

155Mb/s BI-DIRECTIONAL Single Fiber SFP Transceiver

Applications

- Applied to optical fiber access Ethernet and Fiber Channel with bit rate up to 155Mb/s

Features

- Single Fiber Bi-Directional SM SFP Transceiver
- Single-mode and Multi-mode
- Up to 155Mb/s data rate
- Module integrates receive and transmit circuits of two parts
- All-metal shell and the shell with plastic end plug form, LC or SC receptacle.
- Hot-pluggable
- Metropolitan area network
- Single +3.3V power supply
- Standard PECL data output and input with signal detect indication
- High quality 1310nm MQW-FP LD and 1550nm FP LD\ 1490nm DFB LD\ 1550nm DFB LD
- Commercial level and Industrial level products for customers
- Compliant with SFP MSA
- ROHS compliance



Specifications

Absolute Maximum Ratings						
Parameters	Symbol	Min	Typical	Max	unit	
Storage temperature (°C)	T _s	-40		+85	°C	
Supply voltage(V)	V _{cc}	-0.5		3.63	V	
Relative Humidity	R _H	5		95	%	
Recommended Operating Conditions						
Case Operating Temperature Range (°C)	T _c	-40		+85	°C	Industrial level
	T _c	0		70	°C	Commercial level
Supply voltage(V)	V _{cc}	+3.135	+3.3	+3.465	V	
Data rate			155		Mb/s	
Transceiver Electrical Characteristics Top=23°C@3.3v supply voltage						
Module Supply Current	I _{cc}			250	mA	
Inrush Current	I _{RUSH}			30	mA	
Input differential impedance	R _{in}		100		Ω	
Transmitter Single Ended Input Voltage (TD±)	V _{in}	100		1200	mV	
Transmit Fault(TX_Fault)	V _{OH}	2.0		3.3	V	
LOSS of Signal (LOS)	V _{OL}	0		0.8	V	

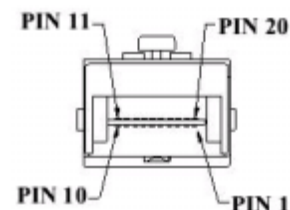
Parameters	Symbol	Min	Typ	Max	Unit	Remark
Transmit Disable Input Low	V_{IL}	0		0.8	V	
Transmit Disable Input High	V_{IH}	2.4		3.3	V	
Receiver Single Ended Output Voltage (RD±)	V_{out}	200		800	mV	
Optical transmitter Characteristics Top=23°C@3.3v supply voltage						
Center Wavelength	$\lambda@1310$	1260	1310	1360	nm	FP
	$\lambda@1550$	1530	1550	1570	nm	FP
	$\lambda@1550$	1540	1550	1560	nm	DFB
	$\lambda@1490$	1480	1490	1500	nm	DFB
Optical Power	$P_0@1310$	-18		-1	dBm	
	$P_0@1550$	-18		-1	dBm	
Optical Rise Time	T_r		120	150	ps	
Optical Fall Time	T_f		120	150	ps	
Extinction Ratio	Ext	8.2			dB	
Spectral Width (-20dB)	$\Delta\lambda$			4	nm	FP-LD,RMS
	$\Delta\lambda$			1	nm	DFB-LD,-20dB
Eye Mask	Compliant with Eye Mask Defined in IEEE 802.3					
Optical receiver Characteristics Top=23°C@3.3v supply voltage						
Center Wavelength	λ	1100		1650	nm	
Receive Optical Sensitivity	Sen			-35	dBm	
LOS output (TTL high level)	V_{LOS}	2			V	
Receiver Overload	P_{inMAX}	-3			dBm	
LOS Assert	P_{LOS_A}	-44			dBm	
LOS Deassert	P_{LOS_D}			-37	dBm	
LOS Hysteresis	P_H	0.5	2	4	dB	$10\log(V_{DE-ASSERT}/V_{ASSERT})$

Data rate\LD Wavelength and Mode\Optical output power\Sensitivity\Reach

Data rate	LD	Wavelength (nm) mode	Optical output power P0 (dBm)	Sensitivity (dBm)	Reach (km)
155Mb/s	1310 FP	SM 1310	≥-14	≤-33	20km
	1550 FP	SM 1550	≥-14	≤-33	
	1310 FP	SM 1310	≥-11	≤-33	40km
	1550 DFB	SM 1550	≥-10	≤-33	
	1310 FP	SM 1310	≥-5	≤-35	60km
	1550 DFB	SM 1550	≥-10	≤-35	
	1490 DFB	SM 1490	≥-8	≤-36	80km
	1550 DFB	SM 1550	≥-8	≤-36	
	1490 DFB	SM 1490	≥-3	≤-36	100km
	1550 DFB	SM 1550	≥-3	≤-36	
	1490 DFB	SM 1490	≥-1	≤-37	120km
	1550 DFB	SM 1550	≥-1	≤-37	
	1310 FP	MM 1310	≥-18	≤-33	5km
	1550 FP	MM 1550	≥-18	≤-33	

