MTNetworks

Product Specification

25G SFP28 40km Dual CWDM Transceivers With APD

MT-SFP25G-ERXXXX

Features

- Operating data rate up to 25.78Gbps
- Up to 40km transmission distance
- High sensitivity APD photodiode and TIA
- Rate Adaptation
- LC duplex connector
- Hot pluggable 20pin connector
- Low power consumption：1.5W
- Single +3.3V±5% power supply
- Compliant with SFF-8472
- Fully RoHS Compliant
- Operating temperature range: 0°C to +70°C

Applications

- 25G Ethernet
- CPRI Option 10
- Fibre Channel 32GFC

Product description

The Transceiver is intended for 40km reach service from 24.33Gb/s to 25.78Gb/s CWDM C27~C37 single mode high-speed communications equipment where low-cost, extraordinary performance and reliability are essential. It consumes low power, operates base on 3.3V DC power supply and is offered in the industrial temperature range. They are compliant with SFP28 MSA, SFF-8431 and SFF-8432.

The low jitter and low bit error rate optical assembly features a C27~C37（DML) laser transmitter and APD/TIA receiver.

It utilizes internal clock and data recovery (CDR) units on transmitter and the receiver chains for low jitter compliance. The differential AC coupled Tx and Rx data interfaces are CML compatible. The device is Class I laser safety compliant.

1. Absolute Maximum Ratings

Parameter	Symbol	Unit	Min	Max
Storage Temperature Range	Ts	oC	-40	85
Relative Humidity	RH	%	0	85

2. Recommended Operating Conditions

Parameter	Symbol	Unit	Min	Type	Max
Operating Case Temperature Range	Tc	oC	0		70
Power Supply Voltage	Vcc	V	3.14	3.3	3.46
Bit Rate	BR	Gb/s		25.78	
Bit Error Ratio	BER				5*10-5
Max Supported Link Length	L	Km			40

3. Electric Ports Definition

Parameter	Symbol	Unit	Min	Type	Max	Note
Transmitter						
Input Differential Impedance	RIN	Ω		100		
Single-ended Data Input Swing	VIN	mVp-p	90		450	
Transmit Disable Voltage	VDIS	V	2		VCCHOST	
Transmit Enable Voltage	VEN	V	VEE		VEE+0.8	
Transmit Fault Assert Voltage	VFA	V	2		VCCHOST	
Transmit Fault De-Assert Voltage	VFDA	V	VEE		VEE+0.4	
Receiver						
Single-ended Data Output Swing	VOD	mVp-p	200		450	
LOS Fault	VLOSFT	V	2		VCCHOST	
LOS Normal	VLOSNR	V	VEE		VEE+0.4	

4. Optical Characteristics *(Ta and Vcc= 3.14 to 3.46V)*

Parameter	Symbol	Unit	Min	Type	Max	Note
Transmitter						
Nominal Wavelength	λC	nm	1270, 1290, 1310, 1330, 1350, 1370			
Wavelength Drift	Δλ	nm	-6.5		+6.5	
Average Output Power	Pav	dBm	-2		6	
Spectral Width (-20dB)	σ	nm			1	
Extinction Ratio	ER	dB	3.5			
Side Mode Suppression Ratio	SMSR	dB	30			
Average Launch Power of OFF Transmitter	POFF	dBm			-30	
Relative Intensity Noise	RIN	dB/Hz			-128	
Receiver (APD/TIA)						
Center Wavelength	λC	nm	1260		1620	
Receiver Sensitivity	RSENSE	dBm			-19	1
Receiver Overload (OMA)	Pmax	dBm	-5			
Optical Return Loss		dB			-26	
LOS Assert	LOSA	dBm	-35			
LOS De-Assert LOS	LOSD	dBm			-22	
LOS Hysteresis		dB	0.5			

Note1: Measured at 25.78125Gb/s, C27~C37,ER>=4dBm, PRBS 231-1 and BER better than or equal to 5E-5

