

## XF-SM27WD060D-SDH-GP

## XF-SM33WD060D-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 21dB at least
- ◆ 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
  - Extended: -10~+85°C
- ◆ Complaint with XFP MSA

### Applications

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

### Ordering information

Part No.	Description
XF-SM27WD060D-SDH-GP	XFP BIDI SM 1270nm/1330nm LC 60km 10Gb
XF-SM33WD060D-SDH-GP	XFP BIDI SM 1330nm/1270nm LC 60km 10Gb

## Absolute Maximum Ratings\* Note3

Parameter	Symbol	Min	Max	Unit
Maximum Supply Voltage	V <sub>cc</sub>	-0.5	4.0	V
Storage Temperature	T <sub>s</sub>	-40	85	°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	T <sub>c</sub>	XF-SM27WD060D-SDH-GP XF-SM33WD060D-SDH-GP	0	-	70	°C
Power Supply Current	I <sub>cc</sub>		-	-	580	mA
Supply Voltage	V <sub>cc</sub>		3.13	-	3.45	V

## Electrical Characteristics

(T<sub>c</sub> = -10 to 85°C, V<sub>cc</sub> = 3.15V to 3.45V)

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

\*Note4. Internal AC coupling.

\*Note5. 20 – 80 %.

## Optical Characteristics

(XF-SM27WD060D-SDH-GP, 1270nm DFB & APD)

Parameter	Symbol	Min.	Typical	Max.	Unit
Power budget		21			dB
Data Rate			9.953/10.3125		Gbps
<b>Transmitter</b>					
Centre Wavelength	$\lambda_C$	1260	1270	1280	nm
Spectral Width (-20dB)	$\Delta\lambda$			1	nm
Average Output Power <sup>*note6</sup>	$P_{out, AVG}$	1		5	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	$\Omega$
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
<b>Receiver</b>					
Centre Wavelength	$\lambda_C$	1320		1340	nm
Sensitivity <sup>*note7</sup>	$P_{IN}$			-20	dBm
Receiver Overload	$P_{MAX}$	-6			dBm
Output Differential Impedance	$P_{IN}$	90	100	110	$\Omega$
LOS De-Assert	$LOS_D$			-22	dBm
LOS Assert	$LOS_A$	-34			dBm
LOS	High		2.0	$V_{CC}+0.3$	V
	Low		0	0.8	

(XF-SM33WD060D-SDH-GP, 1330nm DFB & APD)

Parameter	Symbol	Min.	Typical	Max.	Unit
Power budget		21			dB
Data Rate			9.953/10.3125		Gbps
<b>Transmitter</b>					
Centre Wavelength	$\lambda_C$	1320	1330	1340	nm
Spectral Width (-20dB)	$\Delta\lambda$			1	nm
Average Output Power <sup>*note6</sup>	$P_{out, AVG}$	1		5	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	$\Omega$
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
<b>Receiver</b>						
Centre Wavelength		$\lambda_C$	1260		1280	nm
Sensitivity*note7		$P_{IN}$			-20	dBm
Receiver Overload		$P_{MAX}$	-6			dBm
Output Differential Impedance		$P_{IN}$	90	100	110	$\Omega$
LOS De-Assert		LOS <sub>D</sub>			-22	dBm
LOS Assert		LOS <sub>A</sub>	-34			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

