

# Fibre Products-Short form pluggables

## SFP-815S-110D



### Gigabit - Single Mode – 110km – 1550nm

#### Features

- Compliant with IEEE802.3z Gigabit Ethernet Standard
- Compliant with Fiber Channel 100-SM-LC-Lstandard
- Industry standard small form pluggable (SFP) package
- Duplex LC connector
- Differential LVPECL inputs and outputs
- Single power supply 3.3V
- TTL signal detect indicator
- Hot Pluggable
- Class 1 laser product complies with EN 60825-1
- Extended Temperature Option -40C to +85C
- Dynamic Management Interface (DMI)



#### Application

- Distributed multi-processing
- Switch to switch interface
- High speed I/O for file server
- Bus extension application
- Channel extender, data storage

Recommended Operating Conditions						
Parameter	Symbol	Min	Max	Units	Notes	
Case Operating Temperature	Ts	-40	+85	C		
Supply Voltage	Vcc	3.1	3.5	V		
Supply Current	I <sub>TX</sub> + I <sub>RX</sub>	---	320	mA		

Transmitter Electro-Optical Characteristics						
Parameter	Symbol	Min	Type	Max	Unit	Note
Output Optical Power 9/125 $\mu$ m fibre	P <sub>out</sub>	0	---	+5	dBm	Average
Extinction Ration	ER	7	---	---	dB	
Centre Wavelength	l <sub>c</sub>	1530	1550	1570	nm	
Spectral Width (-20dB)	$\Delta\lambda$	---	---	1	nm	
Side Mode Suppression Ration	SMSR	30	---	---	dB	
Rise / Fall Time (20-80%)	T <sub>nf</sub>	---	---	260	ps	
Relative intensity Noise	RIN	---	---	-120	dB/Hz	
Total jitter	TJ	---	---	227	ps	
Output eye			Compliant with IEEE802.3z			
Max Pout TX-DISABLE Asserted	P <sub>OFF</sub>	---	---	-45	dBm	
Differential Input Voltage	V <sub>DIFF</sub>	0.4	---	2.0	V	

Receiver Electro-Optical Characteristics						
Parameter	Symbol	Min	Type	Max	Unit	Note
Optical Input Power-Maximum	P <sub>IN</sub>	-8	---	---	dBm	BER<10 <sup>-12</sup>
Optical Input Power-Minimum Sensitivity)	P <sub>IN</sub>	---	-34	-30	dBm	BER<10 <sup>-12</sup>
Operating Centre Wavelength	l <sub>c</sub>	1260	---	1610	nm	
Optical Return Loss	ORL	12	---	---	dB	
Signal Detect-Asserted	P <sub>A</sub>	---	---	-30	dBm	
Signal Detect-De-asserted	P <sub>D</sub>	-45	---	---	dBm	
Differential Output Voltage	V <sub>DIFF</sub>	0.5	---	1.2	V	
Data Output Rise, fall Time (20-80%)	T <sub>r,f</sub>	---	---	0.35	ns	
Receiver Loss of Signal Output Voltage-Low	RX_LOS <sub>L</sub>	0	---	0.5	V	
Receiver Loss of Signal Output Voltage-High	RX_LOS <sub>H</sub>	2.4	---	Vcc	V	

Ordering Information				
Part Number	Fibre	Range	Wave	Temperature
SFP-815S-110D	SM	110km	1550	-40°C to + 85°C