Pin descriptions

20 VEET	1 VEET
19 TD-	2 TX Fault
18 TD+	3 TX Disable
17 VEET	4 MOD_DEF(2)
16 VCCT	5 MOD_DEF(1)
15 VCCR	6 MOD_DEF(0)
14 VEER	7 Rate Select
13 RD+	8 LOS
12 RD-	9 VEER
11 VEER	10 VEER



Pin Definitions

Pin	Name	Function/Description
1	VeeT	Transmitter Ground
2	TX Fault	Transmitter Fault Indication
3	TX Disable	Transmitter Disable-Module disables on high or open
4	MOD-DEF2	Module Definition 2-Two wire serial ID interface
5	MOD-DEF1	Module Definition 1-Two wire serial ID interface
6	MOD-DEF0	Module Definition 0-Two wire serial ID interface
7	Rate Select	Not Connected
8	LOS	Loss of Signal
9	VeeR	Receiver Ground
10	VeeR	Receiver Ground
11	Veer	Receiver Ground
12	RD-	Inverse Received Data out
13	RD+	Received Data out
14	VeeR	Receiver Ground
15	VccR	Receiver Power --- +3.3V
16	VccT	Transmitter Power --- +3.3 V
17	VeeT	Transmitter Ground
18	TD+	Transmitter Data In
19	TD-	Inverse Transmitter Data In
20	VeeT	Transmitter Ground

Digital Diagnostic Memory Map

2 wire address 1010000X (A0)

0	Serial ID Defined by SPF MSA(96bytes)
95	
127	
	Vendor Specific (32bytes)
	Reserved in SFP MSA (128bytes)
255	

2 wire address 1010001X (A2)

0	Alarm and Warning Thresholds (56 bytes)
55	
	Cal Constants (40 bytes)
95	Real-Time DiagnosticInterface (24 bytes)
119	
	Vendor Specific (8bytes)
127	User Writable EEPROM (120bytes)
247	
	Vendor Specific (8bytes)
255	

EEPROM Serial ID Memory Contents

Accessing Serial ID Memory uses the 2 wire address 1010000X (A0). Memory Contents of Serial ID are shown in Table 2.

