SFP-S40(-T)

GIGABIT ETHERNET SINGLE MODE SFP TRANSCEIVER

FEATURES

- 1310nm DFB LD
- Data Rate: 1.25Gbps, NRZ
- Single +3.3V Power Supply
- RoHS Compliant and Lead-free
- AC/AC Differential Electrical Interface
- Compliant with Multi-Source Agreement (MSA) Small Form Factor Pluggable (SFP)
- Duplex LC Connector
- Compliance with Specifications for IEEE 802.3z Gigabit Ethernet at 1.25Gbps
- Compliance with ANSI Specifications for Fiber Channel Applications at 1.06Gbps
- Eye Safety - Designed to Meet Laser Class 1 Comply with EN60825-1

INTRODUCTION

The SFP-S40 series from Antaira Technologies is the high performance and cost-effective module for serial optical data communication applications specified for single mode of 1.25 Gb/s. It operates with +3.3V power supply. The module is intended for single mode fiber, operates at a nominal wavelength of 1310nm and complies with Multi-Source Agreement (MSA) Small Form Factor Pluggable (SFP).

The module is a duplex LC connector transceiver designed for use in Gigabit Ethernet applications and to provide IEEE-802.3z compliant link for 1.25Gb/s long reach applications. The characteristics are performed in accordance with Telcordia Specification GR-468-CORE.

EMC

Most equipment utilizing high-speed transceivers will be required to meet the following requirements:

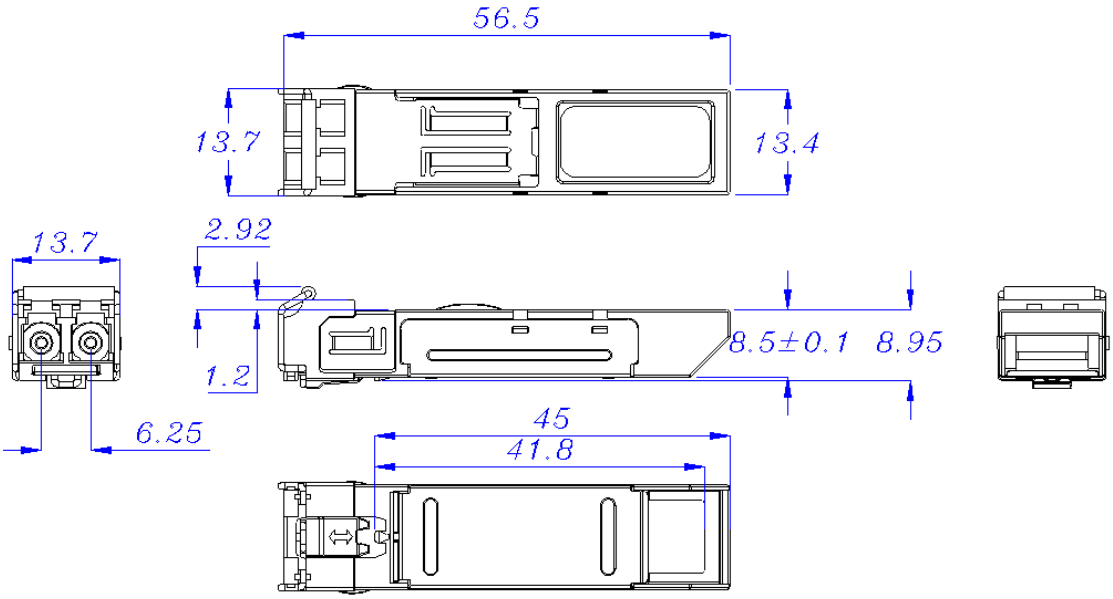
1. FCC in the United States
2. CENELEC EN55022 (CISPR 22) in Europe

To assist the customer in managing the overall equipment EMC performance, the transceivers have been designed to satisfy FCC class B limits and provide good immunity to radio-frequency electromagnetic fields.

EYE SAFETY

The transceivers have been designed to meet Class 1 eye safety and comply with EN 60825-1.

DIMENSIONS



All dimensions are ±0.2mm unless otherwise specified.

