SFP-MM10-30

10 Gb/s 300m SFP+ Transceiver
Hot Pluggable, Duplex LC. +3.3V, 850 nm, VCSEL, Multi mode

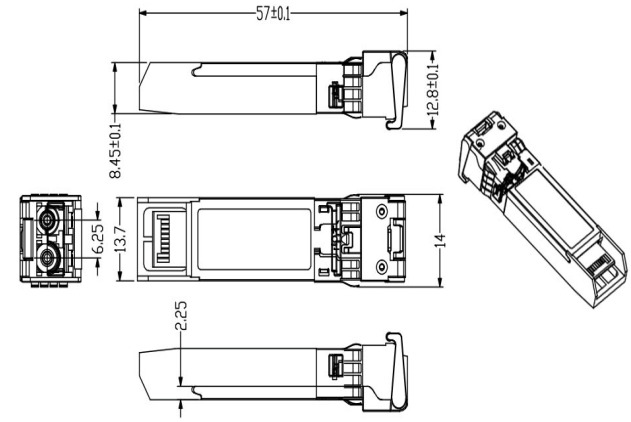
Applications:
- 10GBASE-SR/10G Ethernet

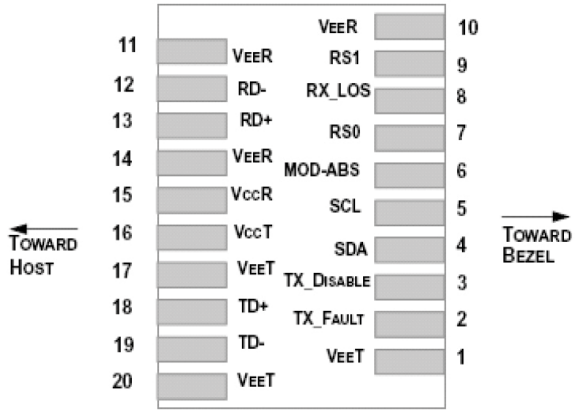
Features

- Supports 9.95 to 11.3 Gb/s bit rates
- Hot-Pluggable
- Duplex LC connector
- 850nm VCSEL transmitter, PIN photo-detector
- MMF links up to 300m
- 2-wire interface for management specifications compliant with SFF 8472 digital diagnostic monitoring interface
- Power Supply: +3.3V
- Power consumption < 1 W
- Temperature Range: 0 - 70°C

Standard

- SFP + MSA Compliant
- SFF - 8472 reversion 9.5 compliant
- IEEE802.3-2005 compliant
- Telcordia GR-468-CORE compliant
- FCC 47 CFR Part 15, Class B compliant
- FDA 21 CFR 1040.10 and 1040.11, class1 compliant
- RoHs compliant





Pin Definitions

Absolute Maximum Ratings:

Parameter	Symbol	Min.	Max.	Unit
Supply Voltage	Vcc	-0.3	4.0	V
Storage Temperature	Ts	-40	85	°C
Relative Humidity			85	%

Transmitter Section

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Date Rate			10.3125		Gb/s
Ave. Output Power	Po	-5		-1	dBm
Output Centre Wavelength	λ	840	850	860	nm
Diable Power	Poff			-30	dBm
Extinction Ratio	ER	3.0	5.5		dB
Spectral Width	△λ			1	nm
Rise/Fall Time (20%-80%)	Tr/Tf			20	PS
Optical Modulation Amplitude	OMA			-128	dBm
Optical Eye Mask 1			GR-253-CORE/ITU-T G.691		
Optical Eye Mask 2			IEEE802.3ae		

Receiver

Operating Date Rate			10.3125		Gb/s
Overload	Po				dBm
Input Centre Wavelength	λ	840		860	nm
Minimum Sensitivity	Pmin			-15.4	dBm
Stressed Sensitivity in OMA				-10.3	dBm
LOS Assert	Los A				nm
LOS De-Assert	Los D			-14	dBm
LOS Hysteresis				4	dB
Optical Returno Loss		14			
Jitter Tolerance			GR-253-CORE/ITU-T G.783		

