FiberStore

Datasheet

OC12 622Mbps 1550nm Single-mode SFP Optical Transceiver, 120km Reach
OSFP-6M55-120-xx

Features

- Data-rate of 100~622Mbps operation
- 120km with 9/125 μm SMF
- 1550nm DFB laser transmitter
- Hot-pluggable SFP footprint duplex LC connector Interface
- Class 1 FDA and IEC60825-1 Laser Safety Compliant
- Single 3.3V Power Supply and LVTTL Control Logic Interface
- Operating case temperature
  Standard : 0°C to +70°C
  Extended: -20°C to +85°C
  Industrial: -40°C to +85°C

Applications

- Fast Ethernet
- SDH/SONET
- ATM Switches and Other Optical links
- Other Optical Links

Description

OC-12 or STM-4 is a network line with transmission speeds of up to 622.08 Mbit/s (payload: 601.344 Mbit/s; overhead: 20.736 Mbit/s).

Specifications

Table 1 - Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage	Vcc	-0.5	3.6	V
Storage Temperature	Ts	-40	+85	℃
Operating Humidity	-		95	%

Table 2 - Recommended Operating Conditions

Parameter		Symbol	Min	Typical	Max	Unit
Operating Case Temperature	Standard	Tc	0		+70	℃
	Industrial		-40		+85	℃
Power Supply Voltage		Vcc	3.15	3.3	3.45	V
Power Supply Current		Icc			300	mA
Date Rate				100~622		Mbps

(DFB and APD, 120km Reach)

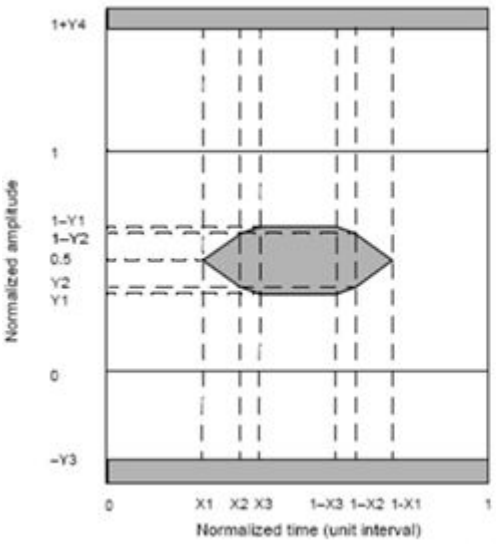
Table 3- Optical and Electrical Characteristics

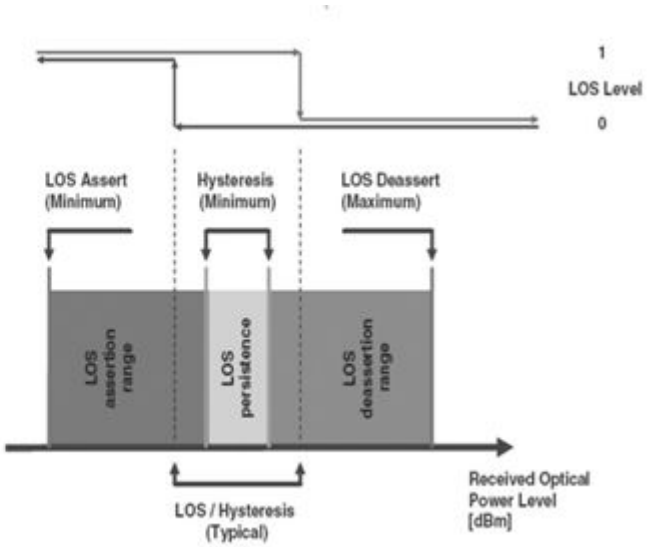
Parameter		Symbol	Min	Typical	Max	Unit	Notes
9μm Core Diameter SMF		L		120		km	
Data Rate				100~622		Mbps	
Transmitter							
Centre Wavelength		λc	1520	1550	1580	nm	
Spectral Width (RMS)		Δλ			1	nm	
Average Output Power		Pout	1		5	dBm	1
Extinction Ratio		ER	10			dB	2
Optical Rise/Fall Time (20%~80%)		tr/tf			1.2	ns	
Output Optical Eye		Compliant with IUT-T G.957					2,5
TX Disable Assert Time		t_off			10	us	
Receiver							
Centre Wavelength		λc	1260		1600	nm	
Receiver Sensitivity	100M	Pmin			-39	dBm	4
	OC-3				-38		
	OC-12				-37		
Receiver Overload		Pmax	-10			dBm	