PRODUCT INFORMATION

Model Number	Operating Temperature & Monitor Function	Distance	LD Type & Wavelength	Output Power	Sensitivity
SFP-S40	0°C to 70°C	40km	1310nm DFB	-3 ~ +2 dBm	≤-23 dBm
SFP-S40-T	-40°C to 85°C				

ABSOLUTE MAX RATINGS

Parameter	Symbol	Min	Max	Unit
Storage Temperature	Ts	-40	85	°C
Supply Voltage	Vcc	0	6	V
Data Input Voltage	-	0	Vcc	V
Supply Current	Is		300	mA

OPERATING CONDITIONS

Parameter	Symbol	Min	Max	Unit
Supply Voltage	Vcc	3.1	3.5	V
Data Input Voltage Swing	VID	300	1860	mV

ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Min	Max	Unit
Transmitter				
Transmitter Supply Current	IccT		200	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				
Receiver Supply Current	ICCR		100	mA
Receiver Data Output Differential Voltage	VOD	0.4	1.3	V
Rx_LOS Output Voltage – Low	VOL	0	0.8	V
Rx_LOS Output Voltage – High	VOH	2.0	Vcc	V
MOD_DEF (1), MOD_DEF (2) – Low	VIL	-0.6	Vcc x 0.3	V
MOD_DEF (1) MOD_DEF (2) – High	VIH	Vcc x 0.7	Vcc x 0.5	V

TRANSMITTER ELECTRO-OPTICAL CHARACTERISTICS

Parameter	Symbol	Min	Typical	Max	Unit	Note
Optical Output Power	Po	-3		2	dBm	1
Extinction Ratio	ER	9			dB	
Center Wavelength	λc	1290	1310	1325	nm	
Spectral Width (-20dB)	Δλ			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
RIN	RIN			-117	dB/Hz	
Optical Rise Time (20-80%)	tr			260	ps	2
Optical Fall Time (20-80%)	tf			260	ps	2
Output Eye	Compliant with IEEE 802.3z/D5.0					

RECEIVER ELECTRO-OPTICAL CHARACTERISTICS

Parameter	Symbol	Min	Typical	Max	Unit	Note
Maximum Input Optical Power	Pmax	-3			dBm	3
Minimum Input Optical Power	Pmin			-23	dBm	3
Operating Wavelength	λ	1100		1600	nm	
Optical Return Loss	ORL	12			dB	
Receiver Electrical 3dB Upper Cutoff Frequency	-			1500	MHz	
LOS of Signal - Asserted	PA	-35			dBm	
LOS of Signal - Deasserted	PD			-22	dBm	

Loss of Signal – Hystersis	P_D–P_A	0.5			dB	

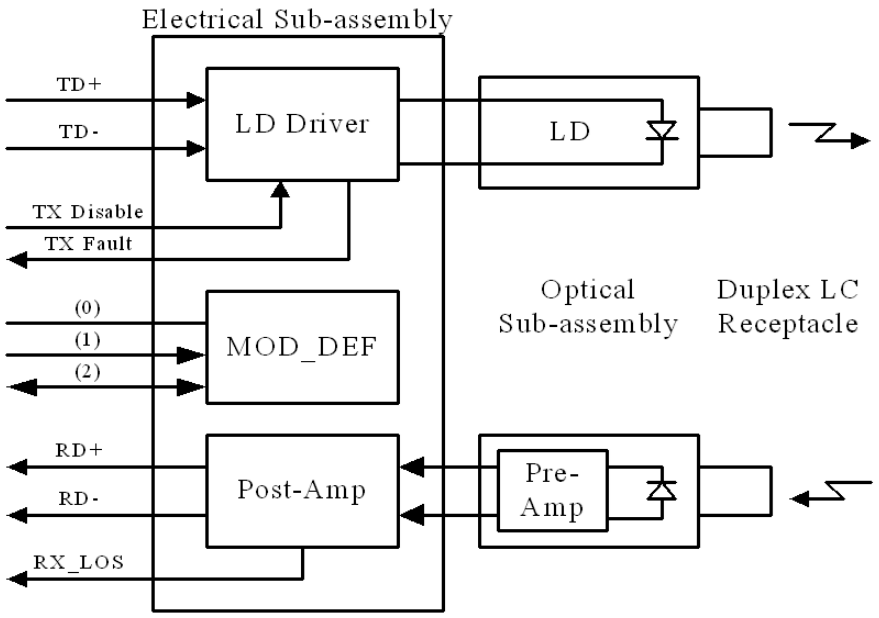
Notes:

1. Measured average power coupled into 9/125μm single mode fiber.
2. These are 20~80% values.
3. Measured with 2^7-1 PRBS at BER<10^{-12}

