

SO-SFP-10GE-LR40-Cxx

SFP+, 10GBase-LR, CWDM 1350nm-1450nm, SM, DDM, 14dB, 40km

OVERVIEW

The SO-SFP-10GE-LR40-Cxx series optical transceiver is designed for fiber communications application such as 10G Ethernet (10GBASE-LR), 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 CWDM wavelength. There are six center wavelengths available from 1350nm to 1450nm, with each step 20nm. A guaranteed minimum optical link budget of 14 dB is offered. The module is with the SFP+ connector to allow hot plug capability. Single 3.3V power supply is needed. The optical output can be disabled by LVTTTL 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

- Supports 9.95Gb/s to 10.7Gb/s bit rates
- Hot-Pluggable SFP+ footprint
- 10-Wavelength CWDM DFB transmitter from 1350 nm to 1450 nm, with step 20 nm
- 14dB power budget
- Duplex LC connector
- Power dissipation < 1.2W
- Case operation temperature range 0°C to 70°C
- Compliant with SFP+ MSA specification SFF-8431
- Build-in digital diagnostic functions
- Compliant with SFF-8472 MSA

APPLICATIONS

- 10GBASE-ER/EW 10G Ethernet
- 10GBASE-ER at 10.31Gbps
- 10GBASE-EW at 9.95Gbps
- Other optical links

ORDERING INFORMATION

Part Number	Description
SO-SFP-10GE-LR40-Cxx*	SFP+, 10GBase-LR, CWDM 1350nm-1450nm, SM, DDM, 14dB, 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
Case Operating Temperature	TOP	0	70	°C

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min	Typ	Max	Unit
Operating Temperature	TOP	0		70	°C
Supply Voltage	V_{cc}	3.13	3.3	3.45	V
Supply Current	I_{cc}			350	mA
Data Rate		9.95		10.7	Gbps

ELECTRICAL CHARACTERISTICS – TRANSMITTER

Parameter	Symbol	Min	Typ	Max	Unit	Notes
CML	V_{IN}	150		1200	mVpp	
Inputs(Differential)						
Input Impedance (Differential)	Z_{in}	85	100	115	ohm	
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	

ELECTRICAL CHARACTERISTICS – RECEIVER

Parameter	Symbol	Min	Typ	Max	Unit	Notes
CML Outputs (Differential)	V_{out}	350		700	mVpp	
Output Impedance (Differential)	C_{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	

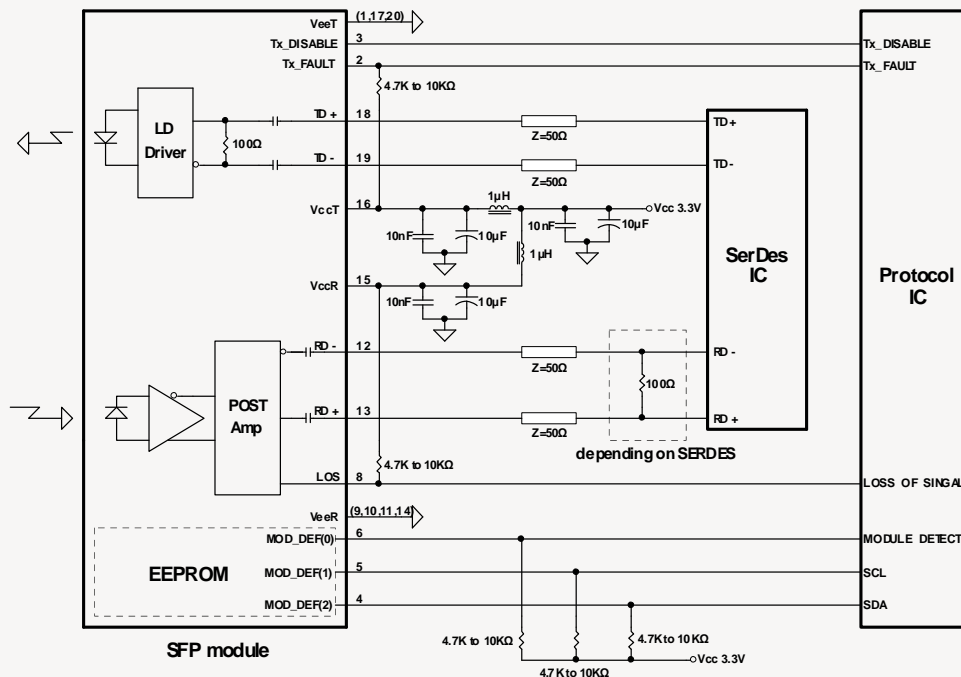
OPTICAL CHARACTERISTICS – TRANSMITTER

Parameter	Symbol	Min	Typ	Max	Unit
Output Opt. Pwr: 9/125 SMF	P_{out}	-1		+4	dBm
Optical Extinction Ratio	ER	3.5			dB
Optical Wavelength	λ	$\lambda_c - 5.5$	λ_c	$\lambda_c + 7.5$	nm
Side Mode Suppression Ratio	SMSR	30			dB
Transmitter and Dispersion Penalty	TDP			2	dB
Average Launch Power of OFF Transmitter	POFF			-30	dBm