LOS De-Assert	LOS_D			-38	dBm	
LOS Assert	LOS_A	-45			dBm	
LOS Hysteresis		0.5			dB	6

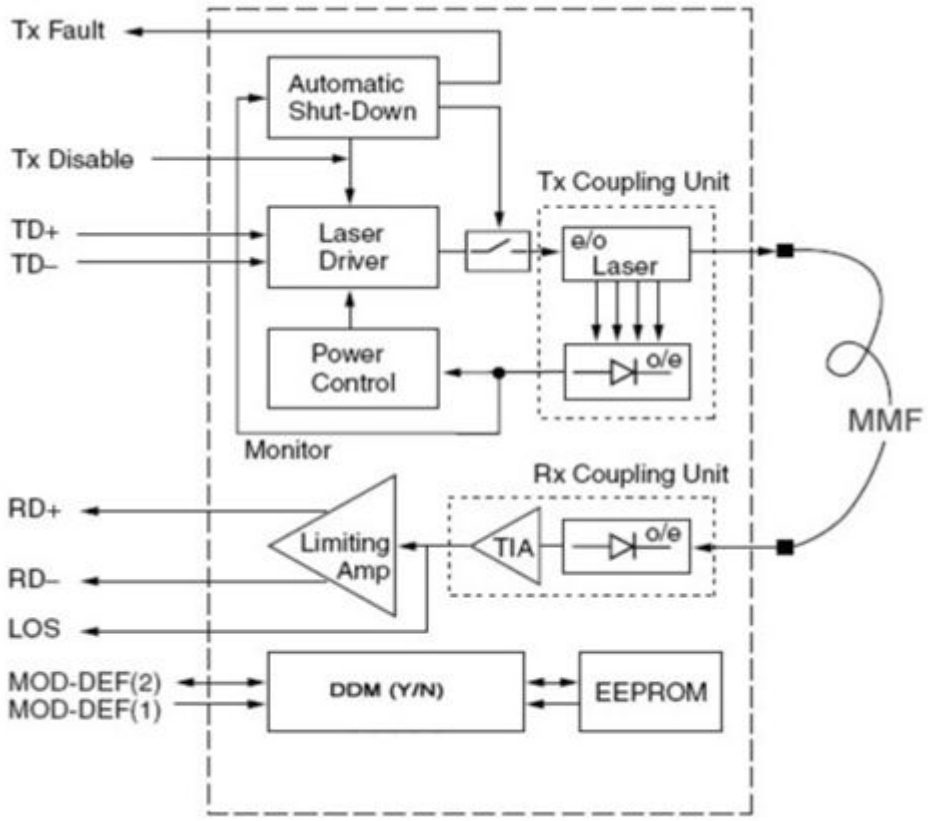
Notes:

1: Output is coupled into a 9/125μm single-mode fiber.
2: Filtered, measured with a PRBS 2^7-1 test pattern @1.25Gbps
3:LVPECL logic, internally AC coupled. LVPECL logic, internally AC coupled.
4: Minimum average optical power measured at BER less than 1E-12, with a 2^7-1 NRZ PRBS and ER=9dB.
5: Eye Pattern Mask
6: LOS Hysteresis

