p	1
Transmitter							
Differential Input Voltage		VIN	190		700	mV	AC coupled
Differential Input Impedance		ZIN	90	100	110	Ω	
Tx_Disable	Input Low	VIL	-0.3		0.8	V	2
	Input High	VIH	2.0		Vcc+0.3	V	
	Assert Time	tOFF			100	us	High
	Negate Time	tON			2.0	ms	Low
Tx_Disable to Start Reset		treset	10			us	High
Time to Initialize		tInit			90	s	3
Tx_Fault	Output Low	VFOL	-0.3		0.4	V	LVTTTL, low is normal
	Output High	IFOH	-50		37.5	uA	
RS1 (Rate Select for Tx)		VIL	-0.3		0.8	V	Internally pulled down
		VIH	2.0		Vcc+0.3	V	
Receiver							
Differential Output Voltage		VOUT	300		850	mV	AC coupled
Differential Output Impedance		ZOUT	90	100	110	Ω	
Rx_LOS (Loss of Signal)	Output Low	VLOSL	-0.3		0.4	V	LVTTTL, low is normal
	Output High	ILOSH	-50		37.5	uA	
	Assert time	tLOS-ON			100	us	High @S
	De-Assert time	tLOS-OFF			100	us	Low @S
RS0 (Rate Select for Rx)		VIL	-0.3		0.8	V	Internally pulled down
		VIH	2		Vcc+0.3	V	

Notes:

1. From 10Hz to 10MHz.
2. LVTTTL, normal at low, high is shutdown (Poff).
3. Including reset of Tx_Fault.

Optical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter							
Average Launch Power		Pavg	-1.0		3.0	dBm	
Optical Power Flatness		ΔPO	-1.0		1.0	dB	All channels
Transmitter Disabled Power		Poff			-30	dBm	1
Optical Center Wavelength		λC	1528.77		1566.31	nm	2
Optical Center Frequency		FfC	191.40		196.10	THz	2
Center Wavelength Spacing				100		GHz	2
Wavelength Stability	Beginning of Life	λp_BOL	-1.7	λC	1.7	GHz	3
	End of Life	λp_EOL	-2.5	λC	2.5	GHz	3
Wavelength Tuning Speed		TTUNE			30	ms	4
Spectral Width					0.5	nm	@-20dB
Side-Mode Suppression Ratio		SMSR	30			dB	
Extinction Ratio		ER	8.0			dB	PRBS2 ³¹ -1
Relative Intensity Noise		RIN ₂₀ OMA			-130.0	dB/Hz	
Optical Return Loss tolerance		ORL			20.0	dB	
Transmitter Reflectance					-26.0	dB	
Optical Eye Mask		IEEE802.3cc 114.6 25GBASE-LR/ER {X1,X2,X3,Y1,Y2,Y3} = {0.31,0.40,0.45,0.34,0.38,0.40}					Hit ratio 5E ⁻⁵
Receiver							
Optical Sensitivity	25.78Gbps or 24.33Gbps	S1			-19.0		5
	10.7Gbps, 10.3Gbps, 9.8Gbps	S2			-19.0		6
	11.3Gbps to 11.1Gbps	S3			-19.0		7
Optical Overload		OL	-4.0			dBm	8
Operating wavelength		λo	1525		1575	nm	
Rx_LOS (Loss of Signal)	Assert	LOSA	-30.0			dBm	9
	De-Assert	LOSD			-23.0	dBm	
	Hysteresis	LOSH	0.5		5.0	dB	
Return Loss of Receiver					-26.0	dB	
RSSI Calibration		RCAL	Internally Calibrated (The host side can be read by an external way)				
Auxiliary Management and Control Channel							
Bit Rate		BR _{AMCC}		1200		Gbps	
Modulation Depth		AMCC _{MD}	5		10	%	
Dynamic Range		DR _{AMCC}	-4		-24	dBm	10

Notes:

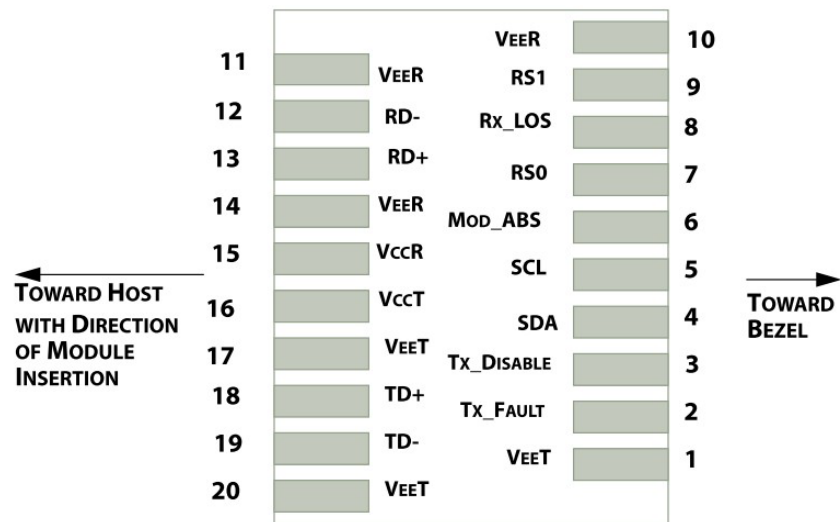
1. @Tx_Disable is high.

