

**SFP 1.25Gb/s Transceiver with DDMI ( SFP-1000A 3KM SC DDM/SFP-1000B 3KM SC DDM) Hot Pluggable , 1310/1550 SFP with SC Receptacle, Single-Mode Transceiver**

**Features:**

- ≧ Single Mode bi-directional Transmission
- ≧ SFP Multi-source Package with SC Receptacle
- ≧ Up to 1.25Gb/s Data Links
- ≧ Hot-Pluggable Capability
- ≧ Single +3.3V Power Supply
- ≧ Isolation > 30dB, Cross Talk < -45dB
- ≧ Compliant with Specifications for IEEE802.3Z
- ≧ Compliant with Bellcore TA-NWT-000983
- ≧ Eye Safety Designed to Meet Laser Class1, Compliant with IEC60825-1

**Applications:**

- <sup>2</sup> Gigabit Ethernet <sup>2</sup>
- Fiber Channel <sup>2</sup>
- WDM Application

**Specification:**

**| Electrical and Optical Characteristics: (Condition: T<sub>a</sub>=T<sub>OP</sub>)**

Parameter	Symbol		Typical		
Transmitter Differential Input Voltage	+/-TXDAT	200		2400	mV p-p
Supply Current	ICC		130	180	mA
Tx_Disable Input Voltage – Low	VIL	0		0.8	V
Tx_Disable Input Voltage – High	VIH	2.0		Vcc	V
Tx_Fault Output Voltage – Low	VOL	0		0.8	V
Tx_Fault Output Voltage – High	VOH	2.0		Vcc	V
Receiver Differential Output Voltage	+/-RXDAT	600		1400	mV p-p
Rx_LOS Output Voltage- Low	VOL	0		0.8	V
Rx_LOS Output Voltage- High	VOH	2.0		Vcc	V

**Transmitter Section:(TTP4633S-3):**

			Typical	Max.	
Data Rate	B	-	1250	-	Mb/s
Centre Wavelength	Ac	1270	1310	1355	nm
Output Spectral Width	▲ λ(RMS)	-	-	4	nm
Average Output Power	Po	-12	-	-5	dBm
Extinction Ratio	EXT	9	-	-	dB
Data Input Voltage-High	VIHS	V <sub>cc</sub> -1.16	-	V <sub>cc</sub> -0.89	V
Data Input Voltage -Low	VILS	V <sub>cc</sub> -1.82	-	V <sub>cc</sub> -1.48	V
Supply Current	ICC	-	90	150	mA
Output Optical Eye	Compliant with IEEE802.3Z				

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**Receiver Section:(TTP4633S-3)**

Parameter	Symbol	Min.	Typical		
Receive Sensitivity	Pmin	-	-	-21	dBm
Maximum Input Power	P <sub>MAX</sub>	-3	-	-	dBm
Signal Detect Threshold-Assertion:	SDHIGH	-	-	-22	dBm
Signal Detect Threshold-Deassertion:	SDLOW	-32	-	-	dBm
Hysteresis	-	-	3.0	-	dBm
Output High Voltage	V <sub>OH</sub>	V <sub>cc</sub> -1.03	-	V <sub>cc</sub> -0.89	V
Output Low Voltage	V <sub>OL</sub>	V <sub>cc</sub> -1.82	-	V <sub>cc</sub> -1.63	V
Operating Wavelength	Ac	1480	1550	1580	nm
Supply Current	ICC	-	80	110	mA

**Transmitter Section:(TTP4653S-3):**

Parameter	Symbol	Min.			
Data Rate	B	-	1250	-	Mb/s
Centre Wavelength	Ac	1480	1550	1580	nm
Output Spectral Width	▲ $\Delta$ (RMS)		-	1	nm
Average Output Power	P <sub>o</sub>	-9.5	-	-5	dBm
Extinction Ratio	EXT	9	-	-	dB
Data Input Voltage-High	V <sub>IHS</sub>	V <sub>cc</sub> -1.16	-	V <sub>cc</sub> -0.89	V
Data Input Voltage -Low	V <sub>ILS</sub>	V <sub>cc</sub> -1.82	-	V <sub>cc</sub> -1.48	V
Supply Current	ICC	-	90	150	mA
Output Optical Eye	Compliant with IEEE802.3Z				