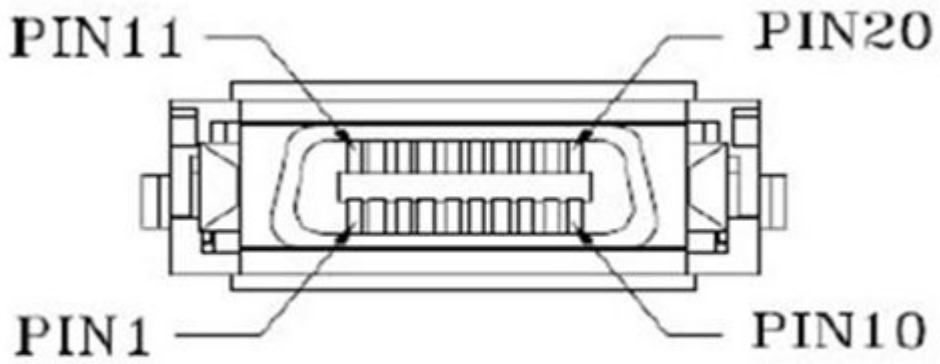


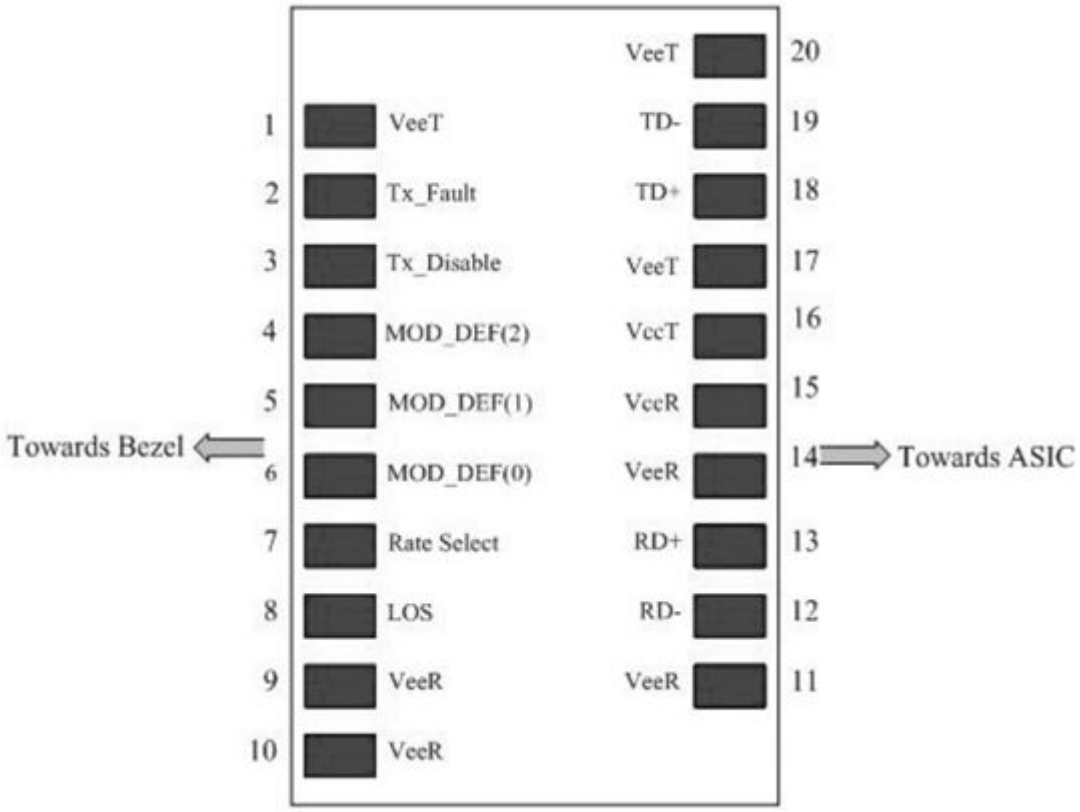


Functional Description of Transceiver



SFP Transceiver Electrical Pad Layout





Pin Descriptions

Pin	Signal Name	Description	Plug Seq.	Notes
1	V_{EET}	Transmitter Ground	1	
2	TX FAULT	Transmitter Fault Indication	3	Note 1
3	TX DISABLE	Transmitter Disable	3	Note 2
4	MOD_DEF(2)	SDA Serial Data Signal	3	Note 3
5	MOD_DEF(1)	SCL Serial Clock Signal	3	Note 3
6	MOD_DEF(0)	TTL Low	3	Note 3
7	Rate Select	Not Connected	3	
8	LOS	Loss of Signal	3	Note 4
9	V_{EER}	Receiver ground	1	
10	V_{EER}	Receiver ground	1	
11	V_{EER}	Receiver ground	1	
12	RD-	Inv. Received Data Out	3	Note 5
13	RD+	Received Data Out	3	Note 5
14	V_{EER}	Receiver ground	1	
15	V_{CCR}	Receiver Power Supply	2	

16	V_{CCT}	Transmitter Power Supply	2	
17	V_{EET}	Transmitter Ground	1	
18	TD+	Transmit Data In	3	Note 6
19	TD-	Inv. Transmit Data In	3	Note 6
20	V_{EET}	Transmitter Ground	1	

Notes:

Plug Seq.: Pin engagement sequence during hot plugging.

