Specification

Small Form Factor Pluggable

Dual Optical Transmitter

Duplex LC Receptacle

4250 Mbit /s

Ordering Information

S A A - x C A 1 - 1 1 1

A = Dual Transmitter
B = Dual Receiver

1 = 0 °C ~ +70°C
3 = -40°C ~ +85°C

Product Summary

Model Name	Voltage	Device type	Interface	Temperature	Media	Distance	Latch Color
SAA-1CA1-111	3.3V	VCSEL	AC / AC Coupling	0°C~+70°C	Multi-Mode Fiber	150M (OM2) 70M (OM1)	Black
SAA-3CA1-111				-40°C~+85°C			

Descriptions

The series of transceivers comply with standard Small Form Factor Pluggable (SFP) package. It is designed for multi-mode fiber application with high performance and cost-effective. Each module consists of two transmitters which use the high-speed laser diode a light source. It complies with the laser class 1 products and EN60825-1.

Features

- **Standard Small Form Factor Pluggable Package**
- **Duplex LC Receptacle Optical Interface**
- **Gigabit Ethernet Standard (IEEE802.3Z 1000BASE) Compliant**
- **Fibre Channel Standard (100-M5-SN-I and 100-M6-SN-I) Compliant**
- **Fibre Channel Standard (200-M5-SN-I and 200-M6-SN-I) Compliant**
- **Fibre Channel Standard (400-M5-SN-I and 400-M6-SN-I) Compliant**
- **Single + 3.3 V Power Supply**
- **Differential LVPECL Data Input**
- **Metal Enclosure and Low Power Consumption**
- **RoHs Compliant**

Applications

- **Support up to 4250 Mb/s data links**
- **Support 1250 Mb/s Gigabit Ethernet data links**
- **Router interconnects / Bus extenders**
- **Distributed multi processing / Host adapters**
- **SAN / Switch-to-switch interfaces**
- **Channel extenders / Telecom switches**
- **SAN / Mass storage system interconnects**
- **High speed I/O file servers / LAN**
- **Data storage networks / Hub interconnects**

Absolute Maximum Ratings

Parameter	Symbol	Min	Typ	Max	Unit
Storage Temperature	T_S	**-40**	**--**	**85**	℃
Supply Voltage	V_{CC}	**0**	**--**	**3.8**	V
Relative humidity (non-condensing)	RH	**--**	**--**	**85**	%
Input voltage	V_{IN}	0	--	**V_{CC}**	V

General Characteristics

Parameter	Symbol	Min	Typ	Max	Unit
Case Operating Temperature (SAA-1CA1-111)	Tc	**0**	**--**	**70**	℃
Case Operating Temperature (SAA-3CA1-111)	Tc	**-40**	**--**	**85**	℃
Supply Voltage	V_{CC}	**3.1**	**3.3**	**3.5**	V
Supply Current (Total Current)	I_{Total}	**--**	**--**	**300**	mA

Transmitter Logic

Parameter	Function	Logic Stage	Logic Type	Min	Max	Unit	Notes
TxDisable	Disable	High	LVTTL	2.0	Vcc+0.3	V	Laser is OFF
TxDisable	Enable	Low	LVTTL	0	0.8	V	Laser is ON
TxFault	Fault	High	LVTTL	2.0	Vcc+0.3	V	Transmitter is OFF
TxFault	Normal	Low	LVTTL	0	0.8	V	Transmitter is ON

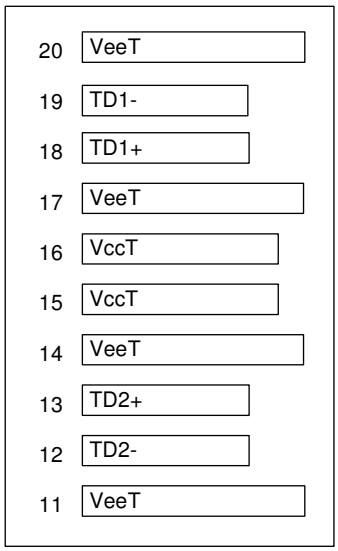
Transmitter Specifications –Electro- Optical

