

SFP-100BASE-EX60-I

100Base-EX SFP Transceiver

Hot Pluggable, +3.3V, Duplex LC, 1310nm, up to 60km, Industrial Temperature

FEATURES

- Up to 100Mb/s Data Links
- Hot Pluggable SFP Footprint
- Duplex LC Connector
- Up to 60km on 9/125µm SMF
- 1310nm FP laser transmitter
- Single +3.3V Power Supply
- Industrial Operating Temperature Range: -40 to 85°C
- RoHS compliant and Lead Free

APPLICATIONS

- SDH/SONET STM-1 I-1.1
- FAST ETHERNET LX EX

DESCRIPTION

ATGBICS® SFP-100BASE-EX60-I transceiver is a small form factor pluggable (SFP) transceiver compatible with multi-sourcing agreement (MSA). It is suitable for single-mode fibre (SMF) communications in Fast Ethernet and SDH STM-1, SONET OC-3.

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Temperature	T _{op}	-40		85	°C
Storage Temperature	T _s	-40		85	°C
Supply Voltage	V _{CC}	-0.5		3.6	V
Relative Humidity	RH	0		85	%

RECOMMENDED OPERATING ENVIRONMENT

Parameter	Symbol	Min.	Typical	Max.	Unit
Case operating Temperature	T _c	-40		85	°C
Supply Voltage	V _{CC}	3.15	3.3	3.45	V
Supply Current	I _{CC}			250	mA

ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Min.	Typical	Max.	Unit
TRANSMITTER					
Input differential impedance	R _{in}	90	100	110	Ω
Data Input Swing Differential	V _{in}	500		2400	mV
Tx-Dis Disable	V _d	2.0		V _{CC}	V
Tx-Dis Enable	V _{en}	0		0.8	V
TX-Fault (Fault)		2.0		V _{CC} +0.3	V
TX-Fault (Normal)		0		0.8	V
RECEIVER					
Data Output Swing Differential	V _{out}	370		2000	mV
Rx-Los Fault	V _{lf}	2.0		V _{CC} +0.3	V
Rx-Los Normal	V _{ln}	0		0+0.8	V

OPTICAL PARAMETERS

Parameter	Symbol	Min.	Typical	Max.	Unit
TRANSMITTER					
Centre Wavelength	λ_c	1270	1310	1370	nm
Spectral Width	σ			4	nm
Optical Output Power	P_{out}	-5		0	dBm
Extinction Ratio	EX	9			dB
Optical Rise/Fall Time	tr/tf			2	ns
RECEIVER					
Centre Wavelength	λ_c	1260	1310	1600	nm
Receiver Sensitivity	PIN			-34	dBm
Receiver Overload	PMAX	-1			dBm
LOS De-Assert	LOSD			-36	dBm
LOS Assert	LOSA	-45			dBm
LOS Hysteresis		0.5		4.5	dB

PIN ASSIGNMENT

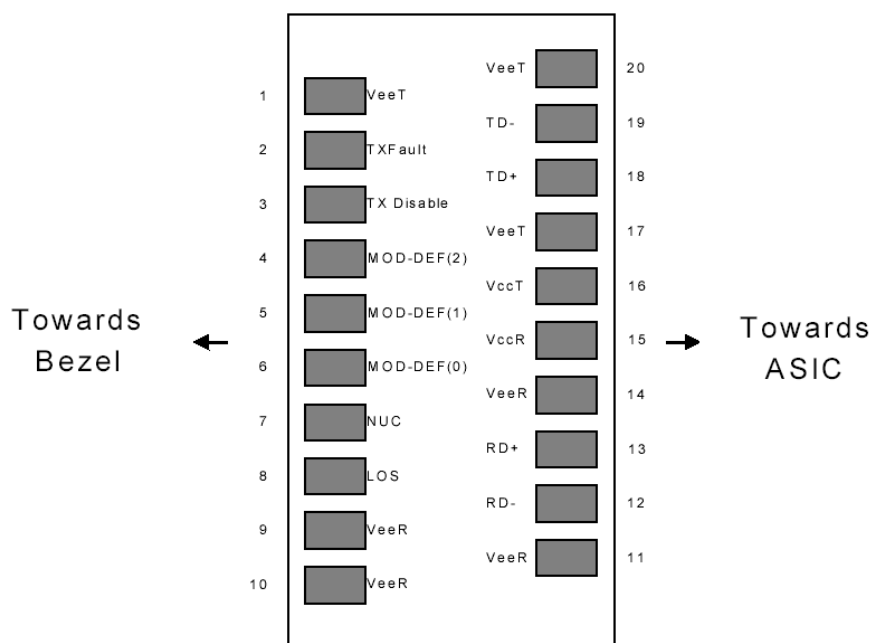


Diagram of Host Board Connector Block Pin Numbers and Name

PIN FUNCTION DEFINITIONS

Pin No	Name	Function	Notes
1	VEET	Transmitter Ground (Common with Receiver Ground)	1
2	TFAULT	Transmitter Fault.	
3	TDIS	Transmitter Disable. Laser output disabled on high or open.	2
4	MOD_DEF (2)	Module Definition 2. Data line for Serial ID.	3
5	MOD_DEF (1)	Module Definition 1. Clock line for Serial ID.	3
6	MOD_DEF (0)	Module Definition 0. Grounded within the module.	3
7	Rate Select	No connection required	
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	4
9	VEER	Receiver Ground (Common with Transmitter Ground)	1
10	VEER	Receiver Ground (Common with Transmitter Ground)	1
11	VEER	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	VEER	Receiver Ground (Common with Transmitter Ground)	1
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	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	VEET	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 - 10 kOhms 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.