FACT SHEET

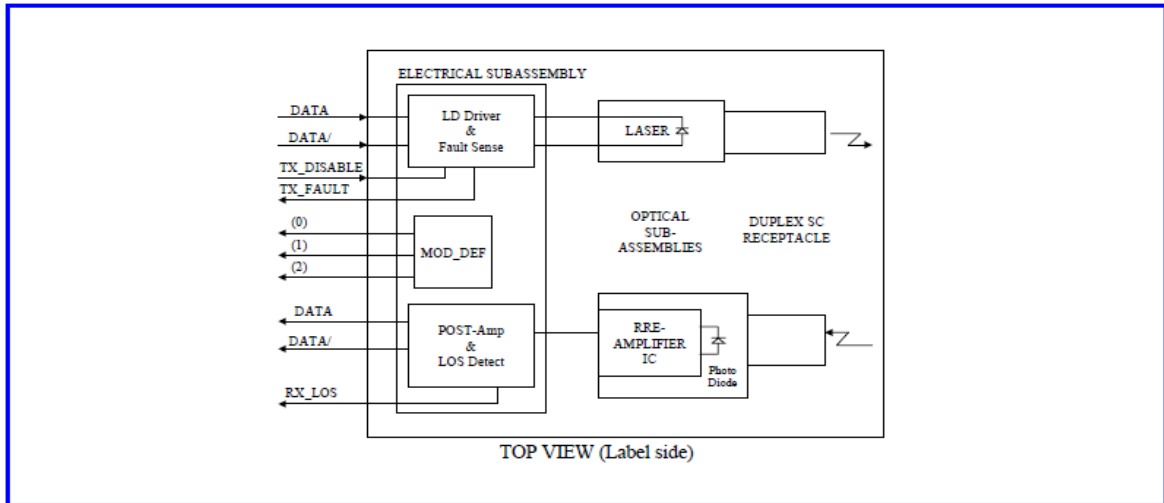
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## SFP-815S-110D



Absolute Maximum Ratings					
Parameter	Symbol	Min	Max	Units	Notes
Storage Temperature	Ts	-40	+85	C	
Supply Voltage	Vcc	-0.5	4.0	V	
Input Voltage	VIN	-0.5	Vcc	V	
Output Current	Io	---	50	mA	
Operating Current	IOP	---	400	mA	

### Block Diagram of Transceiver



### Transmitter Section

The transmitter section consists of a 1310 nm InGaAsP laser in an eye safe optical subassembly (OSA) which mates to the fiber cable. The laser OSA is driven by a LD driver IC which converts differential input LVPECL logic signals into an analog laser driving current.

### TX\_DISABLE

The TX\_DISABLE signal is high (TTL logic "1") to turn off the laser output. The laser will turn on when TX\_DISABLE is low (TTL logic "0").

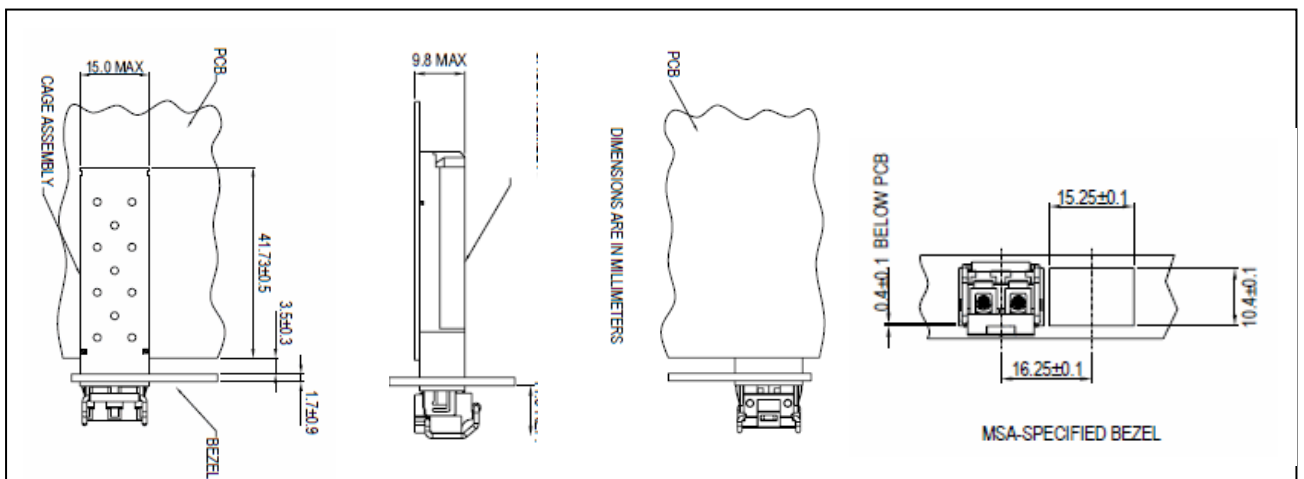
### Receiver Section

The receiver utilizes an InGaAs PIN photodiode mounted together with a trans-impedance preamplifier IC in an OSA. This OSA is connected to a circuit providing post-amplification quantization, and optical signal detection.

### Receive Loss (RX\_LOS)

The RX\_LOS is high (logic "1") when there is no incoming light from the companion transceiver. This signal is normally used by the system for the diagnostic purpose. The signal is operated in TTL level.