1) TX Fault is an open collector output, which should be pulled up with a 4.7k~10kΩ resistor on the host board to a voltage between 2.0V and Vcc+0.3V. Logic 0 indicates normal operation; Logic 1 indicates a laser fault of some kind. In the low state, the output will be pulled to less than 0.8V.

2) TX Disable is an input that is used to shut down the transmitter optical output. It is pulled up within the module with a 4.7k~10kΩ resistor. Its states are:

Low (0 to 0.8V): Transmitter on

(>0.8V, < 2.0V): Undefined

High (2.0 to 3.465V): Transmitter Disabled

Open: Transmitter Disabled

3) Mod-Def 0, 1, 2. These are the module definition pins. They should be pulled up with a 4.7k~10kΩ resistor on the host board. The pull-up voltage shall be VccT or VccR.

Mod-Def 0 is grounded by the module to indicate that the module is present

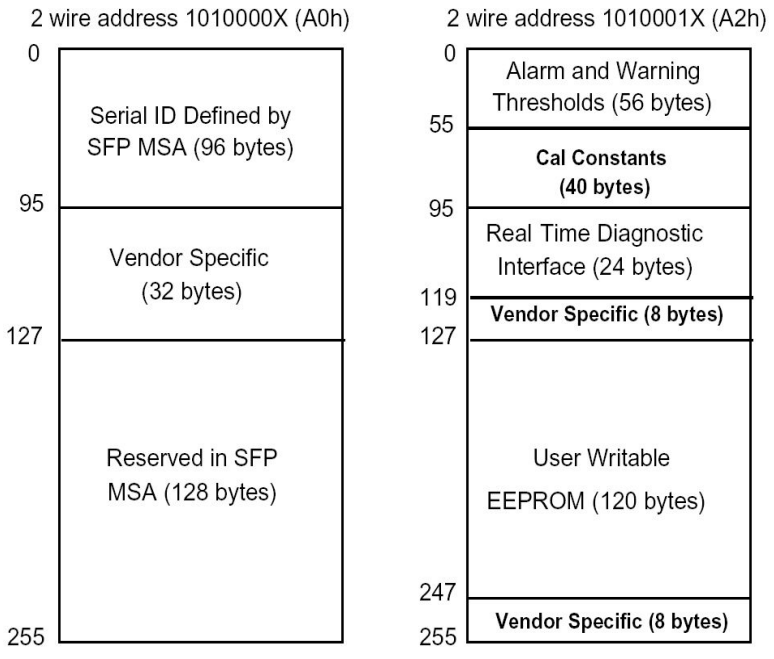
Mod-Def 1 is the clock line of two wire serial interface for serial ID

Mod-Def 2 is the data line of two wire serial interface for serial ID

4) LOS is an open collector output, which should be pulled up with a 4.7k~10kΩ resistor. Pull up voltage between 2.0V and Vcc+0.3V. Logic 1 indicates loss of signal; Logic 0 indicates normal operation. In the low state, the output will be pulled to less than 0.8V.

5) RD-/+: These are the differential receiver outputs. They are internally AC-coupled 100 differential lines which should be terminated with 100Ω (differential) at the user SERDES.

6) TD-/+: These are the differential transmitter inputs. They are internally AC-coupled, differential lines with 100Ω differential termination inside the module.