**Receiver Section:(TTP465D1-3)**

Parameter	Symbol	Min.	Typical	Max.	
Receive Sensitivity	Pmin	-	-	-21	dBm
Maximum Input Power	P <sub>MAX</sub>	-3	-	-	dBm
Signal Detect Threshold-Assertion:	SDHIGH	-	-	-22	dBm
Signal Detect Threshold-Deassertion:	SDLOW	-32	-	-	dBm
Hysteresis	-	-	3.0	-	dBm
Output High Voltage	V <sub>OH</sub>	V <sub>cc</sub> -1.03	-	V <sub>cc</sub> -0.89	V
Output Low Voltage	V <sub>OL</sub>	V <sub>cc</sub> -1.82	-	V <sub>cc</sub> -1.63	V
Operating Wavelength	Ac	1270	1310	1355	nm
Supply Current	ICC	-	80	110	mA

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**| Absolute Maximum Ratings: (T<sub>C</sub>=25°C)**

Storage Temperature	T <sub>ST</sub>	-40	+85	°C
Operating Temperature	T <sub>IP</sub>	0	+70	°C
Input Voltage	T <sub>cc</sub>	0	+5	V

**| Recommended Operating Environment:**

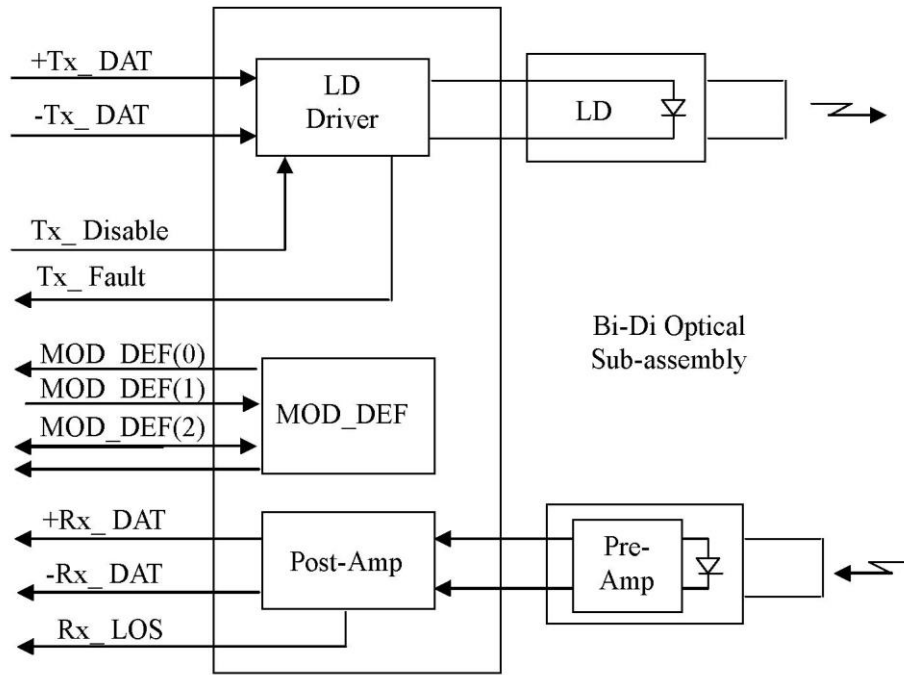
Parameter					
Supply Voltage	V <sub>cc</sub>	+3.1	+3.3	+3.5	V
Operating Temperature	T <sub>OP</sub>	0	-	+70	°C

