

SO-SFP-10GE-ER-Cxx

SFP+, 10GBase-ER, CWDM 1470nm-1610nm, SM, DDM, 14.8dB, 40km

OVERVIEW

The SO-SFP-10GE-ER-CXX series optical transceiver is designed for fiber communications application up to 10g, which fully compliant with the specification of sfp+ msa sff-8431. This module is designed for single mode fiber and operates at a nominal wavelength of cwm wavelength. There are eight center wavelengths available from 1470nm to 1610nm, with each step 20nm. A guaranteed optical link budget of 14 db is offered. The module is with the sfp+ connector to allow hot plug capability. Only single 3.3v power supply is needed. The optical output can be disabled by lvttl logic high-level input of tx_dis. Loss of signal (rx_los) output is provided to indicate the loss of an input optical signal of receiver. This module provides digital diagnostic functions via a 2-wire serial interface as defined by the sff-8472 specification.

PRODUCT FEATURES

- Hot-Pluggable SFP+ footprint
- 8-Wavelengths CWDM EML transmitter from 1470nm to 1610nm, with step 20nm
- 14dB power budget
- Duplex LC connector
- Power dissipation < 1.5W
- Dispersion tolerance 800ps/nm
- Case operation temperature, standard: 0°C to +70°C
- Compliant with SFF-8431 MSA
- Compliant with SFF-8432 MSA
- Compliant with SFF-8472 MSA

APPLICATIONS

- 10GBASE-ER/EW
- 10G FC
- Other optical links

ORDERING INFORMATION

Part Number	Description
SO-SFP-10GE-ER-Cxx*	SFP+, 10GBase-ER, CWDM 1470nm-1610nm, SM, DDM, 14.8dB, 40km

*xx = Refers to notation for frequency data. Please see extended order information on last page for additional information.

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Max	Unit
Maximum Supply Voltage 1	V _{cc}	-0.5	4.0	V
Storage Temperature	TS	-40	85	°C

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min	Typ	Max	Unit
Case Operating Temperature	T _c	0		70	°C
Supply Voltage	V _{cc}	3.13	3.3	3.45	V
Supply Current	I _{cc}			455	mA
Data Rate	SO-SFP-10GE-ER-Cxx			10.3	Gbps

PERFORMANCE SPECIFICATIONS – ELECTRICAL TRANSMITTER

Parameter	Symbol	Min	Typ	Max	Unit	Notes
CML Inputs(Differential)	V _{IN}	180		1000	mVpp	
Input Impedance (Differential)	Z _{IN}	85	100	115	ohms	
Tx_DISABLE Input Voltage – High		2		V _{cc} +0.3	V	
Tx_DISABLE Input Voltage – Low		0		0.8	V	
Tx_FAULT Output Voltage – High		2		V _{cc} +0.3	V	
Tx_FAULT Output Voltage – Low		0		0.8	V	

PERFORMANCE SPECIFICATIONS – ELECTRICAL RECEIVER

Parameter	Symbol	Min	Typ	Max	Unit	Notes
CML Outputs (Differential)	V _{out}	350		700	mVpp	
Output Impedance (Differential)	Z _{out}	85	100	115	ohms	
Rx_LOS Output Voltage – High		2		V _{cc} +0.3	V	
Rx_LOS Output Voltage – Low		0		0.8	V	
MOD_DEF (2:0)	V _{oH}	2.5			V	
	V _{oL}	0		0.5	V	

OPTICAL AND ELECTRICAL CHARACTERISTICS TRANSMITTER

Parameter	Symbol	Min	Typ	Max	Unit
Output Opt. Pwr: 9/125 SMF	P _{out}	-1		+4	dBm
Extinction Ratio, EOLP-1696-14XN	ER	3.5			dB
Optical Wavelength	λ	λ _c -6	λ _c	λ _c +7.5	nm
Side Mode Suppression Ratio	SMSR	30			dB
Average Launch Power of OFF Transmitter	P _{OFF}			- 30	dBm
Transmitter Dispersion Penalty	TDP			3	dB
TX Jitter	T _{Xj}	Per 802.3ae requirements			
Relative Intensity Noise	RIN			-128	dB/Hz