(V_{CC}=3.1V~3.5V ; Tc= 0°C~70°C / Tc= -40°C~85°C unless specified)

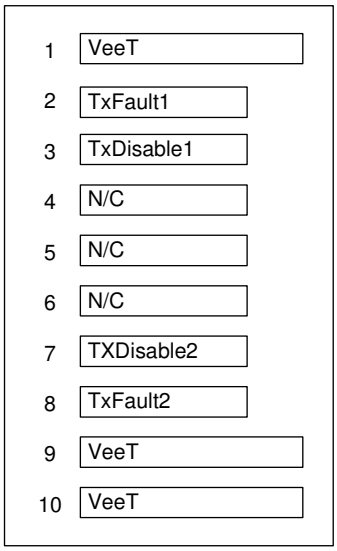
Parameter	Symbol	Min	Typ	Max	Unit
Optical Output Power	P_O	**-9**	**--**	**0**	dBm
Optical Extinction Ratio	E_R	**5**	**--**	**--**	dB
Center Wavelength	λ_C	**830**	**850**	**860**	nm
Spectral Width (RMS)	$\Delta\lambda$	**--**	**--**	**0.85**	nm
Transmitter Differential Input Voltage	TD +/-	**400**	**--**	**2000**	mVp-p
Tx_Fault - High	V_{FH}	**2**	**--**	**V_{CC}+0.3**	V
Tx_Fault - Low	V_{FL}	**0**	**--**	**0.8**	V
Tx_Disable - High	V_{DH}	**2**	**--**	**V_{CC}+0.3**	V
Tx_Disable - Low	V_{DL}	**0**	**--**	**0.8**	V

Notes:
(A). All of data is measured at 4250Mbps , PRBS 2^7-1 ,NRZ.

