

XF-SM27WD020D-SDH-GP

XF-SM33WD020D-SDH-GP

Tx: 1270nm/Rx: 1330nm BIDI XFP Transceiver for 10GbE/10FC

Tx: 1330nm/Rx: 1270nm BIDI XFP Transceiver for 10GbE/10FC

RoHS 6 Compliant

Features

- ◆ Supports 9.95Gb/s to 10.5Gb/s data rates
- ◆ Power budget up to 12dB
- ◆ Two types:
 - A: 1270nm DFB Transmitter/ 1330nm Receiver
 - B: 1330nm DFB Transmitter/ 1270nm Receiver
- ◆ LC Connector
- ◆ +3.3V power supply only
- ◆ Power dissipation <2W
- ◆ Built-in digital diagnostic functions
- ◆ Case temperature range:
 - Standard: 0~+70°C
- ◆ Complaint with XFP MSA
- ◆ Complaint with IEEE 802.3ae 10GBASE-LR/LW
- ◆ Complaint with 10GFC 1200-SM-LL-L

Applications

- ◆ 10GBASE-LR 10G Ethernet at 10.3125Gbps
- ◆ 10GBASE-LW 10G Ethernet at 9.953Gbps
- ◆ 1200-SM-LL-L 10G Fiber Channel at 10.51875Gbps

Ordering information

Part No.	Description
XF-SM27WD020D-SDH-GP	XFP BIDI SM 1270nm/1330nm LC 20km 10Gb
XF-SM33WD020D-SDH-GP	XFP BIDI SM 1330nm/1270nm LC 20km 10Gb

Absolute Maximum Ratings*

Parameter	Symbol	Min	Max	Unit
Maximum Supply Voltage	V _{cc}	-0.5	4.0	V
Storage Temperature	T _s	-40	85	°C
Case Operating Temperature	XF-SM27/33WD020D-SDH-GP	0	70	°C

*Note3: Exceeding any one of these values may destroy the device permanently.

Recommend operating condition

Parameter	Symbol	Min	Typ	Max	Units
Case Operating Temperature	XF-SM27/33WD020D-SDH-GP	0	-	70	°C
Power Supply Current	I _{cc}	-	-	580	mA
Supply Voltage	V _{cc}	3.13	-	3.45	V

Electrical Characteristics

(T_C = -10 to 85°C, V_{CC} = 3.15V to 3.45V)

Parameter	Symbol	Min	Typ	Max	Unit
Transmitter					
Data Rate		9.95	-	10.52	Gbps
Input differential impedance	R _{in}	90	100	110	Ω
Differential data input swing*Note4	V _{in,pp}	120	-	820	mV
Transmit Disable Voltage	V _D	2.0	-	V _{cc}	V
Transmit Enable Voltage	V _{EN}	GND	-	GND+ 0.8	V
Transmit Disable Assert Time		-	-	10	us
Receiver					
Differential data output swing*Note4	V _{out,pp}	340	650	850	mV
Data output rise time*Note5	t _r	-	-	38	ps
Data output fall time*Note5	t _f	-	-	38	ps
LOS Fault	V _{LOS fault}	2.4	-	V _{cc}	V
LOS Normal	V _{LOS norm}	GND	-	GND+0.5	V

*Note4. Internal AC coupling.

*Note5. 20 – 80 %.

Optical Characteristics

(XF-SM27WD020D-SDH-GP, 1270nm DFB & PIN/TIA)

Parameter	Symbol	Min.	Typical	Max.	Unit
Power budget		12			dB
Data Rate			9.953/10.3125		Gbps
Transmitter					
Centre Wavelength	λ_C	1260	1270	1280	nm
Spectral Width (-20dB)	$\Delta\lambda$			1	nm
Average Output Power*note6	$P_{out, AVG}$	-2		3	dBm
Extinction Ratio	ER	3.5			dB
Side Mode Suppression Ratio	SMSR	30			dB
Transmitter and Dispersion Penalty	TDP			2	dB
Average Power of OFF Transmitter				-30	dBm
Relative Intensity Noise	RIN			-128	dB/Hz
Input Differential Impedance	Z_{IN}	90	100	110	Ω
TX Disable	Disable		2.0	$V_{CC}+0.3$	V
	Enable		0	0.8	
TX Fault	Fault		2.0	$V_{CC}+0.3$	V
	Normal		0	0.8	
TX Disable Assert Time	t_{off}			10	us
Receiver					
Centre Wavelength	λ_C	1320		1340	nm
Sensitivity*note7	P_{IN}			-14	dBm
Receiver Overload	P_{MAX}	0.5			dBm
Output Differential Impedance	P_{IN}	90	100	110	Ω
LOS De-Assert	LOS_D			-16	dBm
LOS Assert	LOS_A	-28			dBm
LOS	High		2.0	$V_{CC}+0.3$	V
	Low		0	0.8	

(XF-SM33WD020D-SDH-GP, 1330nm DFB & PIN/TIA)

Parameter	Symbol	Min.	Typical	Max.	Unit
Power budget		12			dB
Data Rate			9.953/10.3125		Gbps
Transmitter					
Centre Wavelength	λ_C	1320	1330	1340	nm
Spectral Width (-20dB)	$\Delta\lambda$			1	nm
Average Output Power*note6	$P_{out, AVG}$	-2		3	dBm
Extinction Ratio	ER	3.5			dB
Side Mode Suppression Ratio	SMSR	30			dB
Transmitter and Dispersion Penalty	TDP			2	dB
Average Power of OFF Transmitter				-30	dBm
Relative Intensity Noise	RIN			-128	dB/Hz

Input Differential Impedance		Z _{IN}	90	100	110	Ω
TX Disable	Disable		2.0		V _{CC} +0.3	V
	Enable		0		0.8	
TX Fault	Fault		2.0		V _{CC} +0.3	V
	Normal		0		0.8	
TX Disable Assert Time		t _{off}			10	us
Receiver						
Centre Wavelength		λ _C	1260		1280	nm
Sensitivity*note7		P _{IN}			-14	dBm
Receiver Overload		P _{MAX}	0.5			dBm
Output Differential Impedance		P _{IN}	90	100	110	Ω
LOS De-Assert		LOS _D			-16	dBm
LOS Assert		LOS _A	-28			dBm
LOS	High		2.0		V _{CC} +0.3	V
	Low		0		0.8	

*Note6. Output is coupled into a 9/125um SMF.

*Note7: Measured with a PRBS 2³¹-1 test pattern @10.3125Gbps.

Mechanical Specifications