**| Timing Characteristics:**

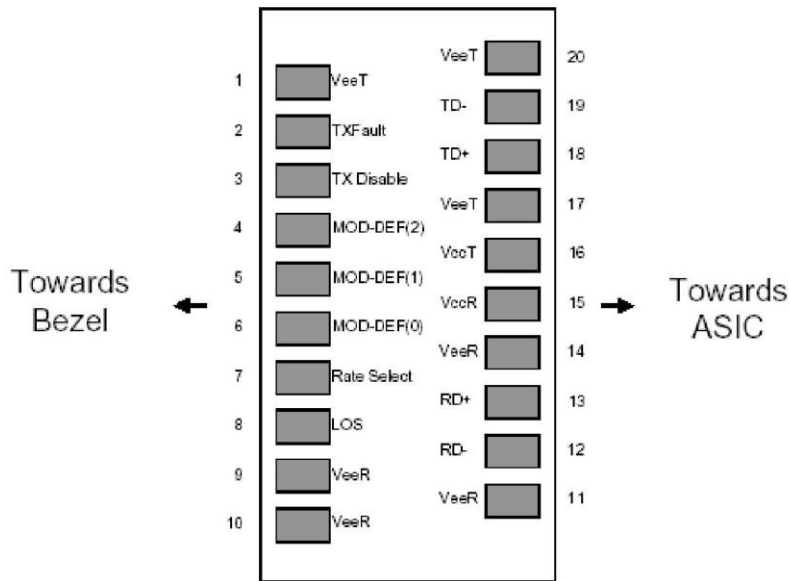
Parameter	Symbol	Min.	Typical	Max.	Unit
TX_DISABLE Assert Time	t <sub>off</sub>		3	10	usec
TX_DISABLE Negate Time	t <sub>on</sub>		0.5	1	msec
Time to initialize include reset of TX_FAULT	t <sub>int</sub>		30	300	msec
TX_FAULT from fault to assertion	t <sub>fault</sub>		20	100	usec
TX_DISABLE time to start reset	t <sub>reset</sub>	10			usec
Receiver Loss of Signal Assert Time (off to On)	T <sub>A,RX_LOS</sub>			100	usec
Receiver Loss of Signal Assert Time (on to off)	T <sub>d,RX_LOS</sub>			100	usec

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**Block Diagram of Transceiver:**



**Pin Assignment:**



**Pin out of Connector Block on Host Board**

**Pin Description:**

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Pin	Symbol	Name/Description	Rcf.
1	^i.i.r	Transmitter Ground (Common with Receiver Ground)	1
2	T FAULT	Transmitter Fault. Not supported.	
3	TUB	Transmitter Disable. Laser output disabled on high or open	2
4	MOD DEF(2)	Module Definition 2. Data line for Serial ID.	
5	MOD DEF(1)	Module Definition 1. Clock line for Serial ID.	
6	MOD DEF(0)	Module Definition 0. Grounded with in the module.	3
7	Rale Si^li^t; I	Connection required	
3	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	4
9	^EER	Receiver Ground (Common with Transmitter Ground)	1
10	*EER	Receiver Ground (Common with Transmitter Ground)	1
11	^ EER	Receiver Ground (Common with Transmitter Ground)	1
12	RD-	Receiver Inverted DATA out. AC Coupled	
13	RD+	Receiver Non-inverted DATA out AC Coupled	
14	^ EER	Receiver Ground (Common with Transmitter Ground)	1
15	^OCЙ	Receiver Power Supply	
16	Vocr	Transmitter Power Supply	
17	"V EET	Transmitter Ground (Common with Receiver Ground)	1
18	TD	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	^ i kr	Transmitter Ground (Common with Receiver Ground)	1

**Notes:**

1. Circuit ground is internally isolated from chassis ground.
2. Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.
3. Should be pulled up with 4.7k – 10kohms on host board to a voltage between 2.0V and 3.6V. MOD\_DEF(0) pulls line low to indicate module is plugged in.
4. LOS is open collector output. Should be pulled up with 4.7k – 10kohms on host board to a voltage between 2.0V and 3.6V . Logic 0 indicates normal operation; logic 1 indicates loss of signal.

