

SFP-10G-ZR-100

10GBASE, SFP+, ZR+, SMF CDR TRANSCEIVER
1550nm, 100km REACH, DUPLEX LC CONNECTOR

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10GBase SFP+ ZR 1550nm SMF 100km CDR Transceiver

Product Features

- Up to 11.3Gbps Data Links
- 1550nm EML transmitter and APD receiver
- Up to 100km on 9/125µm SMF
- Hot-pluggable SFP+ footprint
- Duplex LC/UPC type pluggable optical Interface
- RoHS-10 compliant and lead-free
- Support Digital Monitoring interface
- Single +3.3V power supply
- Compliant with SFF+MSA and SFF-8472
- Metal enclosure, for lower EMI
- Meet ESD requirements.
- Available operating temperature ranges:
 - Commercial: 0°C to 70°C
 - Industrial: -40°C to 85°C



Product Applications

- 10GBASE-ZR/ZW
- OTN / FC / CPRI

I. Maximum Ratings

Exceeding the limits below may damage the transceiver module permanently.

Parameter	Symbol	Min.	Typ.	Max.	Units
Power Supply Voltage	Vcc	-0.5		3.6	V
Storage Temperature	TS	-40		85	°C
Relative Humidity	RH	5		95	%
Damage Threshold	TH _d	0			dBm

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II. Operating Specifications

Parameter	Symbol	Min.	Typ.	Max.	Units	Notes
Case Operating Temperature	TC	0		+70	°C	Commercial
		-40		+85	°C	Industrial
Power Supply Voltage	Vcc	3.135	3.3	3.465	V	
Data Rate			10.3125		Gb/s	
Control Input Voltage HIGH		2		Vcc	V	
Control Input Voltage LOW		0		0.8	V	
Link Distance (SMF)	D			100	km	9/125um

III. Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Optical Wavelength	λ_c	1530	1550	1565	nm	1
Center Wavelength Spacing			100		GHz	
Optical Spectral Width	$\Delta\lambda$			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Average Optical Power	P _{AVG}	1		5	dBm	2
Optical Extinction Ratio	ER	8.2			dB	
Transmitter and Dispersion Penalty	TDP			3.2	dB	
Transmitter OFF Output Power	POff			-30	dBm	
Transmitter Eye Mask		Compliant with IEEE802.3ae				
Receiver						
Center Wavelength	λ_c	1270		1610	nm	
Receiver Sensitivity (Average Power)	Sen.			-25	dBm	3
Input Saturation Power (overload)	Psat	-8			dBm	
LOS Assert	LOSA	-35			dB	
LOS De-assert	LOSD			-27	dBm	
LOS Hysteresis	LOSH	0.5			dBm	

Notes:

1. Class 1 Laser Safety per FDA/CDRH and IEC-825-1 regulations.
2. Launched power (avg.) is power coupled into a single mode fiber with master connector (Before of Life).
3. Measured with Light source 1550nm, ER=8.2dB; BER≤1E-12 @10.3125Gbps, PRBS=2³¹-1 NRZ.

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IV. Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Consumption	p			1.6	W	
Supply Current	I _{cc}			480	mA	
Transmitter						
Single-ended Input Voltage Tolerance	V _{cc}	-0.3		4.0	V	
AC Common Mode Input Voltage Tolerance (RMS)		15			mV	
Differential Input Voltage Swing	V _{in,pp}	120		820	mVpp	
Differential Input Impedance	Z _{in}	90	100	110	Ohm	1
Transmit Disable Assert Time				10	Us	
Transmit Disable Voltage	V _{dis}	V _{cc} -1.3		V _{cc}	V	
Transmit Enable Voltage	V _{en}	V _{ee}		V _{ee} +0.8	V	2
Receiver						
Differential Output Voltage Swing	V _{out,pp}	350		850	mVpp	
Differential Output Impedance	Z _{out}	90	100	110	Ohm	3
Data output rise/fall time	Tr/Tf	28			Ps	4
LOS Assert Voltage	V _{losH}	V _{cc} -1.3		V _{cc}	V	5
LOS De-assert Voltage	V _{losL}	V _{ee}		V _{ee} +0.8	V	5
Power Supply Rejection	PSR	100			mVpp	6

Notes:

1. Connected directly to TX data input pins. AC coupled thereafter.
2. Or Open circuit.
3. Input 100 ohms differential termination.
4. These are unfiltered 20-80% values.
5. Loss of Signal is LVTTTL. Logic 0 indicates normal operation; logic 1 indicates no signal detected.
6. Receiver sensitivity is compliant with power supply sinusoidal modulation of 20 Hz to 1.5 MHz up to specified value applied through the recommended power supply filtering network.

Warranty

All transceivers feature a limited lifetime warranty.

Disclaimer

External physical characteristics are subject to variation. This may include, but is not limited to, external case designs, pull tab colors and/or shapes, removal latch styles or colors, and label sizes and placement. These variations do not affect the function or characteristics of the transceivers.