SO-SFP-4GFC-80D-Dxxxx

SFP, 4/2/1 Gb FC/FICON, DWDM, SM, DDM, 24dB, 80km

OVERVIEW

The SO-SFP-4GFC-80D-Dxxxx series single mode transceiver is small form factor pluggable module for duplex optical data communications. This module is designed for single mode fiber and operates at a nominal DWDM wavelength from 1528.77nm to 1565.50nm as specified by the ITU-T. It is designed to deploy in the DWDM networking equipment in metropolitan access and core networks. It is with the SFP 20-pin connector to allow hot plug capability. The transmitter section uses a DWDM multiple quantum well DFB laser and is a class 1 laser compliant according to International Safety Standard IEC-60825. The SO-SFP-4GFC-80D-Dxxxx series are designed to be compliant with SFF-8472 Multi-Source Agreement (MSA).

PRODUCT FEATURES

- Operating data rate up to 4.25Gbps
- Available in all C-Band wavelengths on the 100GHz DWDM ITU Grid
- Single 3.3V power supply and TTL logic interface
- Hot-Pluggable SFP footprint duplex LC connector interface
- Compliant with Class 1 FDA and IEC60825-1 laser safety
- Compliant with SFP MSA
- Compliant with SFF-8472
- Operating case temperature:
  - Standard: 0 ℃~+70 ℃
  - Industrial: -40 ℃ ~+85 ℃

APPLICATIONS

- 4/2/1Gbps Fibre Channel / Ficon
- Fast Ethernet, Gigabit Ethernet
- DWDM, SAN, WAN networking

ORDERING INFORMATION

Part Number	Description
SO-SFP-4GFC-80D-DXXXX	SFP, 4/2/1 Gb FC/FICON, DWDM, SM, DDM, 24dB, 80km
SO-SFP-4GFC-80D-DXXXX -I	SFP, 4/2/1 Gb FC/FICON, DWDM, SM, DDM, 24dB, 80km, ind.temp.

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Max	Unit
Storage Temperature	TS	-40	+85	°C
Supply Voltage	VCC	-0.5	3.6	V
Operating Relative Humidity			95	%

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol		Min	Typ	Max	Unit
Case Operating Temperature	*Tc*	*SO-SFP-4GFC-80D-DXXXX*	0		+70	°C
		SO-SFP-4GFC-80D-DXXXX -I	-5		+70	
Power Supply Voltage	*Vcc*		3.15	3.3	3.45	V
Power Supply Current	*Icc*				455	mA
Data Rate					4.25G	bps

PERFORMANCE SPECIFICATIONS – ELECTRICAL TRANSMITTER

Parameter		Symbol	Min	Typ	Max	Unit	Notes
CML inputs (Differential)		V_{IN}	400		2000	mVpp	AC coupled inputs
Input Impedance (Differential)		Z_{IN}	85	100	115	ohm	Rin > 100 kohms @ DC
TX Disable	Disable		2		Vcc	V	
	Enable		0		0.8		
TX FAULT	Fault		2		Vcc	V	
	Normal		0		0.8		

PERFORMANCE SPECIFICATIONS – ELECTRICAL RECEIVER

Parameter	Symbol	Min	Typ	Max	Unit	Notes
CML Outputs (Differential)	*Vout*	370		2000	mVpp	AC coupled outputs
Output Impedance (Differential)	*Zout*	85	100	115	ohms	
Rx_LOS Output Voltage – High		2		Vcc	V	
Rx_LOS Output Voltage – Low		0		0.8	V	
MOD_DEF (2:0)	*VoH*	2.5			V	
	VoL	0		0.5	V	

PERFORMANCE SPECIFICATIONS – OPTICAL

Parameter	Symbol	Min	Typ	Max	Unit
Data Rate			4.25G		bps

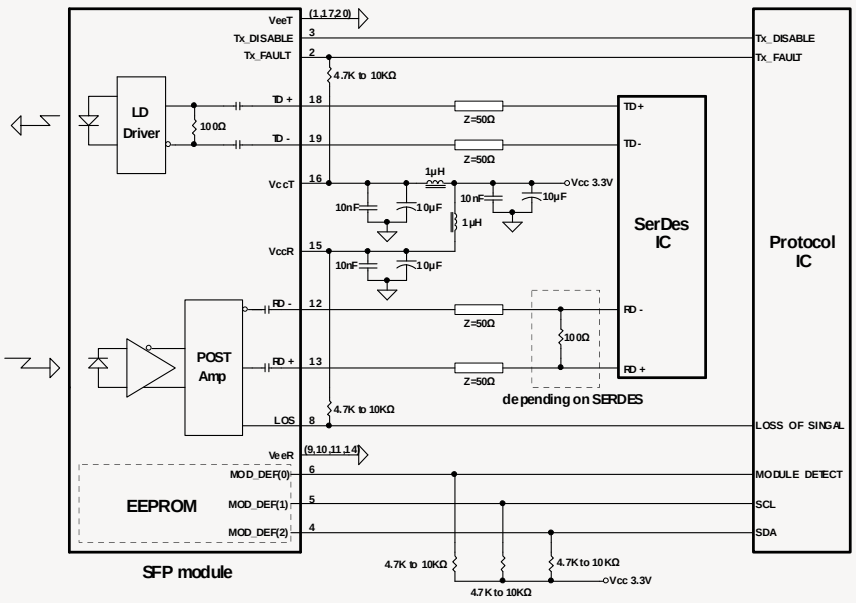
PERFORMANCE SPECIFICATIONS – OPTICAL - TRANSMITTER

Parameter	Symbol	Min	Typ	Max	Unit
Centre Wavelength Spacing			100		GHz
			0.8		nm
Spectral Width (-20dB)	$\Delta\lambda$			0.3	nm
Deviation From Central Frequency@EOL		-12		12	GHz
Side Mode Suppression Ratio	*SMSR*	30			dB
Average Output Power	*Pout*	0		5	dBm
Extinction Ratio @4.25Gb/s	*ER*	4.5			dB
Average Launch Power (Tx: OFF)	*Poff*			-45	dBm
Rise/Fall Time(Unfiltered 20%~80%)	*tr/tf*			120	ps
Output Optical Eye		Complies with ANSI FC-PI specification			
TX Disable Assert Time	*t_off*			10	us
Pout@TX Disable Asserted	*Pout*			-45	dBm
Relative Intensity Noise	*RIN*			-135	dB/Hz
Dispersion Tolerance	*DT*		1600		ps/nm

PERFORMANCE SPECIFICATIONS – OPTICAL - RECEIVER

Parameter	Symbol	Min	Typ	Max	Unit
Centre Wavelength	*Λ*	1528		1665	nm
Receiver Sensitivity	*Pmin*			-24	dBm
Receiver Overload	*Pmax*	-9			dBm
LOS De-Assert	*LOSD*			-25	dBm
LOS Assert	*LOSA*	-45			dBm
LOS Hysteresis		0.5			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 (LVTTL). 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 (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 SPECIFICATIONS