OPTICAL CHARACTERISTICS – RECEIVER

Parameter	Symbol	Min	Typ	Max	Unit
Receiver Sensitivity @ 10.5Gb/s	P_{min}			-15	dBm
Maximum Input Power	P_{max}	+0.5			dBm
Optical Center Wavelength	λ	1260		1620	nm
Receiver Reflectance	R_{rf}			-27	dB
LOS De-Assert	LOSD			-16	dBm
LOS Assert	LOSA	-28			dBm
LOS Hysteresis		1			dB

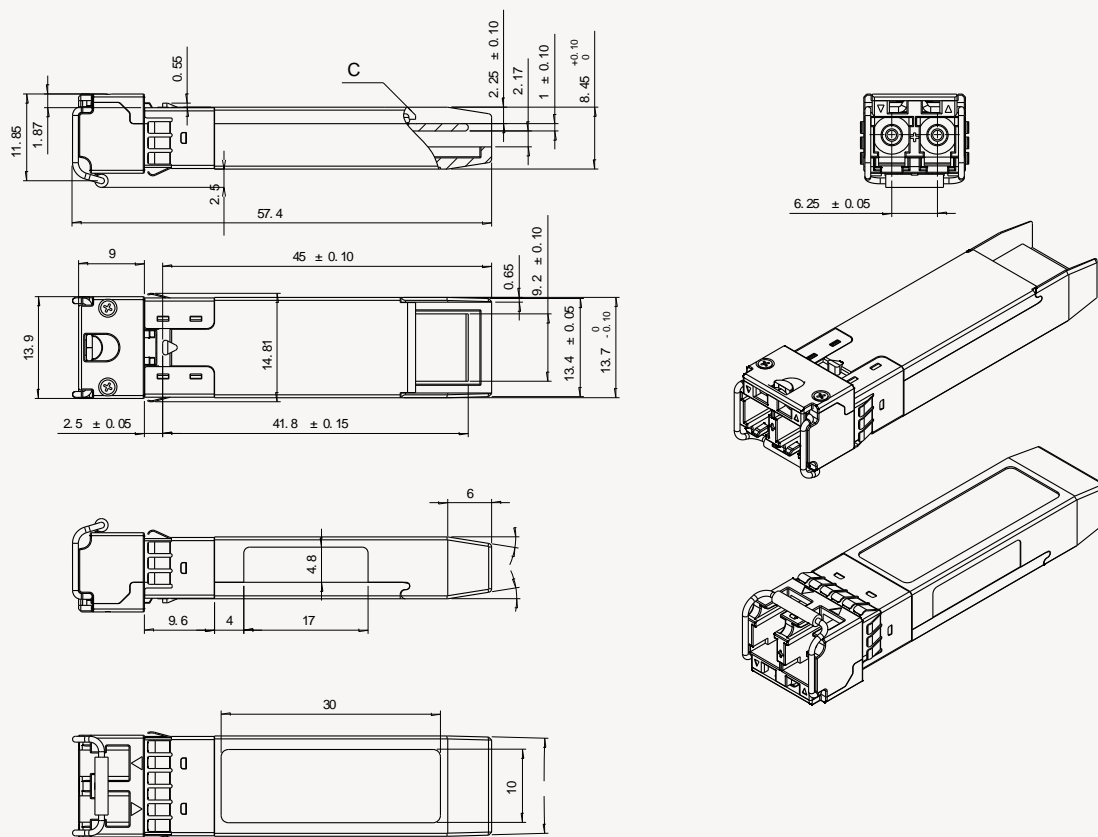
RECOMMENDED CIRCUIT SCHEMATIC



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 pulldown to ground. A signal on this pin will not affect module performance.	17	V _{EE} T	Transmitter Signal Ground
8	RX_LOS	Loss of Signal Out (OC).	18	TD+	Transmitter Data In
9	RS1	TX Rate Select (LVTTTL). 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



Subject to change without notice.

For more information, visit smartoptics.com.

EXTENDED ORDERING INFORMATION

Part Number	Description
SO-SFP-10GE-LR40-C35	SFP+, 10GBase-LR, CWDM 1350nm, SM, DDM, 14dB, 40km
SO-SFP-10GE-LR40-C37	SFP+, 10GBase-LR, CWDM 1370nm, SM, DDM, 14dB, 40km
SO-SFP-10GE-LR40-C39	SFP+, 10GBase-LR, CWDM 1390nm, SM, DDM, 14dB, 40km
SO-SFP-10GE-LR40-C41	SFP+, 10GBase-LR, CWDM 1410nm, SM, DDM, 14dB, 40km
SO-SFP-10GE-LR40-C43	SFP+, 10GBase-LR, CWDM 1430nm, SM, DDM, 14dB, 40km
SO-SFP-10GE-LR40-C45	SFP+, 10GBase-LR, CWDM 1450nm, SM, DDM, 14dB, 40km

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