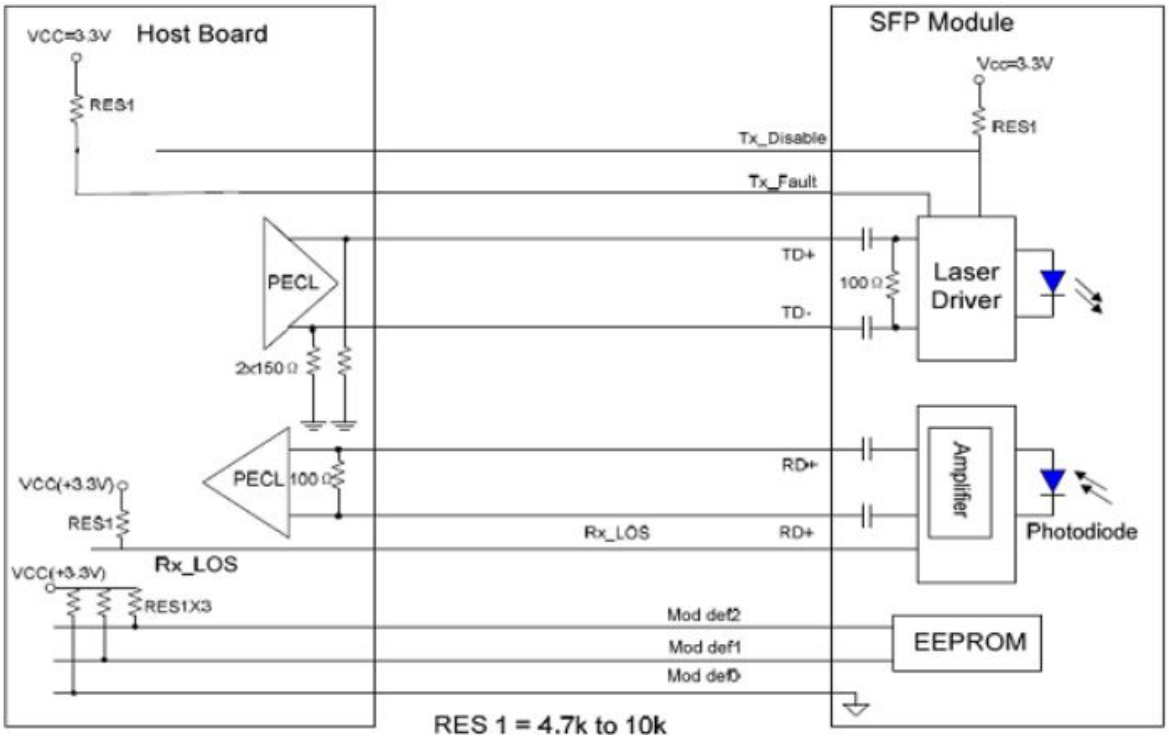
EEPROM Serial ID Memory Contents

Addr.	Size (Bytes)	Name of Field	Hex	Description
		BASE ID FIELDS		
0	1	Identifier	03	SFP
1	1	Ext. Identifier	04	SFP function is defined by serial ID only
2	1	Connector	07	LC Connector
3-10	8	Transceiver	XX XX XX XX XX XX XX XX(note)	OC 12, Single mode inter. or long reach.
11	1	Encoding	03	NRZ
12	1	BR, Nominal	06	622Mbps
13	1	Reserved	00	
14	1	Length (9μm) km	XX(note)	Transceiver Transmit Distance
15	1	Length(9μm) 100m	FF	
16	1	Length (50μm) 10m	00	
17	1	Length(62.5μm)10m	00	
18	1	Length (Copper)	00	Not Compliant
19	1	Reserved	00	
20-35	16	Vendor name	XX XX XX XX XX XX XX XX(note)20 20 20 20 20 20 20 20	Vendor name (ASCII)
36	1	Reserved	00	
37-39	3	Vendor OUI	XX XX XX(note)	
40-35	16	Vendor PN	XX XX XX XX XX XX XX XX XX XX XX XX XX XX XX XX	part number
56-59	4	Vendor rev	XX XX XX XX(note)	
60-61	2	Wavelength	06 0E	1550nm
62	1	Reserved	00	
63	1	CC_BASE	Check Sum (Variable)	Check Code for Base ID Fields
EXTENDED ID FIELDS				
64-65	2	Options	00 1A	TX_DISABLE, TX_FAULT and Loss of Signal implemented.
66	1	BR, max	00	