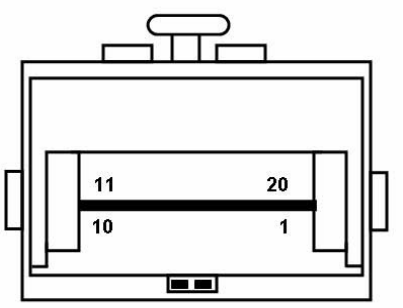
Pin Definition and Descriptions



Top of Board



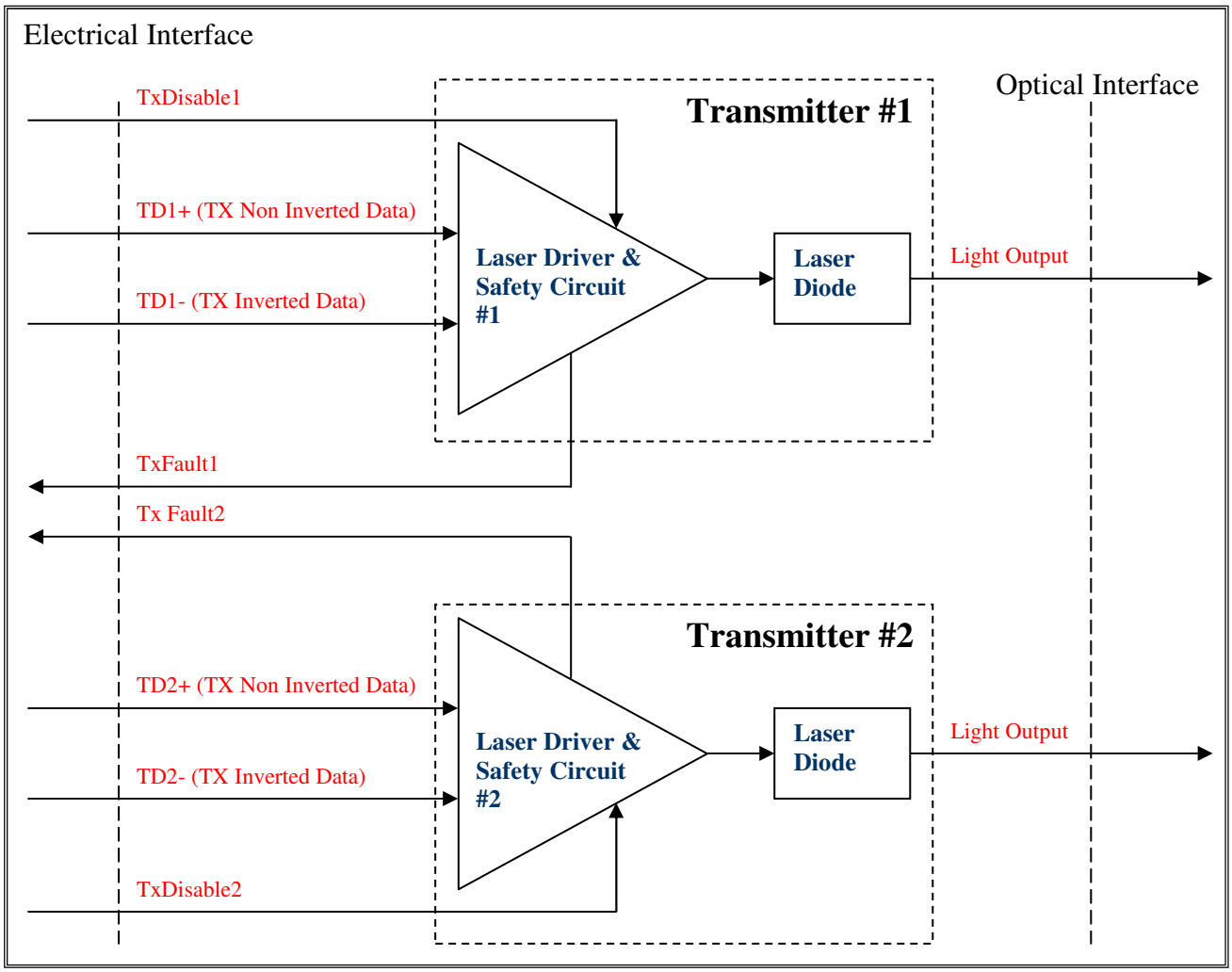
Bottom of Board
(as view through top of board)



