

## Juniper Compatible QFX-SFP-10GE-ER Quick Spec:

Part Number:	QFX-SFP-10GE-ER QFX-SFP-10GE-ER-EXT QFX-SFP-10GE-ER-IND
Form Factor:	SFP+
TX Wavelength:	1550nm
Reach:	40km
Cable Type:	SMF
Rate Category:	10GBase
Interface Type:	ER
DDM:	Yes
Connector Type:	Dual-LC
Power Budget:	11.10 dB
TX Power Min/Max:	-3.00 to 3.00
RX Power Min/Max;	-14.10 to -1.00



## Juniper Compatible QFX-SFP-10GE-ER Features

- Compliant with SFF-8413 and IEEE802.3ae
- Data rate selectable  $\leq 4.25$ Gbps or 9.95Gbps to 10.3Gbps bit rates
- Cooled EML transmitter and PIN receiver
- Low Power Dissipation 1.5W Maximum
- Single 3.3V power supply
- Voltages, laser bias current, transmit optical power, receive optical power
- Operating Case Temperature:
  - Standard: 0°C to +70 °C
  - Extended -5°C to +85 °C
  - Industrial -40°C to +85 °C

## Juniper Compatible QFX-SFP-10GE-ER Applications

- 10GBASE-ER at 10.3125Gbps
- 10GBASE-EW at 9.953Gbps
- Other Optical Links

## Electrical Characteristics (Condition: Ta=TOP)

Parameter	Symbol	Min.	Typ	Max.	Unit	Notes
CML Inputs(Differential)	Vin	150		1200	mV p-p	AC coupled inputs
Supply Current	ICC			300	mA	
Input Impedance (Differential)	Zin	85	100	115	ohm	Rin > 100 kohm @ DC
Tx_Disable Input Voltage – Low	VIL	0		0.8	V	
Tx_Disable Input Voltage – High	VIH	2.0		3.45	V	
Tx_Fault Output Voltage – Low	VOL	0		0.5	V	
Tx_Fault Output Voltage – High	VOH	2.0		Vcc+0.3	V	
CML Outputs (Differential)	Vout	350		700	mV pp	AC coupled outputs
Output Impedance (Differential)	Zout	85	100	115	ohms	
Rx_LOS Output Voltage- Low	VOL	0		0.5	V	
Rx_LOS Output Voltage- High	VOH	2.5			V	

## Optical Characteristics (Condition: Ta=TOP)

TX						
Parameter	Symbol	Min	Typ	Max	Unit	
Data Rate		-	10.3	-	Gb/s	
9µm Core Diameter SMF			10		Km	
Centre wavelength	$\lambda_c$	1530	1550	1565	nm	
Output Spectral Width(-20dB)	$\Delta\lambda$	-	-	1	nm	
Average Output Power	P <sub>out</sub>	-3	-	+3	dBm	
Extinction Ratio	ER	6	-	-	dB	
Average Power of OFF Transmitter				-30	dBm	
Side Mode Suppression Ratio	SMSR	30			dB	
Input Differential Impedance	Zin	90	100	110	$\Omega$	
TX Disable	Disable		2.0	Vcc+0.3	V	
	Enable		0	0.8		
TX Fault	Fault		2.0	Vcc+0.3	V	
	Normal		0	0.8		

TX Disable Assert Time		t <sub>off</sub>		10	us
<b>RX</b>					
Parameter	Symbol	Min	Typ	Max	Unit
Center Wavelength	λ <sub>c</sub>	1530		1565	nm
Receive Sensitivity	P <sub>in</sub>	-	-	-14.1	dBm
Maximum Input Power	P <sub>MAX</sub>	-1.0	0	-	dBm
Signal Detect Threshold-Assertion:	SD <sub>HIGH</sub>	-	-	-16	dBm
Signal Detect Threshold-Deassertion:	SD <sub>LOW</sub>	-25	-	-	dBm
Output Differential Impedance	P <sub>in</sub>	90	100	110	Ω
Receiver Overload	P <sub>max</sub>	0.5			dBm
Optical Return Loss	ORL			-16	dB
LOS	High	2.0		V <sub>cc</sub> +0.3	V
	Low	0		0.8	

### Absolute Maximum Ratings (T<sub>C</sub>=25°C)

Parameter	Symbol	Min	Max	Unit
Storage Temperature	T <sub>ST</sub>	-40	+85	°C
Operating Temperature (Com)	T <sub>IP</sub>	0	+70	°C
Operating Temperature (Industrial)		-40	+85	
Input Voltage	T <sub>CC</sub>	0	5	V

### Recommend Operation Environment

Parameter	Symbol	Min	Typ	Max	Unit
Supply Voltage	V <sub>CC</sub>	+3.15	3.3	+3.45	V
Operating Temperature	T <sub>OP</sub>	0	-	+70	°C
Operating Temperature		-40	-	+85	

### Licensing

The following U.S. patents are licensed by Finisar to FluxLight, Inc.:  
 U.S. Patent Nos: 7,184,668, 7,079,775, 6,957,021, 7,058,310, 6,952,531, 7,162,160, 7,050,720