EEPROM

2 wire address 1010000X (A0h)

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

DDM THRESHOLD

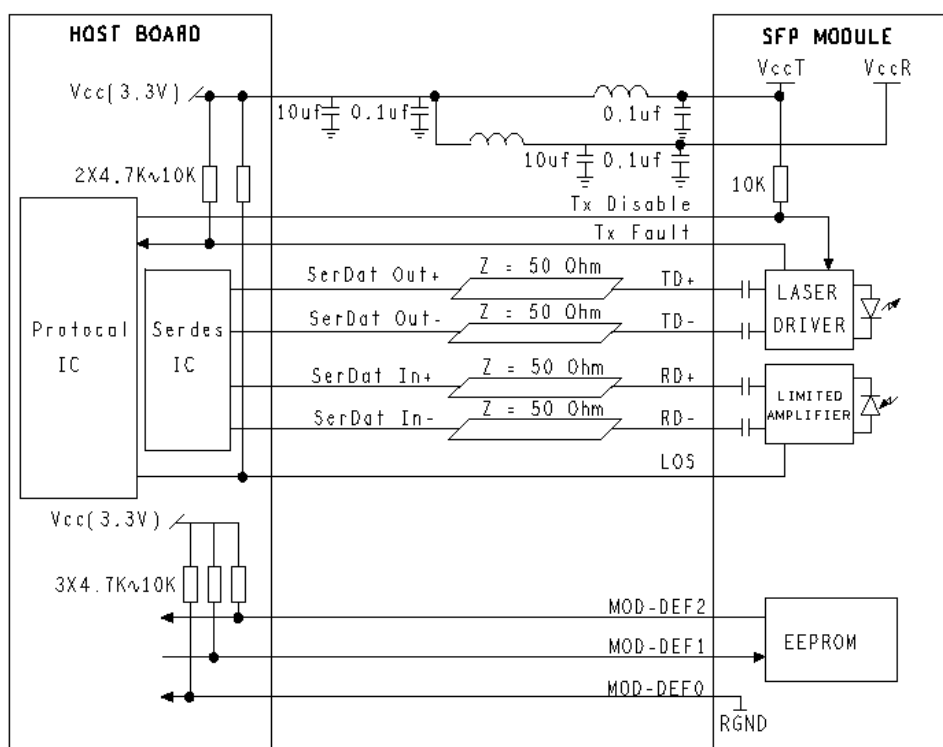
Parameter	Low Alarm	Low Warn	High Warn	High Alarm	Unit
Temperature	-5	0	70	75	°C
Voltage	3.0	3.1	3.6	3.7	V
Tx Bias	3	4	70	75	mA
Tx Power	-8	-7	1	2	dBm
Rx Power	-37	-36	-1	0.7	dBm

REGULATORY COMPLIANCE

The SFP-100BASE-EX60-I complies with international Electromagnetic Compatibility (EMC) and international safety requirements and standards (see details in Table following).

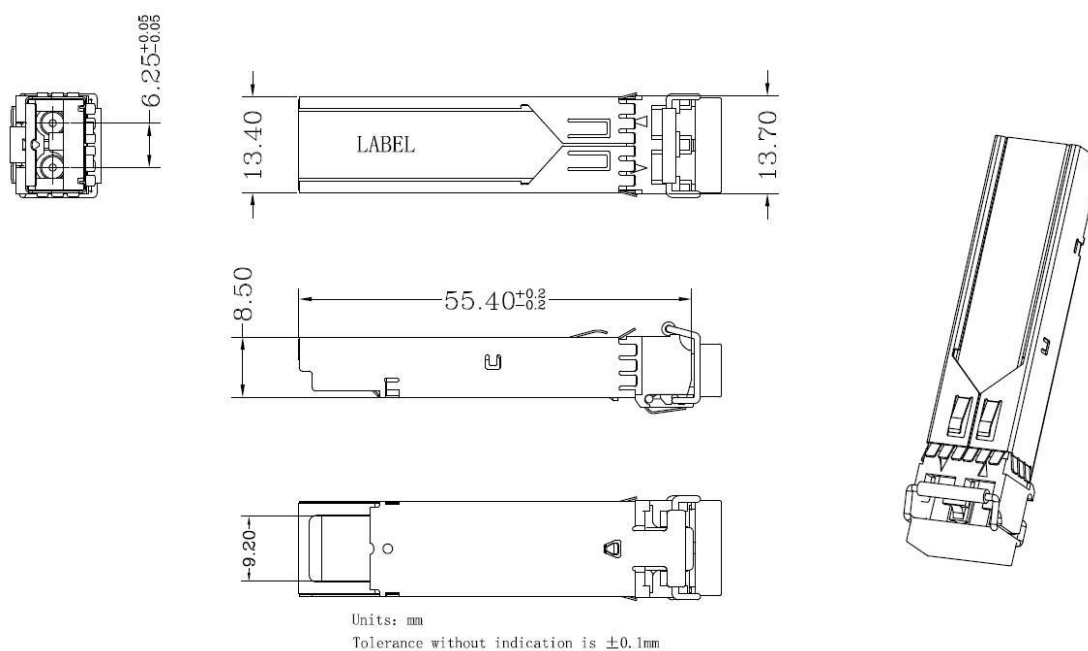
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883E Method 3015.7	Class 1(>1000 V)
Electrostatic Discharge (ESD) to the Duplex LC Receptacle	IEC 61000-4-2 GR-1089-CORE	Compatible with standards
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN55022 Class B (CISPR 22B) VCCI Class B	Compatible with standards
Laser Eye Safety	FDA 21CFR 1040.10 and 1040.11 EN60950, EN (IEC) 60825-1,2	Compatible with Class 1 laser product.

RECOMMENDED CIRCUIT



SFP Host Recommended Circuit

MECHANICAL DIMENSIONS (UNITS: mm)



Mechanical Drawing