

## CISCO Compatible SFP-10G-LR-S-FL Quick Spec:

Part Number:	SFP-10G-LR-S-FL SFP-10G-LR-S-EXT-FL SFP-10G-LR-S-IND-FL
Form Factor:	SFP+
TX Wavelength:	1310nm
Reach:	10km
Cable Type:	SMF
Rate Category:	10GBase
Interface Type:	LR
DDM:	Yes
Connector Type:	Dual-LC
Power Budget:	6.00 dB
TX Power Min/Max:	-8.00 to 0.50
RX Power Min/Max:	-14.00 to -3.0



## CISCO Compatible SFP-10G-LR-S-FL Features

- Operating Data Rate up to 10.3Gbps
- 1310nm DFB-LD Transmitter
- Single 3.3V Power Supply and TTL Logic Interface
- Hot Pluggable
- Compliant with MSA SFP+
- Compliant with IEEE 802.3ae 10GBASE-LR
- Compliant with IEEE 802.3ae 10GBASE-LW
- Compliant with SFF-8472
- RoHS 6 Compliant
- Operating Case Temperature:
  - Standard: 0°C to +70 °C
  - Extended -5°C to +85 °C
  - Industrial -40°C to +85 °C

## CISCO Compatible SFP-10G-LR-S-FL Applications

- 10GBASE-LR at 10.3125Gbps
- 10GBASE-LW at 9.953Gbps
- Other Optical Links

### CISCO Compatible SFP-10G-LR-S-FL 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	

### CISCO Compatible SFP-10G-LR-S-FL 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	$\lambda_c$	1270	1310	1355	nm	
Output Spectral Width(-20dB)	$\Delta\lambda$	-	-	1	nm	
Average Output Power	P <sub>out</sub>	-8	-	+0.5	dBm	
Extinction Ratio	ER	3.5	-	-	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	

RX					
Parameter	Symbol	Min	Typ	Max	Unit
Center Wavelength	$\lambda_c$	1260		1565	nm
Receive Sensitivity	$P_{in}$	-	-	-14	dBm
Maximum Input Power	$P_{MAX}$	-3	0	-	dBm
Signal Detect Threshold-Assertion:	$SD_{HIGH}$	-	-	-15	dBm
Signal Detect Threshold-Deassertion:	$SD_{LOW}$	-25	-	-	dBm
Output Differential Impedance	$P_{in}$	90	100	110	$\Omega$
Receiver Overload	$P_{max}$	0.5			dBm
Optical Return Loss	ORL			-12	dB
LOS	High	2.0		$V_{cc}+0.3$	V
	Low	0		0.8	

### Absolute Maximum Ratings ( $T_c=25^\circ C$ )

Parameter	Symbol	Min	Max	Unit
Storage Temperature	$T_{ST}$	-40	+85	$^\circ C$
Operating Temperature (Com)	$T_{IP}$	0	+70	$^\circ C$
Operating Temperature ( Ext )		-40	+85	
Input Voltage	$T_{CC}$	0	5	V

### CISCO Compatible SFP-10G-LR-S-FL Recommend Operation Environment

Parameter	Symbol	Min	Typ	Max	Unit
Supply Voltage	$V_{CC}$	+3.15	3.3	+3.45	V
Operating Temperature	$T_{OP}$	0	-	+70	$^\circ C$
Operating Temperature		-40	-	+85	

### Licensing

The following U.S. patents are licensed by Cisco 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