



10G SFP+ to SFP+ Active Optical Cables

Features

- Low power consumption <0.35W per end
- Electrical interface compliant to SFF-8431
- Up to 300m on OM3 MMF
- 850nm VCSEL transmitter, PIN photo-detector receiver
- Operating case temperature 0 °C to +70°C
- 3.3V power supply voltage
- RoHS 6 compliant
- Hot Pluggable SFP+ form factor
- good EMI performance

Applications

- 10 Gigabit Ethernet
- 1x InfiniBand QDR. DDR, SDR
- High-performance computing clusters
- 4G and 8G Fibre Channel Applications
- Servers, switches, storage, host card adapters and datacenter

Description

The ETU-Link SFP+ Active Optical Cables are direct-attach fiber assemblies with SFP+ connectors. They have very good power consumption performance .They are suitable for very short distances and offer a cost-effective way to connect within racks and across adjacent racks. ETU-Link SFP+ Active Optical Cables ' s length is up to 300 meters on OM3 MMF.

Absolute Maximum Ratings

The operation in excess of any absolute maximum ratings might cause permanent damage to this module.

Parameter	Symbol	Min	Max	Unit	Note
Storage Temperature	TST	-20	85	degC	
Relative Humidity(non-condensing)	RH	0	85	%	
Operating Case Temperature	TOPC	0	70	degC	
Supply Voltage	VCC	-0.3	3.6	V	
Input Voltage	Vin	-0.3	Vcc+0.3	V	



Recommended Operating Conditions and Supply Requirements

Parameter	Symbol	Min	Typical	Max	Unit
Operating Case Temperature	TOPC	0		70	degC
Power Supply Voltage	VCC	3.13	3.3	3.47	V
Data Rate	DR		10.3	11.3	Gbps
Data Speed Tolerance	Δ DR	-100		+100	ppm

Optical Characteristics

All parameters are specified under the recommended operating conditions with PRBS31 data pattern unless otherwise specified.

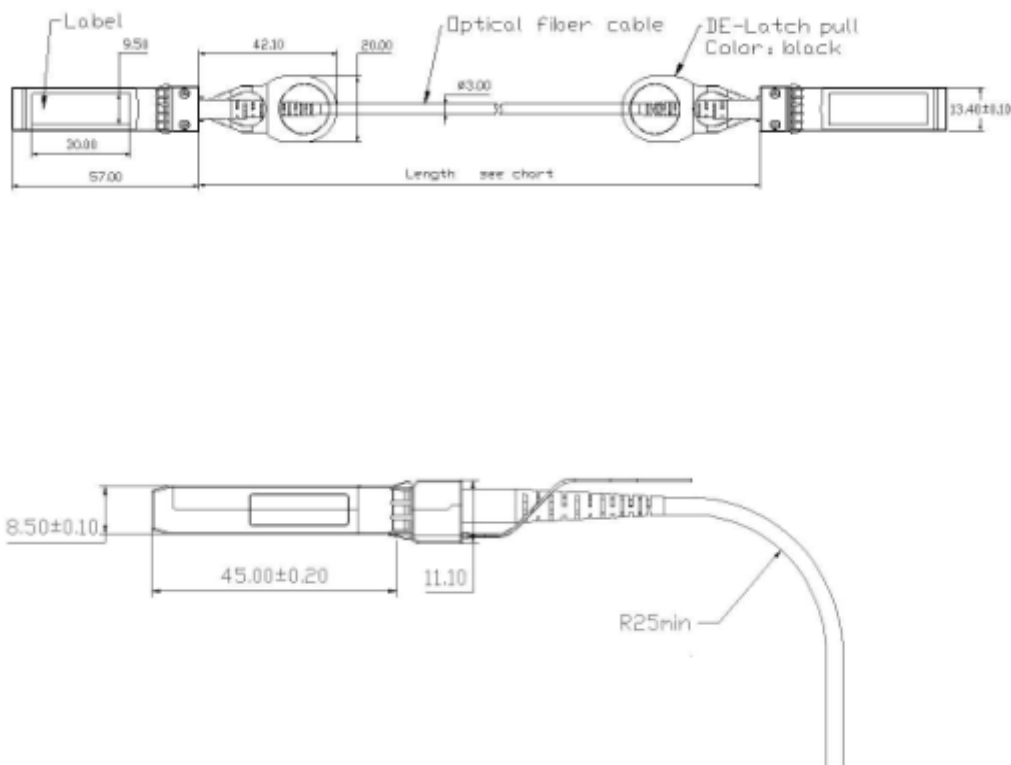
Parameter	Symbol	Min	Typical	Max	Unit
Transmitter					
Center Wavelength	λ C	840	850	860	nm
Average optical Power	PAVG	-6			dBm
Rise/Fall Time	Tr/Tf				Ps
Extinction Ratio	ER	3.5			dB
Relative Intensity Noise	Rin			-128	dB/Hz
Optical Return Loss Tolerance	TOL			12	dB
Transmitter Reflectance	RT			-12	dB
Receiver					
Center Wavelength	λ C	840	850	860	nm
Overload, each lane	OVL	-			dBm
Receiver Sensitivity in OMA, each Lane	SEN			-11	dBm

Electrical Specifications

Parameter	Symbol	Min	Typical	Max	Unit
Differential input impedance	Zin	90	100	110	ohm
Differential Output impedance	Zout	90	100	110	ohm
Differential input voltage amplitude a Amplitude	Δ Vin	100		1800	mVp-p
Differential output voltage amplitude	Δ Vout	400		800	mVp-p
Bit Error Rate	BR			E-12	
Input Logic Level High	VIH	2.0		Vcc	V
Input Logic Level Low	VIL	0		0.8	V



Mechanical Dimensions



Regulatory Compliance

Feature	Reference	Performance
Electrostatic discharge (ESD)	IEC/EN 61000-4-2	Compatible with standards
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN 55022 Class B (CISPR 22A)	Compatible with standards
Laser Eye Safety	FDA 21CFR 1040.10, 1040.11 IEC/EN 60825-1, 2	Class 1 laser product
Component Recognition	IEC/EN 60950, UL	Compatible with standards
ROHS	2002/95/EC	Compatible with standards
EMC	EN61000-3	Compatible with standards