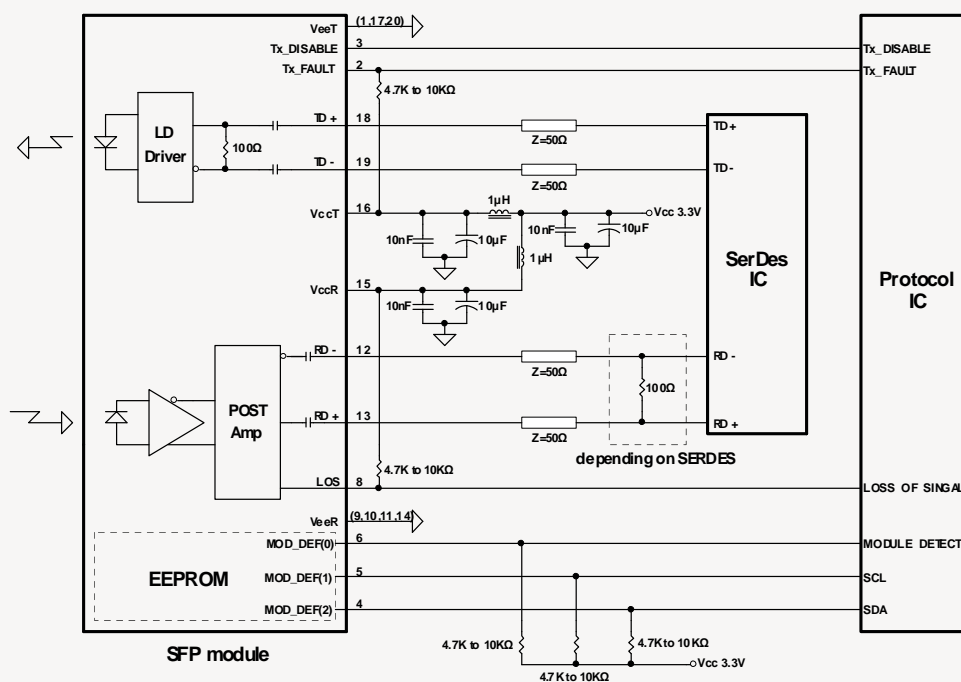
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OPTICAL AND ELECTRICAL CHARACTERISTICS RECEIVER

Parameter	Symbol	Min	Typ	Max	Unit
Receiver Sensitivity	P_{min}			-15.8	dBm
Maximum Input Power	P_{max}	-1			dBm
Optical Center Wavelength	λ	1260		1620	Nm
Receiver Reflectance	R_{rf}			-12	dB
LOS De-Assert	$LOSD$			-20	dBm
LOS Assert	$LOSA$	-28			dBm
LOS Hysteresis		1			dB