Table 2 Serial ID Memory Contents

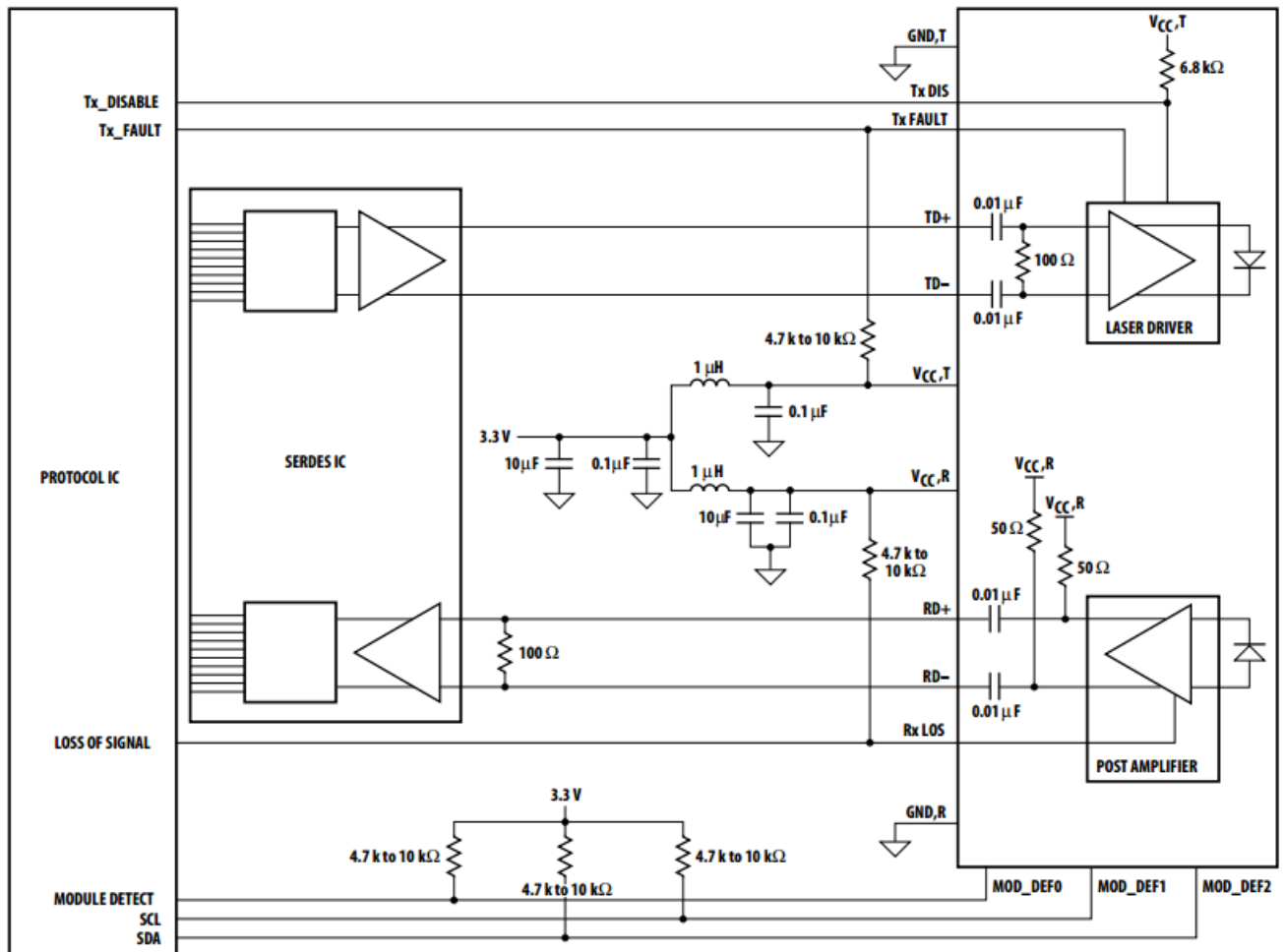
Data Address	Size (Bytes)	Name of Field	Contents (Hex)	Description
0	1	Identifier	03	SFP
1	1	Ext.Identifier	04	SFP function is defined by serial ID only
2	1	Connector	07	LC Connector
3-10	8	Transceiver		Transceiver Codes
11	1	Encoding	03	NRZ
12	1	BR, Nominal	0D	155Mbit/s
13	1	Reserved	00	
14	1	Length (9μm) km		Transceiver transmit distance
15	1	Length (9μm) 100m		
16	1	Length (50μm) 10m		
17	1	Length (62.5μm) 10m		
18	1	Length (Copper)	00	Not compliant
19	1	Reserved	00	
20-35	16	Vendor name	41 2d 43 72 65 61 74 65 20 20 20 20 20 20 20 20	A-Create (ASCII)
36	1	Reserved	00	
37-39	3	Vendor OUI	00 00 00	
40-55	16	Vendor PN		Transceiver part number
56-59	4	Vendor rev	20 20 20	
60-61	2	Wavelength		Transceiver wavelength
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	31 30 30 39 30 32 32 30 30 30 20 20 20 20 20 20	Serial Number of transceiver (ASCII). For example "1009022000"
84-91	8	Date code	30 39 31 30 30 35 20 20	Manufactory date code. For example "091005"

92	1	Diagnostic Monitoring Type	58	Digital diagnostic monitoring implemented, "externally calibrated" is implemented, Rx measurement type is "Average Power"
93	1	Enhanced Options	B0	Optional Alarm/warning flags implemented for all monitored quantities, Optional soft TX_FAULT monitoring implemented, Optional soft RX_LOS monitoring implemented
94	1	SFF-8472 Compliance		Includes which revision of SFF-8472 the transceiver complies with
95	1	CC_EXT	Chect 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	Filled by zero