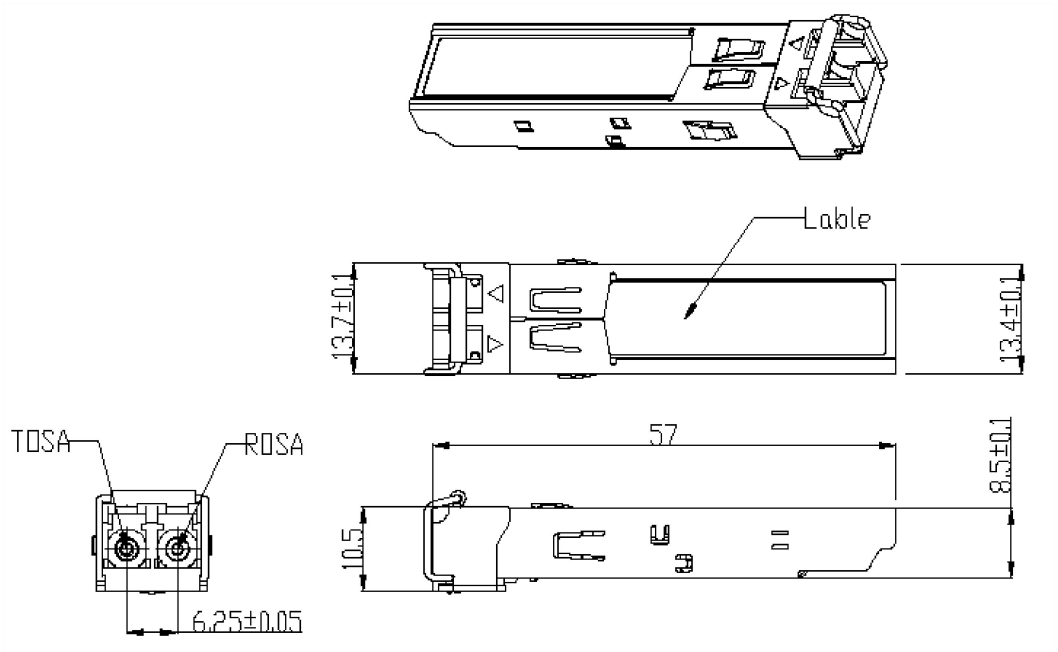
67	1	BR, min	00	
68-83	16	Vendor SN	XX XX XX XX XX XX XX XX[(note)] 20 20 20 20 20 20 20 20	Serial Number of transceiver (ASCII). For example “B000822”.
84-91	8	Date Code	XX XX XX XX XX XX XX XX[(note)]	Manufactory Date Code. For example “080405”
92	1	Diagnostic Monitoring Type	XX[(note9)]	Digital Diagnostic Monitoring Implemented
93	1	Enhanced Options	XX[(note)]	Optional Flags
94	1	SFF_8472 Compliance	XX[(note)]	01 for Rev9.3 SFF-8472
95	1	CC_EXT	Check Sum (Variable)	Check Sum for Extended ID Field
VENDOR SPECIFIC ID FIELDS				
96-127	32	Vendor Specific	Read Only	Depends on Customer Information
128-255	128	Reserved	Read Only	

Note: The “XX” byte should be filled in according to practical case. For more information, please refer to the related document of SFP Multi-Source Agreement (MSA).

Recommended Interface Circuit



Mechanical Dimensions



Ordering Information

Part No.	Data Rate (Mbps)	Wavelength (nm)	Connector Type	Transmission Distance (km)	Operating case temperature (°C)	Digital Diagnostics
OSFP-6M55-120-xx	622	1550	LC	120	0 to +70	No
OSFP-6M55-120D-xx	622	1550	LC	120	0 to +70	Yes
OSFP-6M55-120E-xx	622	1550	LC	120	-20 to +85	No
OSFP-6M55-120ED-xx	622	1550	LC	120	-20 to +85	Yes
OSFP-6M55-120I-xx	622	1550	LC	120	-40 to +85	No
OSFP-6M55-120ID-xx	622	1550	LC	120	-40 to +85	Yes

Notes:

xx means compatible brand. (For example: CO= Cisco, JU=Juniper, FD=Foundry, EX=Extreme, NE=Netgear,etc.)

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