



407-10942 Datasheet

Features:

- Up to 10.7GBd bi-directional data links
- Hot-pluggable SFP+ footprint
- 850nm VCSEL laser transmitter
- Duplex LC connector
- Built-in digital diagnostic function
- Up to 300m over OM3 multi-mode fiber
- Single power supply 3.3V
- Operating temperature range
C-Temp: 0°C to 70°C



Compliance:

- IEEE 802.3ae 10GBase-SR/SW
- MSA SFF8431
- SFP 10G FC
- RoHS Compliant

Applications:

- 10GBASE-SR/SW Ethernet

General Specifications

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Data Rate	DR		10.3125		GBd	IEEE 802.3ae
Bit Error Rate	BER			10^{-12}		
Input Voltage	V_{CC3}	3	3.3	3.6	V	
Maximum Voltage	V_{max}	-0.5		4	V	Electric Power Interface
Supply Current	I_s		230	260	mA	Electric Power Interface
Storage Temperature	T_{sto}	-40		85	°C	Ambient Temperature

Link Distances

Parameter	Fiber Type	Modal Bandwidth @ 850nm (MHz-km)	Distance Range (m)
9.95 - 10.5 GBd	62.5/125um MMF	160	2-26
	62.5/125um MMF	200	2-33
	50/125um MMF	400	2-66
	50/125um MMF	500	2-82
	50/125um MMF	2000	2-300

Optical Characteristics - Transmitter

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Optical Center Wavelength	λ	840		860	nm	
Output Optical Power	P_{tx}	-5		-1	dBm	Class 1 Product
Optical Modulation Amp	OMA		-1.5dB			Per IEEE 802.3ae
Extinction Ratio	ER	3	5.5		dB	
Spectral Width (-20 dB)	$\Delta\lambda$			0.45	nm	
Relative Intensity Noise	RIN			-128	dB/Hz	
Transmitter Dispersion Penalty	TDP			3.9	dB	
Launch Power of OFF Transmitter	P_{OUT_OFF}			-30	dBm	Average
Transmitter Jitter	According to IEEE 802.3ae requirement					

Optical Characteristics - Receiver

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Optical Center Wavelength	λ_C	840		860	nm	
Optical Input Power	P_{IN}	0.5			dBm	Average
Receiver Sensitivity in OMA @ 10.3GBd	P_{SENS1}			-11.1	dBm	Worst ER: BER< 10^{-12} 2 ³¹ -1 PRBS
Stressed Receiver Sensitivity in OMA @ 10.3GBd	P_{SENS2}			-7.5	dBm	IEEE 802.3ae
Receiver Reflectance	TR_{RX}			-12	dB	
LOS Assert	LOS_A	-30			dBm	
LOS De-Assert	LOS_D			-12	dBm	
LOS Hysteresis		0.5			dB	

Electrical Characteristics – Transmitter

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Input differential impedance	R_{in}		100		Ω	Non Condensing
Single ended data input swing	V_{IN_PP}	250		800	mV	
Transmit Disable Voltage	V_D	2		V_{CC}	V	
Transmit Enable Voltage	V_{EN}	V_{EE}		$V_{EE} + 0.8$	V	

Electrical Characteristics – Receiver

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Single ended data output swing	V_{OUT_PP}	150	300	425	mV	
Data output rise time	T_R		30		ps	20%-80%
Data output fall time	T_F		30		ps	20%-80%
LOS Fault	V_{LOS_F}	2		V_{CC_HOST}	V	
LOS Normal	V_{LOS_N}	GND		GND+0.5	V	

Digital Diagnostic Functions

The SFP support the 2-wire serial communication protocol as defined in the SFF 8472. Digital diagnostic information are accessible over the 2-wire interface at the address 0xA2. Digital Diagnostics are internally calibrated by default. A micro controller unit inside the transceiver gathers the monitoring information and reports the status of transceiver.

Transceiver Temperature- Internally measured, represented as a 16 bit signed twos complement value in increments of 1/256 degrees Celsius, Temperature accuracy is better than ± 3 degrees Celsius over specified operating temperature and voltage.

Transceiver Supply Power- Internally measured, represented as a 16 bit unsigned integer with the voltage defined as the full 16 bit value (0 – 65535) with LSB equal to 100 μ Volt, yielding a total range of 0 to +6.55 Volts.

Transceiver TX bias current- Internally measured, represented as a 16 bit unsigned integer with the current defined as the full 16 bit value (0 – 65535) with LSB equal to 2 μ A, yielding a total range of 0 to 131mA. Accuracy is better than $\pm 10\%$ over specified operating temperature and voltage.

Transceiver TX output power- Internally measured, represented as a 16 bit unsigned integer with the power defined as the full 16 bit value (0 – 65535) with LSB equal to 0.1 μ W. Data is assumed to be based on measurement of laser monitor photodiode current. Accuracy is better than ± 3 dB over specified temperature and voltage. Data is not valid when the transmitter is disabled.

Transceiver RX received optical power- Internally measured, represented as a 16 bit unsigned integer with the power defined as the full 16 bit 35 value (0 – 65535) with LSB equal to 0.1 μ W. Accuracy is better than ± 3 dB over specified temperature and voltage.

Parameter	Symbol	Accuracy	Units	Report Range	Unit	Remarks
Temperature	T_{mon}	± 3	$^{\circ}\text{C}$	-10 - +85	$^{\circ}\text{C}$	
Voltage	V_{mon}	± 0.1	V	2.9 - 3.7	V	
Bias Current	T_F	± 10	%	1 - 15	mA	
Tx Power	V_{LOS_F}	± 3	dB	-10 - 0	dBm	
Rx Power	V_{LOS_N}	± 3	dB	-20 - 0	dBm	