10G BASE-ER SFP+ Cisco Compatible Transceiver Module - Single-Mode Duplex LC 1310nm to 40km

PART NUMBER: SFP-10G-ER-ALG
BAR CODE: 9350784008404

1 Overview

This SFP+ transceiver module is designed for use with Cisco network equipment and is equivalent to Cisco part number SFP-10G-ER. This transceiver is built to meet or exceed the specifications of the OEM and to comply with Multi-Source Agreement (MSA) standards. This product is 100% functionally tested, and compatibility is guaranteed. The transceiver is hot-swappable input/output device which allows a Gigabit Ethernet port to link with a fiber optic network. OEM specific configuration data is loaded on to the EEPROM of the transceiver at the factory, allowing this transceiver to initialize and perform identically to an OEM transceiver. This transceiver may be mixed and deployed with other OEM or third party transceivers and will deliver seamless network performance.

2 Features

* 10Gb/s serial optical interface compliant to 802.3a 10GBASE-ER/EW
* Electrical interface compliant to SFF-8431 specifications
* 1550nm cooled EML transmitter with TEC PIN photo-detector
* 2-wire interface for management specifications compliant with SFF 8472 Standard.
* Operating case temperature: 0~70°C
* All-metal housing for superior EMI performance
* Lower power consumption, less than 1.5W
* Advanced firmware allow customer system encryption information to be stored in transceiver
* Cost effective SFP+ solution, enables higher port densities and greater bandwidth
* RoHS Compliant
* Warranty: 1 Year

3 Application

* 10GBASE-ER/EW
* 10GBASE-ER/EW + FEC
* 10G Storage system

4 Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	T_c	-40	85	°C
Operating Case Temperature	T_c	0	70	°C
Supply Voltage	Vcc	0	3.6	V
Relative Humidity	RH	5	95	%
RX Input Average Power	Pmax	---	0	dBm

5 Recommended Operating Conditions

Parameter	Symbol	Min.	Max.	Units
Operating Case Temperature	T_c	0	70	°C
Supply Voltage	Vcc	3.135	3.465	V
Supply Current	I_{cc}	---	300	mA
Power Consumption		---	1000	mW

6 Diagnostics

Parameter	Symbol	Accuracy	Unit	Notes
Temperature	Temp	± 3	°C	Over operating Temp
Voltage	VCC	± 0.1	V	Full operating range
Bias Current	Bias	± 10	mA	
TX Power	TX	± 3 dB	dBm	
RX Power	RX	± 3 dB	dBm	-1dBm to -15dBm range

7 Transmitter Electro-optical Characteristics

Vcc = 3.135 V to 3.465 V, T_c = 0°C to 70°C

Parameter	Symbol	Min.	Typ.	Max.	Units	Note
Data Rate		---	10.3125	---	Gbps	
Output Optical Power	P_{out}	-8.2	---	0.5	dBm	1
Center Wavelength	λ_c	1260		1355	nm	
Relative Intensity Noise	RIN	---	---	-128	dB/Hz	12dB reflection
Side Mode Suppression Ratio	SMSR	30			dB	
Optical spectrum width (-20dB)				1	nm	
Launched power in OMA		-2.1	---		dBm	
Extinction Ratio	ER	6	---	---	dB	
Transmitter Dispersion Penalty	TDP	---	---	2	dB	1
Average launch power of OFF transmitter	Poff			-30	dBm	
Single Ended Output Voltage Tolerance		-0.3	---	4	V	
C common mode voltage tolerance		15	---	---	mV	
TX Input Diff Voltage	VI	180		700	mV	
TX Fault	VoL	-0.3		0.4	V	
	Voh	2.0		Vcc+0.3	V	
TX Disable	VoL	Vee		Vee+0.8	V	
	Voh	2		Vcc	V	
Data Dependent Input Jitter	DDJ			0.1	UI	
Data Input Total Jitter	TJ			0.28	UI	

Note 1: Path penalty is intended as the power penalty of the interface between back-to-back and the maximum applied dispersion.

8 Receiver Electro-optical Characteristics

Vcc = 3.135 V to 3.465 V, T_c = 0°C to 70°C

Parameter	Symbol	Min.	Typ.	Max.	Units	Note
Receiver Overload		-1	---		dBm	
Receiver Sensitivity	RSEN	---	---	-15.8	dBm	1
Receiver Sensitivity in OMA	Psens	---	---	-14.1	dBm	2
Receiver Reflectance	Rf			-26	dB	
Stressed receiver Sensitivity in OMA		---	---	-11.3	dBm	
Operating Center Wavelength	λ_c	1250		1600	nm	
Vertical eye closure penalty				2.7	dB	3
Stressed eye Jitter		0.3			UIp-p	2
Receiver power damage				5	dBm	
Receive electrical 3dB upper cutoff frequency				12.3	GHz	
Loss of Signal-Asserted	PA	-30	---	---	dBm	
Loss of Signal-Deasserted	PD	---	---	-16	dBm	
Loss of Signal-Hysteresis	PH	0.5	---	---	dB	
Single Ended Output Voltage Tolerance		-0.3		4	V	
RX Output Diff Voltage	Vo	300		850	mV	
RX Output Rise and Fall Time	Tr/Tf	30			ps	20% to 80%
Total Jitter	TJ			0.7	UI	
Deterministic Jitter	DJ			0.42	UI	

Note 1: Average optical power shall be measured using the methods specified in TIA/EIA-455-95.
Note 2: Receiver sensitivity is informative. Stressed receiver sensitivity shall be measured with conformance test signal for BER =1x 10-12 .
Note 3. Vertical eye closure penalty and stressed eye jitter are the test conditions for measuring stressed receiver sensitivity. They are not the required characteristic of the receiver.