RECOMMENDED CIRCUIT SCHEMATIC



PIN FUNCTION DEFINITIONS

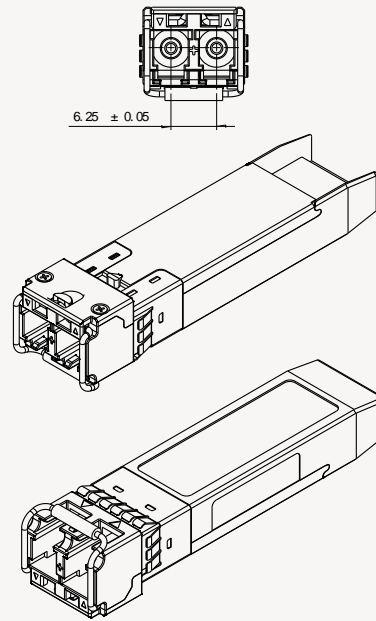
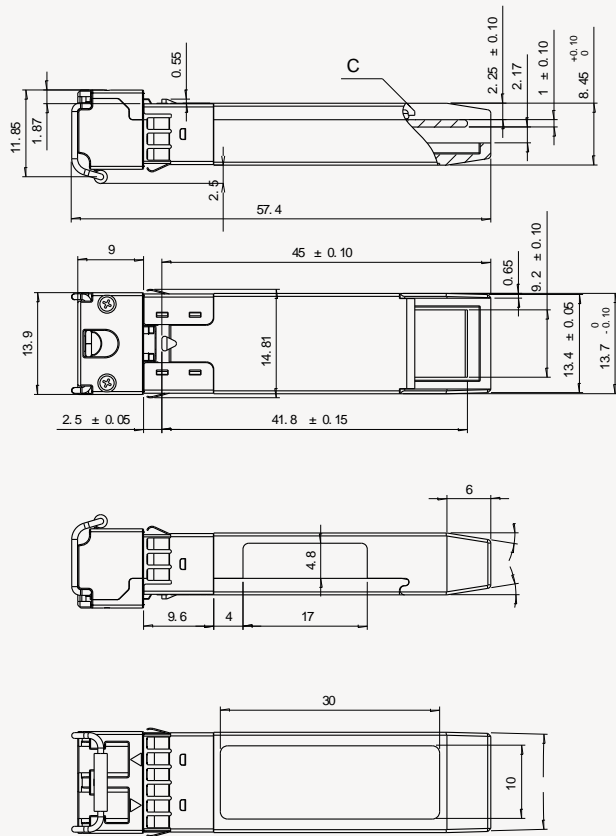
PIN	Signal Name	Description	PIN	Signal Name	Description
1	V _{EE} T	Transmitter Signal Ground	11	V _{EE} R	Receiver Signal Ground
2	TX_Fault	Transmitter Fault Indication. Logic "1" Output = Laser Fault. Logic "0" Output = Normal Operation	12	RD-	Inverse Receiver Data Out
3	TX_Disable	Logic "1" Input (or no connection) = Laser off, Logic "0" = Laser on.	13	RD+	Receiver Data Out
4	SDA	Modulation Definition 2 – Two wires serial ID Interface	14	V _{EE} R	Receiver Signal Ground
5	SDL	Modulation Definition 1 – Two wires serial ID Interface	15	V _{CC} R	Receiver Power – 3.3V±5%
6	MOD-ABS	Modulation Definition 0 – Ground in Module	16	V _{CC} T	Transmitter Power – 3.3V±5%
7	RS0	RX Rate Select (LVTTTL). This pin has an internal 30k pull-down to ground. A signal on this pin will not affect module	17	V _{EE} T	Transmitter Signal Ground

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		performance.			
8	RX_LOS	Loss of Signal Out (OC).	18	TD+	Transmitter Data In
9	RS1	TX Rate Select (LVTTL). This pin has an internal 30k pulldown to ground. A signal on this pin will not affect module performance.	19	TD-	Inverse Transmitter Data In
10	V _{EE} R	Receiver Signal Ground	20	V _{EE} T	Transmitter Signal Ground

MECHANICAL DRAWING



EXTENDED ORDERING INFORMATION

Part Number	Description
SO-SFP-10GE-ER-C47	SFP+, 10GBase-ER, CWDM 1470nm, SM, DDM, 14.8dB, 40km
SO-SFP-10GE-ER-C49	SFP+, 10GBase-ER, CWDM 1490nm, SM, DDM, 14.8dB, 40km
SO-SFP-10GE-ER-C51	SFP+, 10GBase-ER, CWDM 1510nm, SM, DDM, 14.8dB, 40km
SO-SFP-10GE-ER-C53	SFP+, 10GBase-ER, CWDM 1530nm, SM, DDM, 14.8dB, 40km
SO-SFP-10GE-ER-C55	SFP+, 10GBase-ER, CWDM 1550nm, SM, DDM, 14.8dB, 40km
SO-SFP-10GE-ER-C57	SFP+, 10GBase-ER, CWDM 1570nm, SM, DDM, 14.8dB, 40km
SO-SFP-10GE-ER-C59	SFP+, 10GBase-ER, CWDM 1590nm, SM, DDM, 14.8dB, 40km
SO-SFP-10GE-ER-C61	SFP+, 10GBase-ER, CWDM 1610nm, SM, DDM, 14.8dB, 40km