Diagnostic Monitor Functions

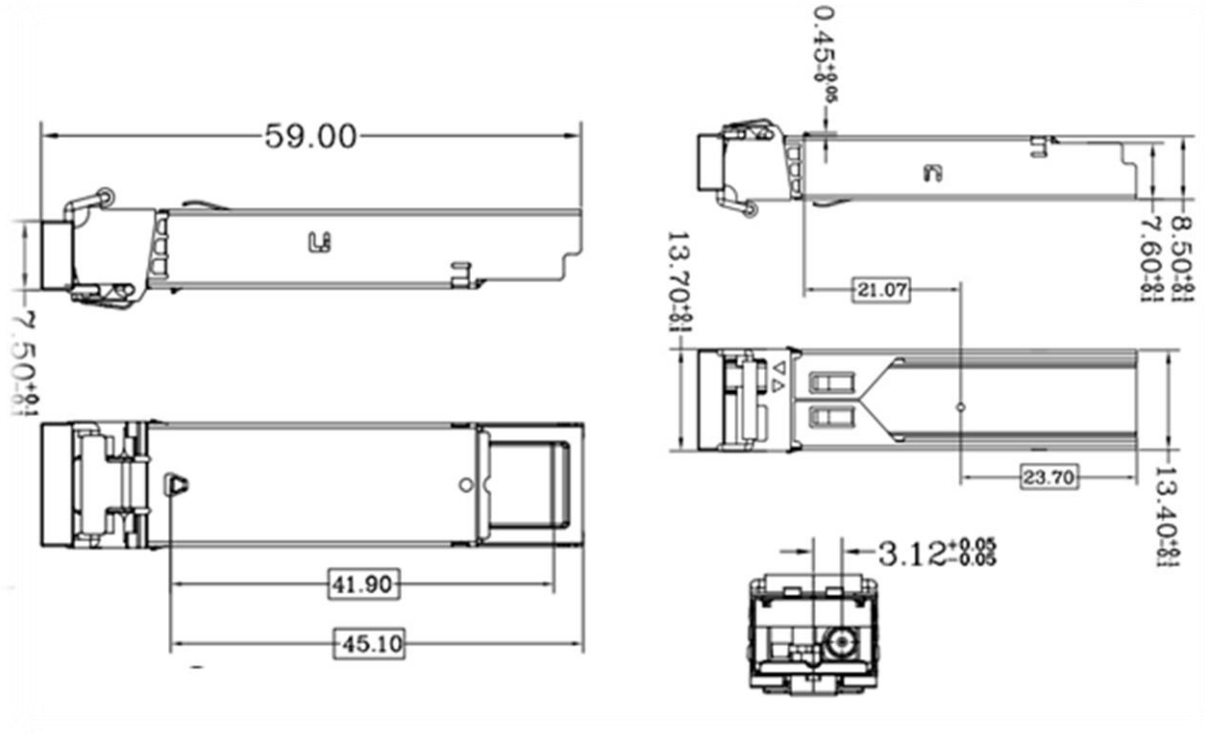
Parameter	Unit	Accuracy
Temperature	°C	±3
Supply Voltage	V	±0.1
Tx Bias Current	mA	±10%
Tx Optical Power	dB	±3
Rx Optical Power	dB	±3

SFP Recommended Application Configuration

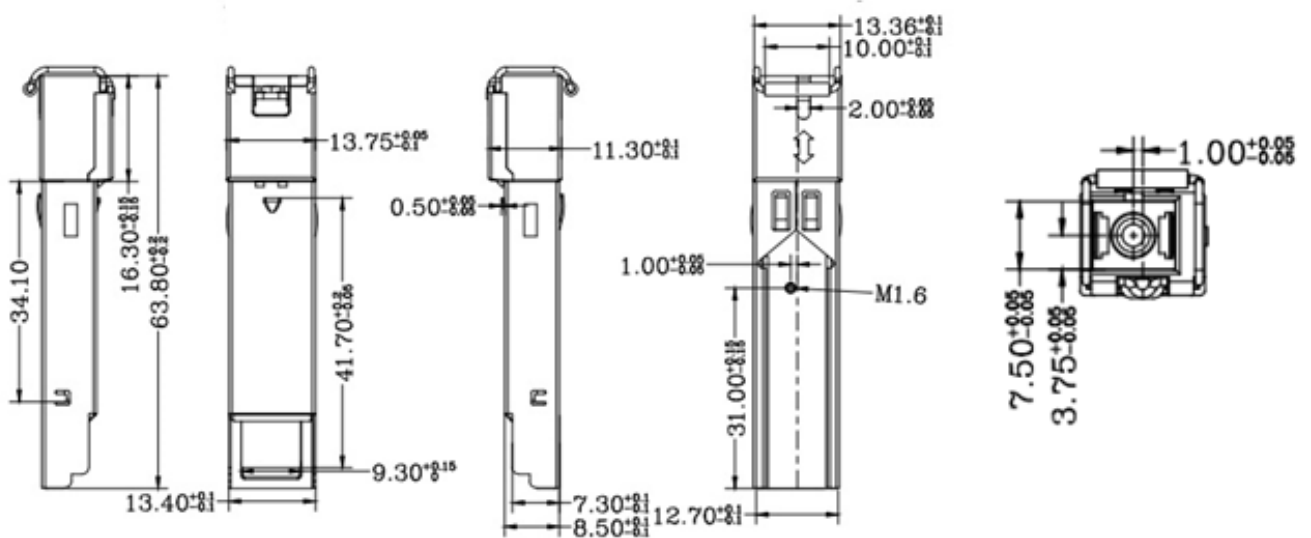


SFP Mechanical Dimensions

SFP BIDI-LC



SFP BIDI-SC



Order Information

