AFCT-739DMZ-OPC

Avago® AFCT-739DMZ Compatible TAA Compliant 1G/10GBase-LR Dual-Rate SFP+ Transceiver (SMF, 1310nm, 10km, LC)

Features

- Supports Rate Selectable 1.25Gbps or 9.83Gbps to 11.3Gbps Bit Rates
- Compliant with IEEE 802.3.2-2012 10GBASE-LR/LW and 1000BASE-LX
- Compliant with SFF-8431
- Hot-Pluggable SFP+ Footprint
- 1310 DFB Laser Transmitter
- Built-In Digital Diagnostic Functions
- Duplex LC Connector
- Up to 10km on SMF
- 3.3V Power Supply
- Operating Temperature: 0 to 70 Celsius
- RoHS Compliant and Lead-Free

Applications:

- 10GBase-LR Ethernet
- 8x/10x Fibre Channel
- Access, Datacenter and Enterprise
- Mobile Fronthaul CPRI/OBSAI

Product Description

This Avago® AFCT-739DMZ compatible SFP+ transceiver provides 1G/10GBase-LR Dual-Rate throughput up to 10km over single-mode fiber (SMF) using a wavelength of 1310nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Avago® 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.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Maximum Supply Voltage	Vcc	-0.5		4	V	1
Storage Temperature	Tstg	-40		85	°C	
Operating Case Temperature	Tc	0		70	°C	
Data Rate (RS0 = Low)	DR		1.25		Gbps	2
Data Rate (RS0 = High)	DR	9.83	10.3125	11.3	Gbps	2
Bit Error Rate	BER			10^{-12}		

Notes:

1. For the electrical power interface.
2. IEEE 802.3-2012.

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Module Supply Voltage	Vcc	3.14	3.3	3.46	V	
Module Supply Current	Icc		290	380	mA	1
Power Dissipation	P_{DISS}		1.0	1.3	W	
Transmitter						
Input Differential Impedance	RIN		100		Ω	
Differential Data Input Swing	VIN,pp	180		700	mVp-p	
Transmit Disable Voltage	VD	2		Host_Vcc	V	
Transmit Enable Voltage	VEN	Vee		Vee+0.8	V	
Receiver						
Differential Data Output Swing	VOUT,pp	300		850	mVp-p	
Data Output Rise/Fall Time (20-80%)	Tr/Tf	28			ps	
LOS Assert	VLOSA	2		Host_Vcc	V	
LOS De-Assert	VLOSD	Vee		Vee+0.5	V	

Notes:

1. For the electrical power interface.

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Output Optical Power @1.25Gbps	P_{TX1}	-9.5		-3	dBm	1
Output Optical Power @10.3Gbps	P_{TX2}	-8.2		0.5	dBm	1
Optical Center Wavelength	λC	1260		1355	nm	
Optical Modulation Amplitude	OMA	-5.2			dBm	2
Extinction Ratio @1.25Gbps	ER1	9			dB	
Extinction Ratio @10.3Gbps	ER2	3.5			dB	
Spectral Width (-20dB)	$\Delta\lambda$			1	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						2
Receiver						
Optical Center Wavelength	λC	1260		1600	nm	
Receive Overload	P_{OL}	0.5			dBm	
Receiver Sensitivity @1.25Gbps	R_{X_SEN1}			-19	dBm	3
Receiver Sensitivity @10.3Gbps	R_{X_SEN2}			-14.4	dBm	4
Receiver Reflectance	TR_{RX}			-12	dB	
LOS Assert @1.25Gbps	LOSA	-30			dBm	
LOS Assert @10.3Gbps	LOSA	-30			dBm	
LOS De-Assert @1.25Gbps	LOSD			-17	dBm	
LOS De-Assert @10.3Gbps	LOSD			-17	dBm	
LOS Hysteresis	LOSH	0.5			dB	