### Assembly Details



FACT SHEET

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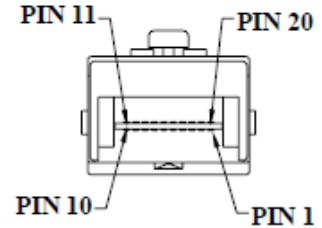
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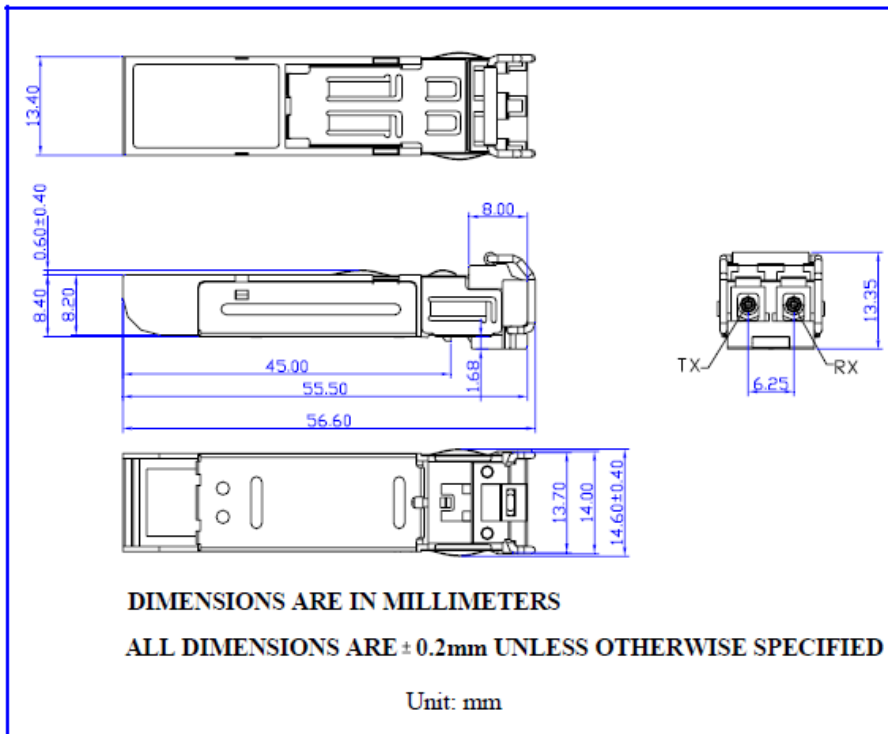
FACT SHEET

Pin	Signal Name	Description
1	T <sub>GND</sub>	Transmit Ground
2	TX_FAULT	Transmit Fault
3	TX_DISABLE	Transmit Disable
4	MOD_DEF(2)	SDA Serial Data Signal
5	MOD_DEF (1)	SCL Serial Clock Signal
6	MOD_DEF (0)	TTL Low
7	RATE_SELECT	Open Circuit
8	RX_LOS	Receiver Loss of Signal, TTL High, open collector
9	R <sub>GND</sub>	Receiver Ground
10	R <sub>GND</sub>	Receiver Ground
11	R <sub>GND</sub>	Receiver Ground
12	RX-	Receive Data Bar, Differential PECL, ac coupled
13	RX+	Receive Data, Differential PECL, ac coupled
14	R <sub>GND</sub>	Receiver Ground
15	V <sub>CCR</sub>	Receiver Power Supply
16	V <sub>CCT</sub>	Transmitter Power Supply
17	T <sub>GND</sub>	Transmitter Ground
18	TX+	Transmit Data, Differential PCEL, ac coupled
19	TX-	Transmit Data Bar, Differential PCEL, ac coupled
20	T <sub>GND</sub>	Transmit Ground

Pin out



### Dimensions



**Class 1 Laser Product**  
**Complies with**  
**21 CFR 1040.10 and 1040.11**

### Eye Safety Mark

The GE-SM series single mode transceiver is a class 1 laser product. It complies with EN 60825-1 and FDA 21 CFR 1040.10 and 1040.11. In order to meet laser safety requirements the transceiver shall be operated within the Absolute Maximum Ratings.

### Caution

**All adjustments have been done at the factory before the shipment of the devices. No maintenance and user serviceable part is required. Tampering with and modifying the performance of the device will result in voided product warranty.**

Note: All information contained in this document is subject to change without notice.