SFP Module Control and Management:

Serial Interface for ID and DDM

The SFP modules implement the 2-wire serial communication protocol as defined in the SFP MSA. The serial ID information of the SFP modules and Digital Diagnostic Monitor parameters can be accessed through the I2C interface at address A0h and A2h. The memory is mapped in Table 1. Detailed ID information (A0h) is listed in Table 2. And the DDM specification (A2h) is described in Table 3. For more details of the memory map and byte definitions, please refer to the SFF-8472 (Rev 9.3, Aug. 2002), ''Digital Diagnostic Monitoring Interface for Optical Transceivers''.

The DDM parameters have been internally calibrated.

Table 1. Digital Diagnostic Memory Map (Specific Data Field Descriptions):

2 wire address 1010000X (A0h)		2 wire address 1010001X (A2h)	
Address	Information	Address	Information
0 - 95	Serial ID Defined by SFP MSA (96 bytes)	0 - 55 56 - 95	Alarm and Warning Thresholds (56 bytes) Calibration Constants (40 bytes)
96 - 127	Vendor Specific (32 bytes)	96 - 119 120 - 127	Real Time Diagnostic Interface (24 bytes) Vender Specific (8 Bytes)
128 - 255	Reserved, SFF8079 (128 bytes)	128 - 247 248 - 255	User Writable EEPROM (120 bytes) Vender Specific (8 bytes)

Table 2. EEPROM Serial ID Memory Contents (A0h):

Data Address	Size (Bytes)	Name of Field	Value (Hex)	Descripction of Field
0	1	Identifier	03	SFP+
1	1	Ext. Identifier	04	SFP with serial ID
2	1	Connector	07	LC
3-10	8	Transceiver	00 00 00 00 00 00 00 00	
11	1	Encoding	01	NRZ
12	1	BR, Nominal	67	
13	1	Reserved	00	
14	1	Length (9µm, km)	00	
15	1	Length (9µm)	00	
16	1	Length (50µm)	00	
17	1	Length (62.5µm)	00	
18	1	Length (Copper)	00	
19	1	Reserved	00	
20 -35	16	Vendor name		
36	1	Reserved	00	
37-39	3	Vendor OUI	000000	
40-55	16	Vendor PN		
56-59	4	Vendor rev	31 30 20 20	10
60-61	2	Wavelength	05 IE	
62	1	Reserved	00	
63	1	CC_BASE	XX	Check code for Base ID Fields
64-65	2	Options	001A	LOS, TX_DIABLE, TX_FAULT
66	1	BR, max	32	Upper bit rate margin, units of %
67	1	BR, min	32	Lower bit rate margin, units of %
68 - 83	8	Vendor SN	xx xx xx xx xx xx xx xx	Serial numer (ASCII)
84 - 91	1	Date code	xx xx xx xx xx xx xx xx	Vendor's manufacturing date code (ASCII)
92	1	Diagnostic M. Type	68	Digital diagnostics and internal calibration
93	1	Enhanced Options	80	Alarm/Warming flags implemented
94	1	SFF-8472 Compliance	04	
95	1	CC_EXT	xx	Check code for the Extended ID Fields
VENDOR SPECIFIC ID FIELDS				
96-127	32	Vendor Specific		Vendor Specific EEPROM
128-255	128	Reserved		Reserved for SFF-8079

Table 3. DDM Specification:

Parameter	Range	Accuracy	Calibration
Temperature	-10 - +80°C	±3 °C	Internal
Voltage	3.0 - 3.6 V	±3 °C	Internal
Bias Current	0 - 100 mA	±10 %	Internal
TX Power	-7 - 1dBm	±2 dB	Internal
RX Power	-20 - 0dBm	±2 dB	Internal