5. PIN Assignment

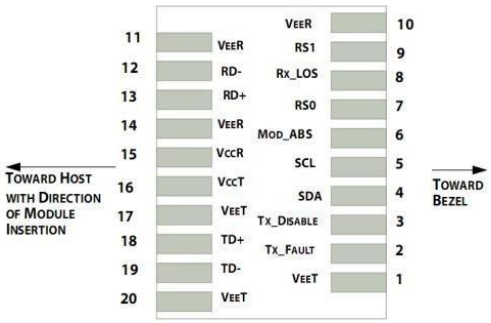


Figure 1.Pin function definitions

Transceiver pin descriptions

Pin	Symbol	Name	Description
1,17,20	VeeT	Transmitter Signal Ground	Connected to signal ground on the host board.
2	TX Fault	Transmitter Fault Out (OC)	Module transmitter fault output.
3	TX Disable	Transmitter Disable In (LVTTL)	Module transmitter disable control.
4	SDA	Module Definition Identifiers	Serial ID with SFF 8472 Diagnostics Module Definition pins should be pulled up to Host Vcc with 10 kΩ resistors.
5	SCL		
6	MOD-ABS		
7	RS0	Receiver Rate Select (LVTTL) Transmitter Rate Select (LVTTL)	Rate select 0(Rx):Low=CDR Bypass ; High=CDR Select Rate select 1(Tx):Low=CDR Bypass; High=CDR Select
9	RS1		
8	LOS	Loss of Signal Out (OC)	Receiver loss of signal.
10,11,14	VeeR	Receiver Signal Ground	Connected to signal ground on the host board.
12	RD-	Receiver Negative DATA Out (CML)	Receiver inverted data output, internally AC coupled and terminated
13	RD+	Receiver Positive DATA Out (CML)	Receiver non-inverted data output, internally AC coupled and terminated.
15	VccR	Receiver Power Supply	Receiver Power 3.3V Supply.
16	VccT	Transmitter Power Supply	Transmitter Power 3.3V Supply.

18	TD+	Transmitter Positive DATA In (CML)	Transmitter non-inverted data input, internally AC coupled and terminated.
19	TD-	Transmitter Negative DATA In (CML)	Transmitter inverted data Input, internally AC coupled and terminated.

6. Recommended Interface Circuit

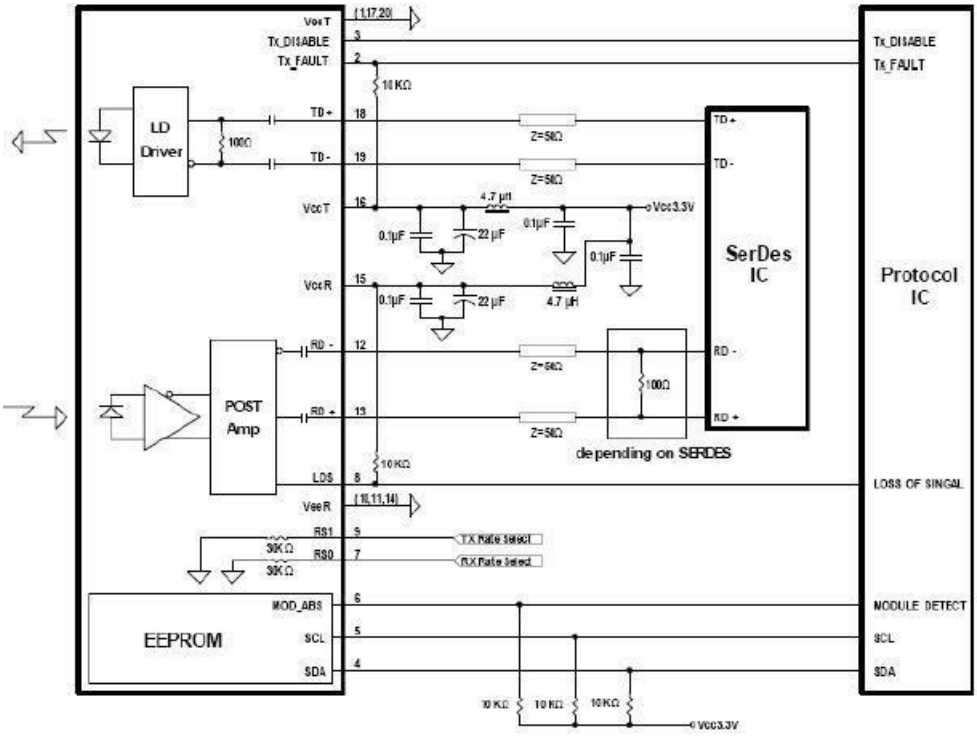
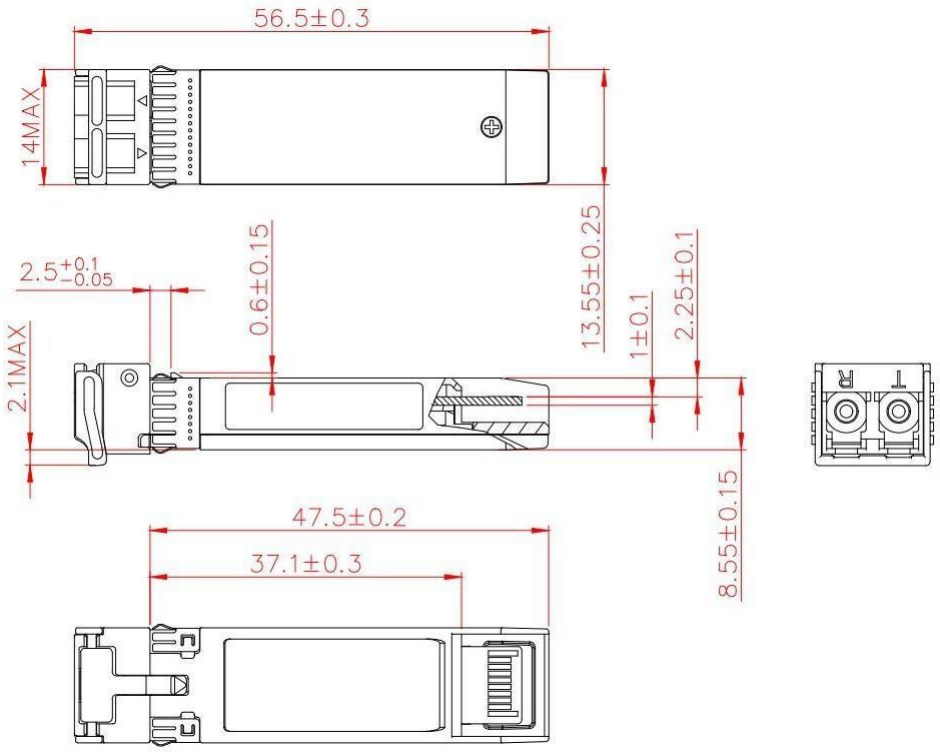