2. ITU-T 694.1 grid wavelength.
3. λ_C =ITU grid wavelength.
4. From any channel to and other channel. ASP disable.
5. PRBS2³¹, BER 5×10^{-5} , source ER=8.0dB, SMF 15km, G652.
6. PRBS2³¹, BER 5×10^{-12} , source ER=8.0dB, SMF 15km, G652.
7. PRBS2³¹, BER 5×10^{-4} , source ER=8.0dB, SMF 15km, G652.
8. PRBS2³¹, source ER=8.0dB.
9. Rx squelch activated.
10. AMCC_{MD}: 5%, 1200bps.

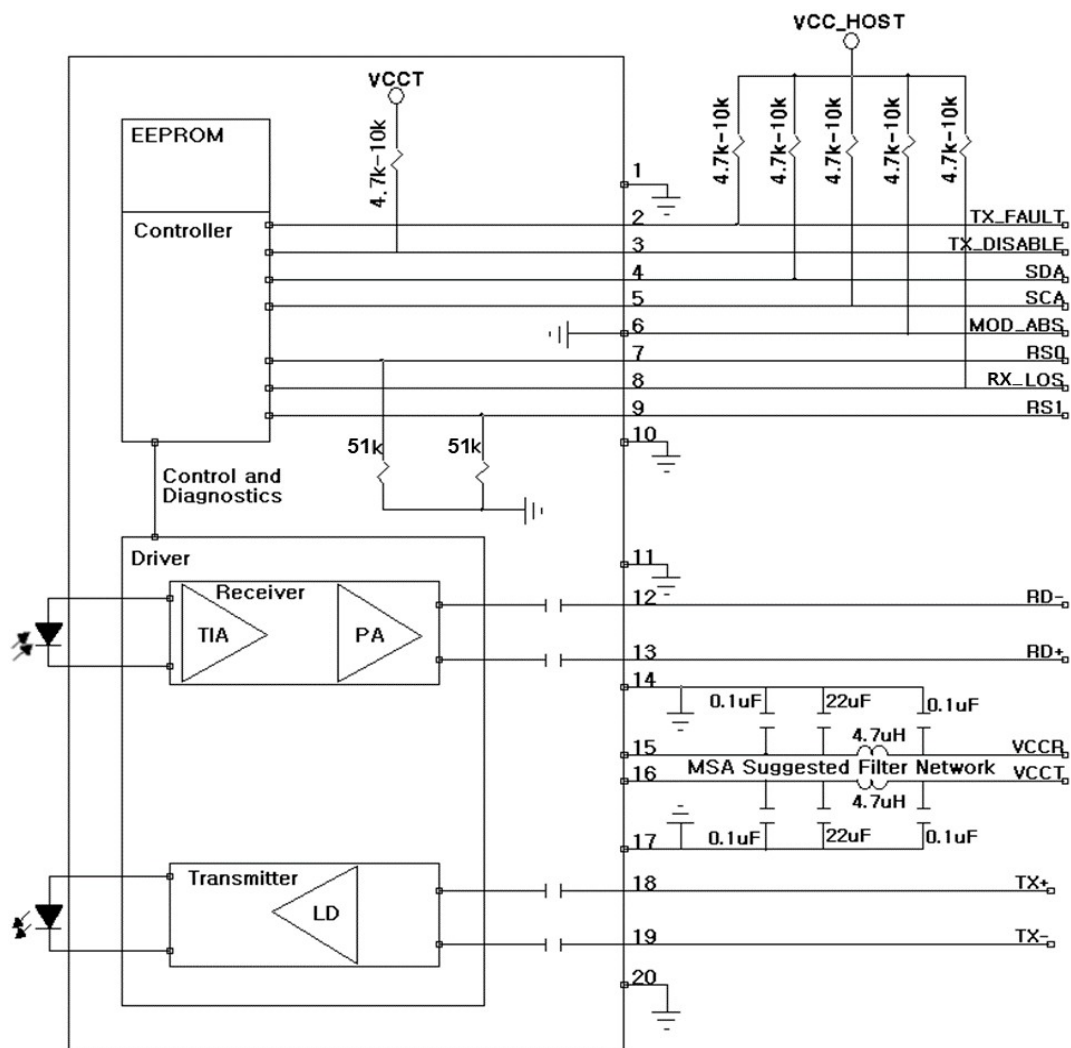
Pin Descriptions

Pin	Symbol	Name/Description	Plug Seq.	Notes
1	VeeT	Transmitter Ground.	1	
2	Tx_Fault	Transmitter Fault Status Output.	3	
3	Tx_Disable	Transmitter Disable Control Input.	3	
4	SDA	I ² C Data (Input/Output).	3	
5	SCL	I ² C Clock (Input/Output).	3	
6	MOD_ABS	Indicates that the module is present. Grounded internally.	3	