Notes:
1. Average.
2. According to IEEE 802.3ae requirements.
3. Average. Test the resulting value using the minimum ER value within the defined range: BER<10^{-12} and 2^{7}-1 PRBS.
4. Average. Test the resulting value using the minimum ER value within the defined range: BER<10^{-12} and 2^{31}-1 PRBS.
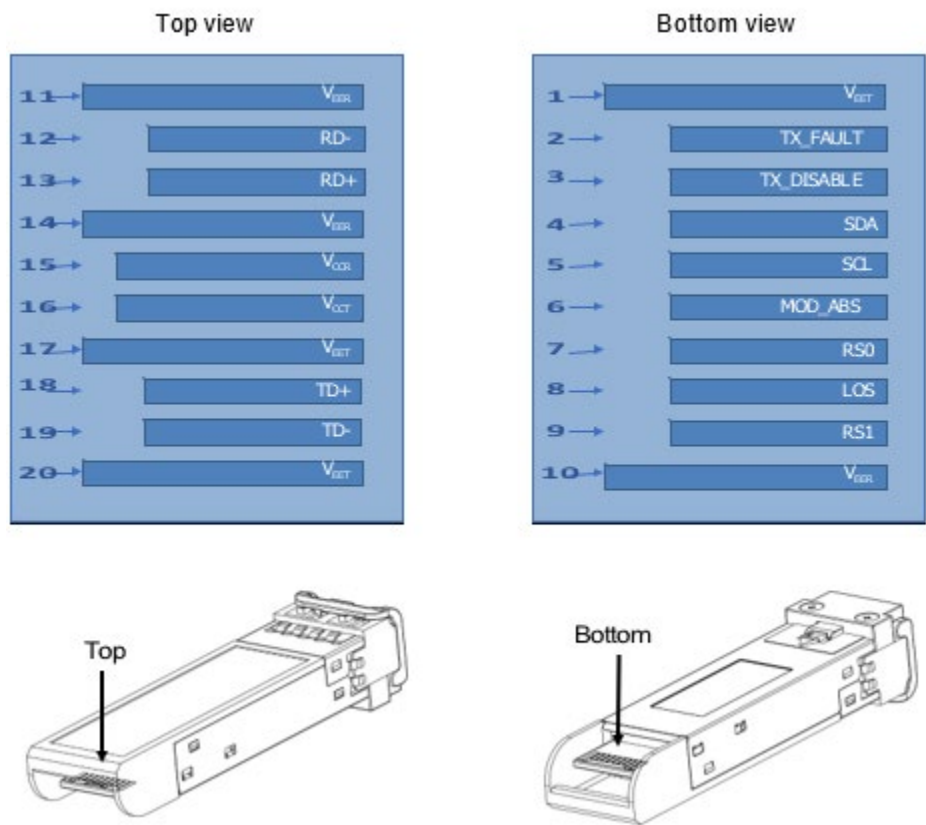
Pin Descriptions

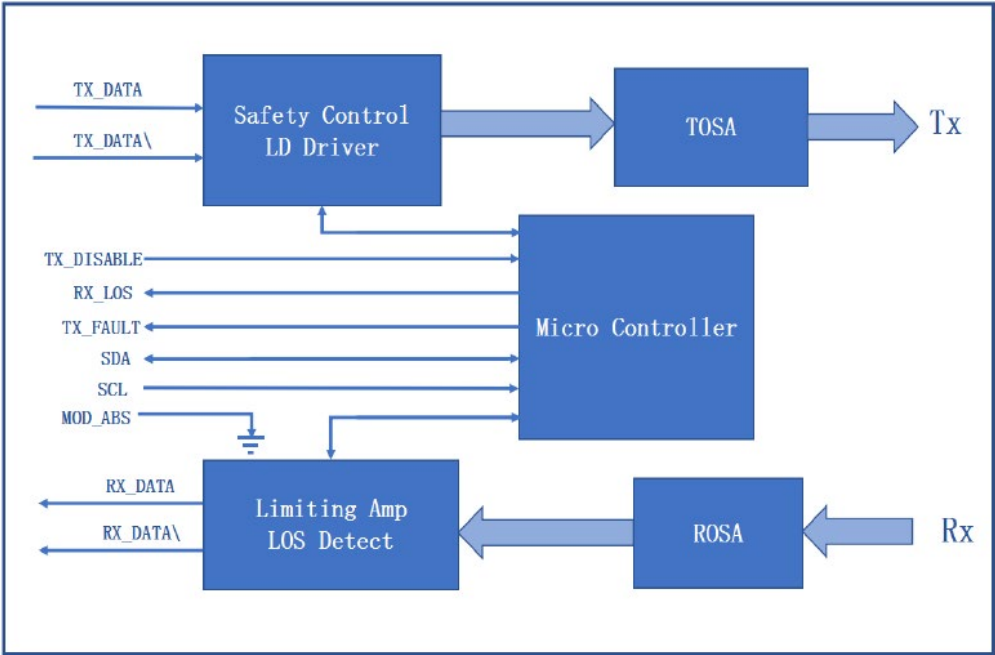| Pin	Symbol	Name/Description	Notes
1	VeeT	Transmitter Ground (Common with Receiver Ground).	1
2	Tx_Fault	Transmitter Fault.	2
3	Tx_Disable	Transmitter Disable. Laser output disables on "high" or "open."	3
4	SDA	2-Wire Serial Interface Data.	4
5	SCL	2-Wire Serial Interface Clock.	4
6	MOD_ABS	Module Absent. Grounded within the module.	4
7	RS0	Module Rate Selection: "Open" or "Low" Level = 1.25Gbps rate (low bandwidth). "High" Level = 9.95-10.31Gbps rate (high bandwidth).	
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-	Inverse Receiver Data Out. AC Coupled.	
13	RD+	Received 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 Data In. AC Coupled.	
19	TD-	Inverse Transmitter Data In. AC Coupled.	
20	VeeT	Transmitter Ground (Common with Receiver Ground).	1