**Serial ID Memory Contents:**

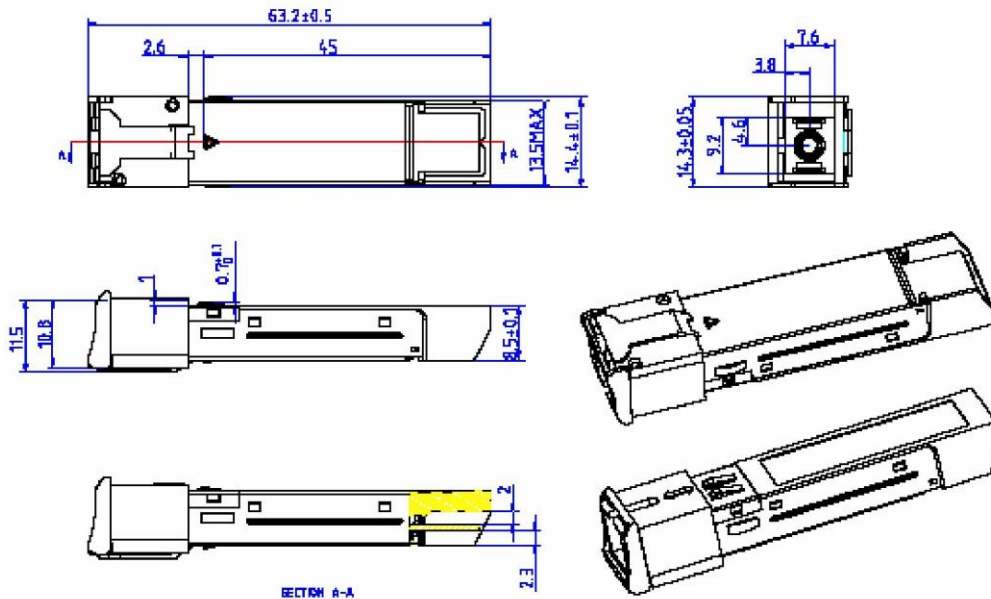
Address	Length	Name of Length	Description and Contents
Base ID Fields			
0	1	Identifier	Type of Serial transceiver (03h=SFP)
1	1	Reserved	Extended identifier of type serial transceiver (04h)
2	1	Connector	Code of optical connector type (01=SC)
3-10	8	Transceiver	Gigabit Ethernet 1000Base-SX & Fiber Channel
11	1	Encoding	8B10B (01h)
12	1	BR,Nominal	Nominal baud rate, unit of 100Mbps
13-14	2	Reserved	(0000h)
15	1	Length(9um)	Link length supported for 9/125um fiber, units of 100m
16	1	Length(50um)	Link length supported for 50/125um fiber, units of 10m
17	1	Length(62.5um)	Link length supported for 62.5/125um fiber, units of 10m
18	1	Length(Copper)	Link length supported for copper, units of meters
19	1	Reserved	

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20-35          16          Vendor Name      SFP vendor name: Fiberay