7	RS0	Rate Select 0. Internally pulled down. 51k Ω .	3	
8	Rx_LOS	Receiver Loss of Signal Status Output.	3	
9	RS1	Rate Select 1. Internally pulled down. 51k Ω .	3	
10	VeeR	Receiver Ground.	1	
11	VeeR	Receiver Ground.	1	
12	RD-	Receiver Inverted Data Output.	3	
13	RD+	Receiver Non-Inverted Data Output.	3	
14	VeeR	Receiver Ground.	1	
15	VccR	Receiver 3.3V Power Supply.	2	
16	VccT	Transmitter 3.3V Power Supply.	2	
17	VeeT	Transmitter Ground.	1	
18	TD+	Transmitter Non-Inverted Data Input.	3	
19	TD-	Transmitter Inverted Data Input.	3	
20	VeeT	Transmitter Ground.	1	

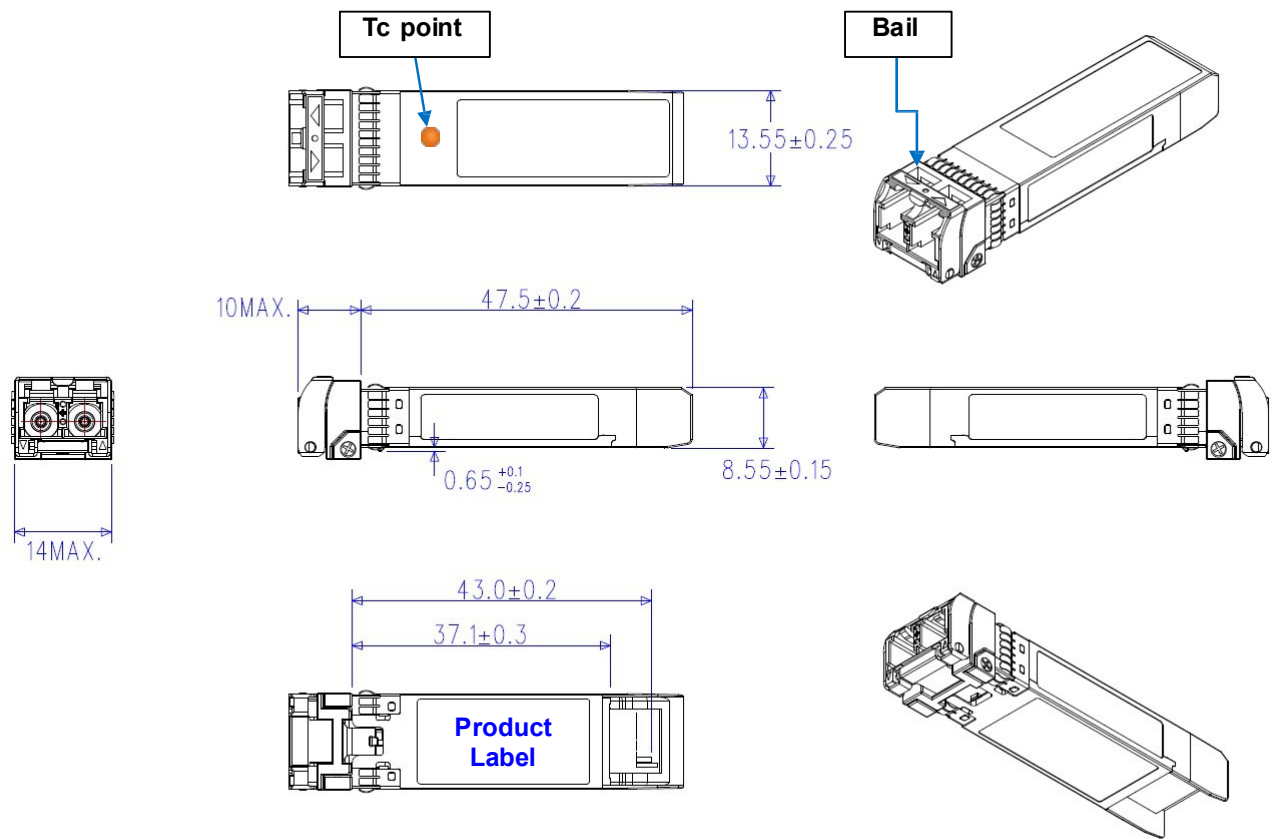
Pin-Out Details



Recommended Interface Circuit



Mechanical Specifications



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.