Notes:
1. The circuit ground is isolated from the chassis ground.
2. Tx_Fault is the open collector output and should be pulled up with 4.7kΩ to 10kΩ on the host board to a voltage between 2V and Vcc+0.3V.
3. Disabled: $T_{DIS}>2V$ or open. Enabled: $T_{DIS}<0.8V$.
4. Should be pulled up with 4.7kΩ to 10kΩ on the host board to a voltage between 2V and Vcc+0.3V.
5. LOS is an open collector output and should be pulled up with 4.7kΩ to 10kΩ on the host board to a voltage between 2V and Vcc+0.3V. "Logic 0" indicates normal operation. "Logic 1" indicates that the receiver signal is lost.
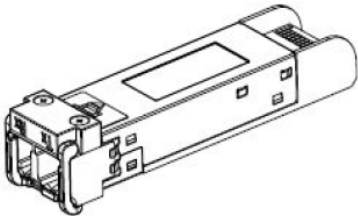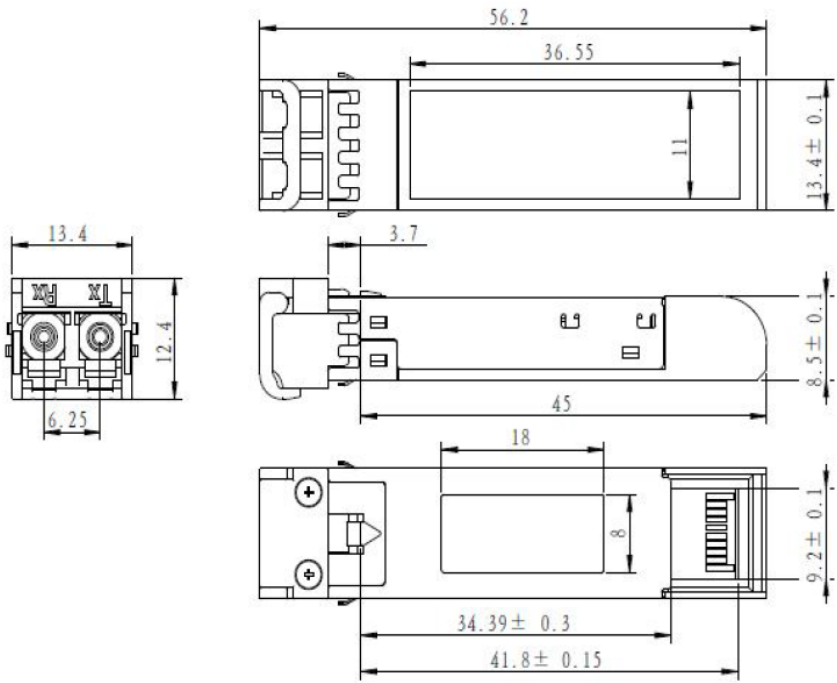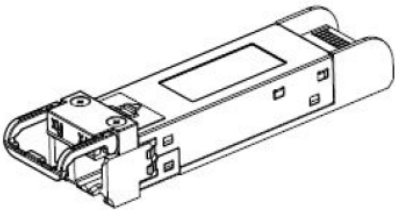
Electrical Pin-Out Details

Top view

11 →	V_{EER}
12 →	RD-
13 →	RD+
14 →	V_{EER}
15 →	V_{CCR}
16 →	V_{CCT}
17 →	V_{EET}
18 →	TD+
19 →	TD-
20 →	V_{EET}

Bottom view

1 →	V_{EET}
2 →	TX_FAULT
3 →	TX_DISABLE
4 →	SDA
5 →	SCL
6 →	MOD_ABS
7 →	RS0
8 →	LOS
9 →	RS1
10 →	V_{EER}

Top

Bottom

Block Diagram

TX_DATA →
TX_DATA\ →
Safety Control
LD Driver
→ TOSA → Tx

TX_DISABLE →
RX_LOS ←
TX_FAULT ←
SDA ←
SCL ←
MOD_ABS →
Micro Controller

RX_DATA ←
RX_DATA\ ←
Limiting Amp
LOS Detect
← ROSA ← Rx

Mechanical Specifications

56.2

36.55

11

13.4 ± 0.1

13.4

12.4

6.25

RX TX

3.7

8.5 ± 0.1

45

18

8

9.2 ± 0.1

34.39 ± 0.3

41.8 ± 0.15

LATCHED

UNLATCHED