Figure 2. Typical application circuit

7. Mechanical Dimensions



8. Digital Diagnostics Functions

As defined by the SFF-8472, Our SFP28 transceivers provide digital diagnostic functions via a 2-wire serial interface, which allows real-time access to the following operating parameters:

- Transceiver temperature
- Laser bias current
- Transmitted optical power
- Received optical power
- Transceiver supply voltage

It also provides a sophisticated system of alarm and warning flags, which may be used to alert end-users when particular operating parameters are outside of a factory-set normal range. The operating and diagnostics information is monitored and reported by

a Digital Diagnostics Transceiver Controller (DDTC) inside the transceiver, which is accessed through the 2-wire serial interface. The memories are organized as a series of 8-bit data words that can be addressed individually or sequentially. The 2-wire serial interface provides sequential or random access to the 8 bit parameters, addressed from 0x00h to the maximum
address of the memory. For more detailed information, including memory map definitions, please refer the SFF-8472 documentation

9. Digital Diagnostic Monitor Accuracy

The following characteristics are defined over recommended operating conditions

Parameter	Accuracy	Unit
Internally measured transceiver temperature	+/-3	deg.C
Internally measured transceiver supply voltage	+/-3	%
Measured Tx bias current	+/-10	%
Measured Tx output power	+/-3	dB
Measured Rx received average optical power	+/-3	dB

10. Ordering information

Part Number	Product Description
MT-SFP25G-ER1270	25G SFP28 1271nm 40km APD
MT-SFP25G-ER1270	25G SFP28 1270nm 40km APD
MT-SFP25G-ER1290	25G SFP28 1290nm 40km APD
MT-SFP25G-ER1310	25G SFP28 1310nm 40km APD
MT-SFP25G-ER1330	25G SFP28 1330nm 40km APD
MT-SFP25G-ER1350	25G SFP28 1350nm 40km APD
MT-SFP25G-ER1370	25G SFP28 1370nm 40km APD

11. For More Information

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