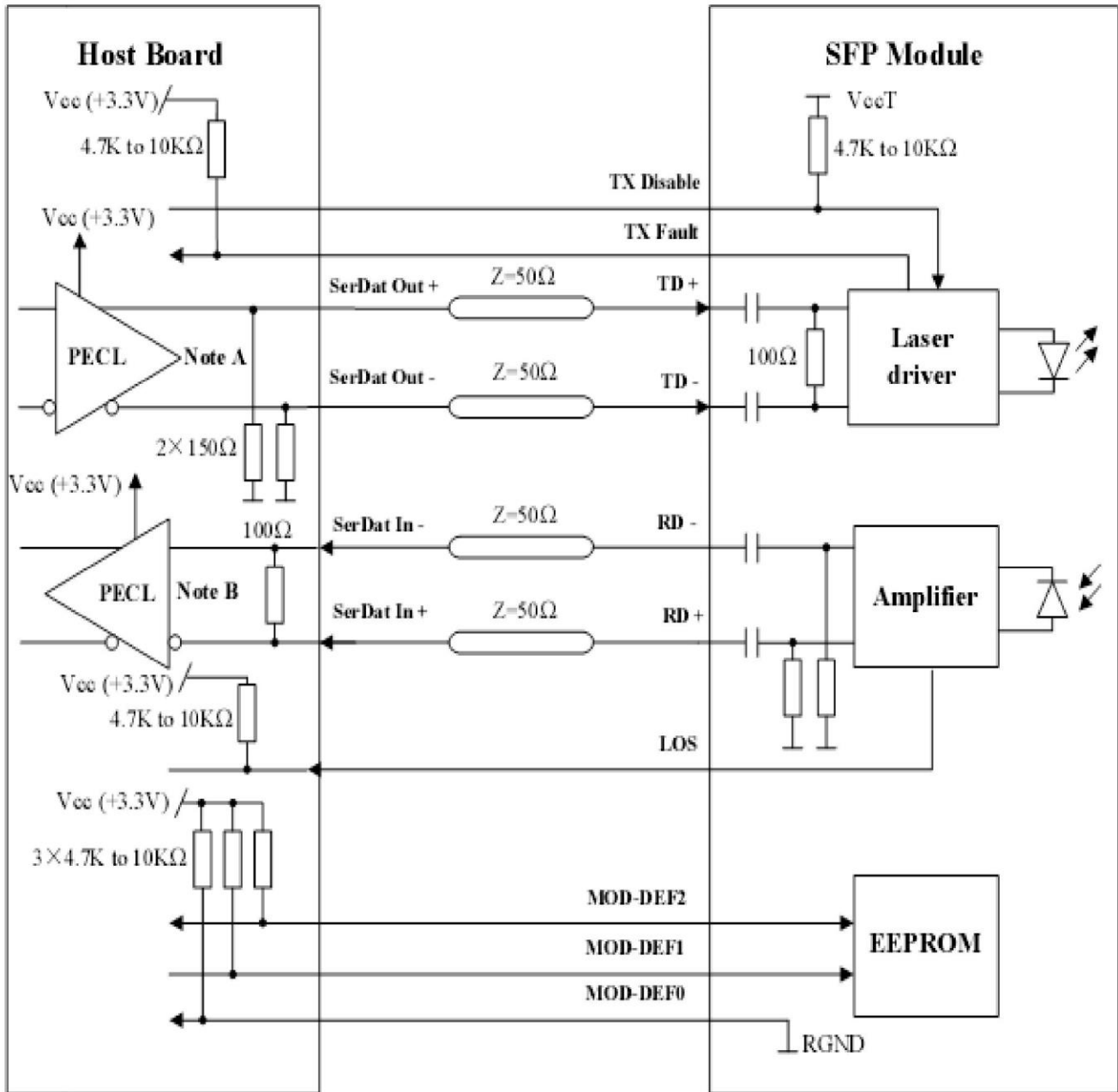
36	1	Reserved	
37-39	3	Vendor OUI	SFP transceiver vendor OUI ID
40-55	16	Vendor PN	Part Number: "TTP-xxxxxx" (ASCII)
56-59	4	Vendor rev	Revision level for part number
60-62	3	Reserved	
63	1	CCID	Least significant byte of sum of data in address 0-62
Extended ID Fields			
64-65	2	Option	Indicates which optical SFP signals are implemented (001Ah = LOS, TX_FAULT, TX_DISABLE all supported)
66	1	BR, max	Upper bit rate margin, units of %
67	1	BR, min	Lower bit rate margin, units of %
68-83	16	Vendor SN	Serial number (ASCII)
84-91	8	Date code	Fiberay's Manufacturing date code
92-94	3	Reserved	
95	1	CCEX	Check code for the extended ID Fields (addresses 64 to 94)
Vendor Specific ID Fields			
96-127	32	Readable	Fiberay specific date, read only

**Mechanical Dimensions:**



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**Recommended Circuit:**



Note A: Circuit assumes open emitter output

Note B: Circuit assumes high impedance internal bias @Vcc-1.3V