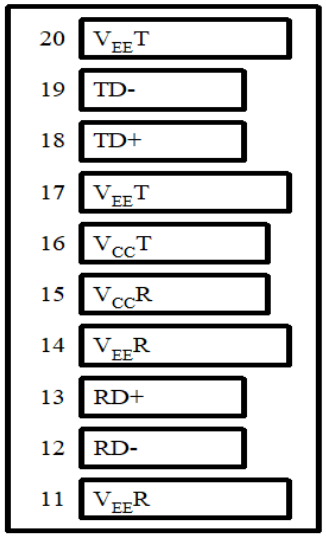
TIMING CHARACTERISTICS

Parameter	Symbol	Min	Typical	Max	Unit
TX_DISABLE Assert Time	t_off			10	μs
TX_DISABLE Negate Time	t_on			1	ms
Time to initialize, include reset of TX_FAULT	t_init			300	ms
TX_FAULT from fault to assertion	t_fault			100	μs
TX_DISABLE time to start reset	t_reset	10			μs
Receiver Loss of Signal Assert Time (off to on)	$t_{A\_RX\_LOS}$			100	μs
Receiver Loss of Signal Assert Time (on to off)	$t_{D\_RX\_LOS}$			100	μs

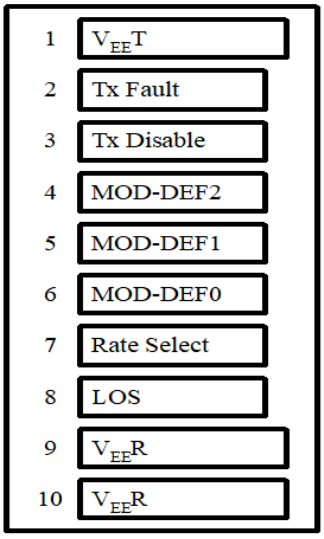
BLOCK DIAGRAM OF TRANSCEIVER



PIN OUT DIAGRAM OF TRANSCEIVER



Top of Board



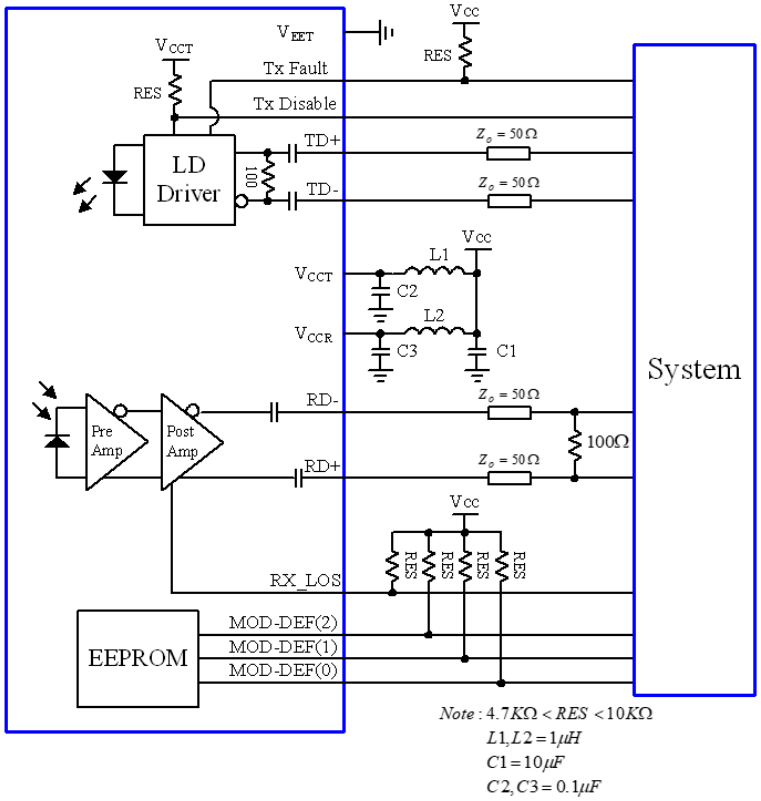
Buttom of Board (As Viewed through Top of Board

PIN OUT TABLE

Pin	Symbol	Functional Description
1	VeeT	Transmitter Ground
2	TX Fault	Transmitter Fault Indication
3	TX Disable	Transmitter Disable - Module disables on high or open
4	MOD-DEF(2)	Module Definition 2 - Two wire serial ID interface
5	MOD-DEF(1)	Module Definition 1 - Two wire serial ID interface
6	MOD-DEF(0)	Module Definition 0 - Grounded in module
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
16	VccT	Transmitter Power
17	VeeT	Transmitter Ground

18	TD+	Transmitter Data In
19	TD-	Inverse Transmitter Data In
20	VeeT	Transmitter Ground

RECOMMENDED CIRCUIT SCHEMATIC



ORDERING INFORMATION

Product Number	Product Description
SFP-S40	1.25Gbps Ethernet SFP Transceiver, Single Mode 40KM / LC / 1310nm, ***Cisco Compatible***
SFP-S40-T	1.25Gbps Ethernet SFP Transceiver, Single Mode 40KM / LC / 1310nm, -40ºC~85ºC, ***Cisco Compatible***