Fortinet Compatible FG-TRAN-SFP+LR Quick Spec:

Part Number:	FG-TRAN-SFP+LR FG-TRAN-SFP+LR-EXT FG-TRAN-SFP+LR-IND
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

Fortinet Compatible FG-TRAN-SFP+LR 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

Fortinet Compatible FG-TRAN-SFP+LR Applications

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

Fortinet Compatible FG-TRAN-SFP+LR 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	

Fortinet Compatible FG-TRAN-SFP+LR 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		λc	1270	1310	1355	nm
Output Spectral Width(-20dB)		△λ	-	-	1	nm
Average Output Power		P_{out}	-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	Ω
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_off			10	us

RX						
Parameter		**Symbol**	**Min**	**Typ**	**Max**	**Unit**
Center Wavelength		λc	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		Pin	90	100	110	Ω
Receiver Overload		Pmax	0.5			dBm
Optical Return Loss		ORL			-12	dB
LOS	High	2.0			Vcc+0.3	V
	Low	0			0.8	

Absolute Maximum Ratings (T_C=25℃)

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

Fortinet Compatible FG-TRAN-SFP+LR 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	℃
Operating Temperature		-40	-	+85	

Licensing

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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