Transceiver Pin Locations

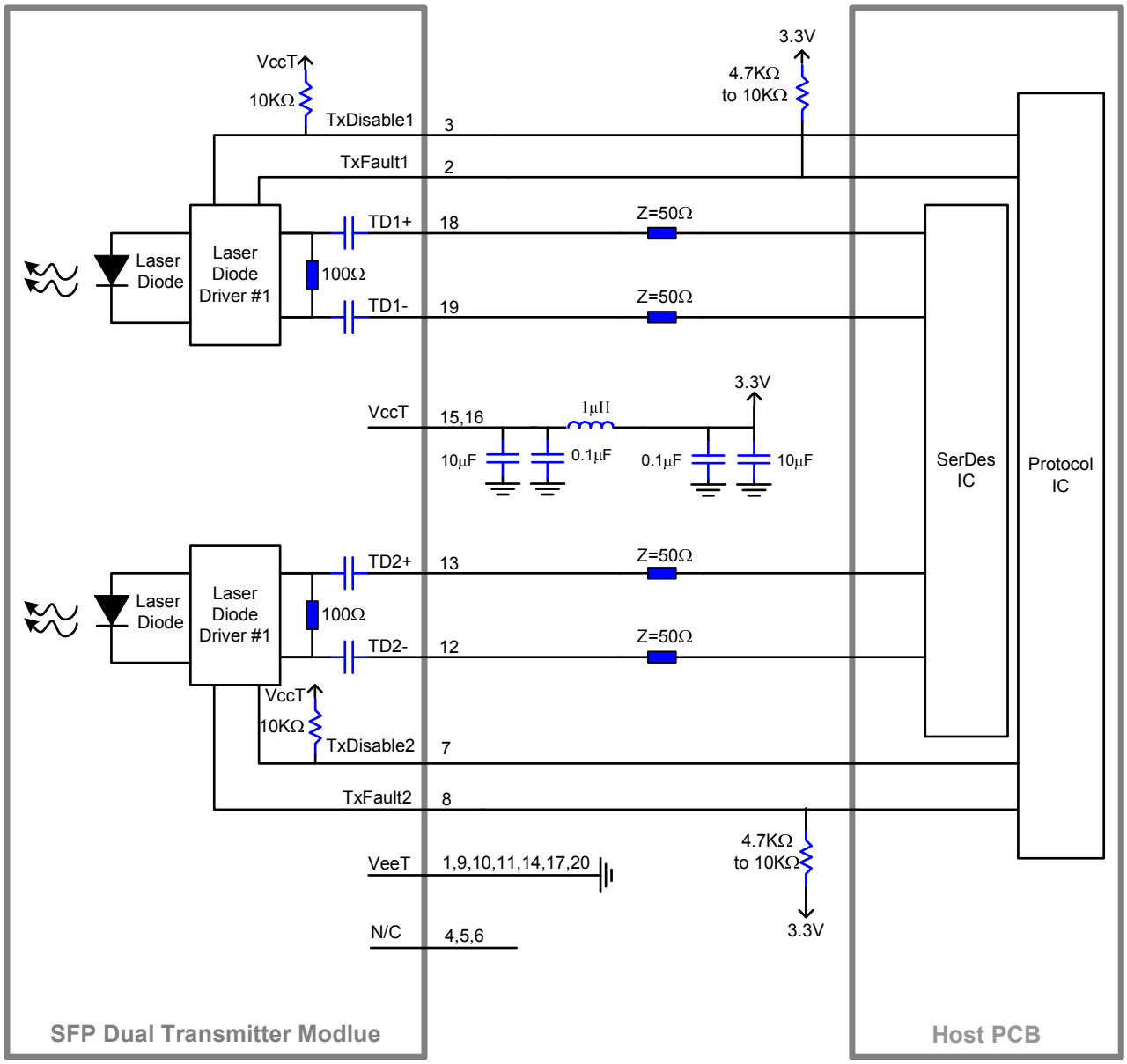
Pin No.	Pin Name	Description	I/O / Level
1	VeeT	Transmitter ground	Input
2	TxFault1	Transmitter Fault LOW = Normal Operation; HIGH = Fault Indication	Output / LVTTL
3	TxDisable1	Transmit Disable LOW = Normal Operation; HIGH = Disables Module	Input / LVTTL
4	N/C	Not Connected (Internal Used)	--
5	N/C	Not Connected (Internal Used)	--
6	N/C	Not Connected (Internal Used)	--
7	TxDisable2	Transmit Disable LOW = Normal Operation; HIGH = Disables Module	Input / LVTTL
8	TxFault2	Transmitter Fault LOW = Normal Operation; HIGH = Fault Indication	Output / LVTTL
9	VeeT	Transmitter Ground	Input
10	VeeT	Transmitter Ground	Input
11	VeeT	Transmitter Ground	Input
12	TD2-	Transmitte2 Data Input (Inverted)	Input / LVPECL
13	TD2+	Transmitter2 Data Input (Non Inverted)	Input / LVPECL
14	VeeT	Transmitter Ground	Input
15	VccT	Transmitter Power	Input
16	VccT	Transmitter Power	Input
17	VeeT	Transmitter Ground	Input
18	TD1+	Transmitter1 Data Input (Non Inverted)	Input / LVPECL
19	TD1-	Transmitter1 Data Input (Inverted)	Input / LVPECL
20	VEET	Transmitter Ground	Input

Dual Transmitter Function Block Diagram



The dual transmitters consist of high reliability 850 nm VCSEL laser diodes (LD) with back facet monitor photo detectors (PD) in dual eye safe optical sub-assemblies (TOSA), which are mated to the dual Tx ports of the fiber optic LC duplex receptacle. A driver IC converts LVPECL differential input data signals into an analog current source that drives the laser diodes. Each transmitter section is provided with the Tx_Disable and Tx_FAULT control and monitoring functions.

Recommended Circuit Diagram



Mechanical Outlines:

(Units in mm)