

EX55X-C0D

10Gbps XFP Transceiver, Single Mode, 120km Reach

PRODUCT FEATURES

- Supports 9.953Gb/s to 11.1Gb/s bit rates
- Hot-pluggable XFP footprint, Built-in digital diagnos
- Maximum link length of 120km with SMF
- 1550nm Cooled EML laser and APD photodiode
- XFP MSA package with duplex LC connector
- No reference clock required
- Single +3.3V power supply
- Power dissipation <3.5W
- Compatible with RoHS
- Temperature range: 0 to +70°C

APPLICATIONS

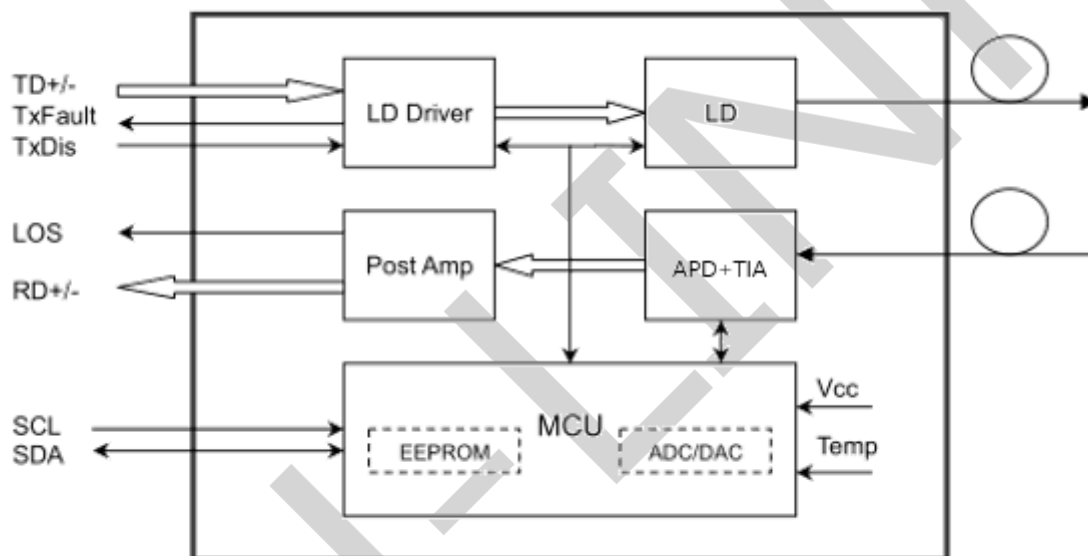
- SONET OC-192&SDH STM-64 at 9.953Gbps
- 10GBASE-120km 10G Ethernet
- OC192 over FEC at 10.709Gbps
- Other optical links, up to 10.7Gbps

DESCRIPTIONS

The XFP module is compliant with the 10G Small Form-Factor Pluggable (XFP) Multi-Source Agreement (MSA), supporting data-rate of 9.953~11.1Gbps, and transmission distance up to 120km on SMF.

The transceiver module comprises a transmitter with 1550nm Cooled EML laser and a receiver with a APD photodiode. Transmitter and receiver are separate within a wide temperature range and offers optimum heat dissipation and excellent electromagnetic shielding thus enabling high port densities for 10GbE systems.

Module Block Diagram



Ordering Information

Part No.	Data Rate(optical)	Laser	Fiber Type	Distance	Optical Interface	Temp	DDMI	Latch Color
EX55X-C0D	10Gbps	EML	SMF	120km	LC	0~+70°C	Y	White

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage	Vcc	-0.5	4.5	V
Storage Temperature	Ts	-40	+85	°C
Operating Humidity	-	5	85	%

Any stress beyond the maximum ratings can result in permanent damage. The device specifications are

guaranteed only under the recommended operating conditions.

Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Operating Case Temperature	T _c	0		+70	°C
Power Supply Voltage @3.3V	V _{cc}	3.135	3.30	3.465	V
Power Supply Current	I _{cc}			1000	mA
Data Rate		9.953		11.1	Gbps

Optical and Electrical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Transmitter						
Centre Wavelength	λ_c	1530		1560	nm	
Spectral Width (-20dB)	$\Delta\lambda$			1	nm	
Side-Mode Suppression Ratio	SMSR	30			dB	
Average Output Power	P _{out}	1.5		+4.0	dBm	1
Extinction Ratio	ER	8.2			dB	
Data Input Swing Differential	V _{IN}	180		950	mV	2
Input Differential Impedance	Z _{IN}	90	100	110	Ω	
TX Disable	Disable	2.0		V _{cc}	V	
	Enable	0		0.8	V	
Receiver						
Centre Wavelength	λ_c	1260		1600	nm	
Receiver Sensitivity				-27	dBm	3
Receiver Overload		-7			dBm	3
LOS De-Assert	LOSD			-28	dBm	
LOS Assert	LOSA	-35			dBm	
LOS Hysteresis		0.5		4	dB	
Data Output Swing Differential	V _{out}	400	600	800	mV	2
LOS	High	2.0		V _{cc}	V	
	Low			0.8	V	

Notes:

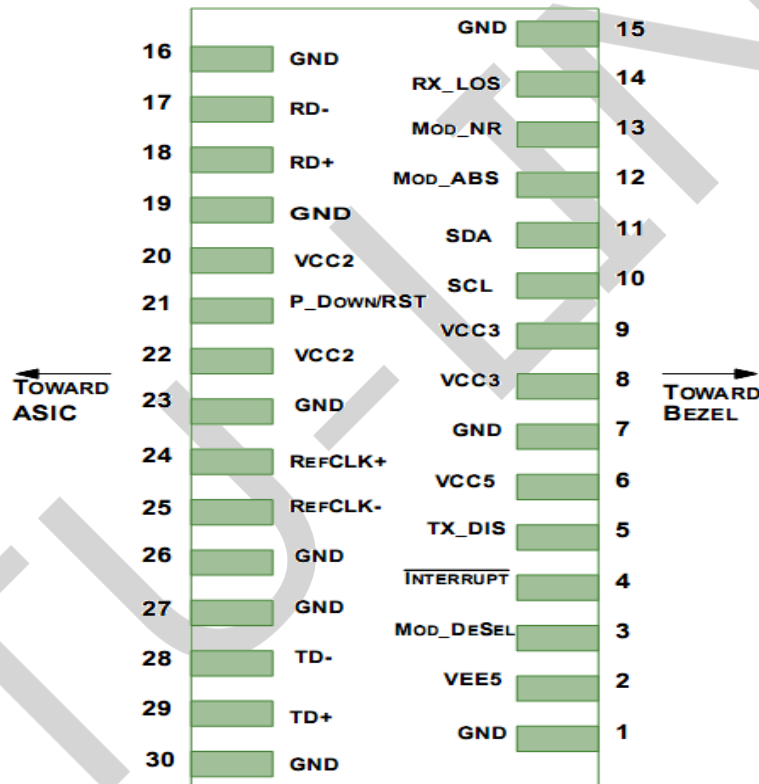
1. The optical power is launched into SMF.
2. Internally AC-coupled.

3. Measured with a PRBS 231-1 test pattern @9953Mbps, BER $\leq 1 \times 10^{-12}$.

Digital Diagnostics

Parameter	Range	Accuracy	Unit	Calibration
Temperature	0 to 70	± 3	$^{\circ}\text{C}$	Internal
Voltage	0 to Vcc	$\pm 3\%$	V	Internal
Tx Bias Current	0 to 100	$\pm 10\%$	mA	Internal
Tx Output Power	1.5 to 4	± 3	dB	Internal
Rx Input Power	-27 to -6	± 3	dB	Internal

Pin Diagram



Pin Definitions

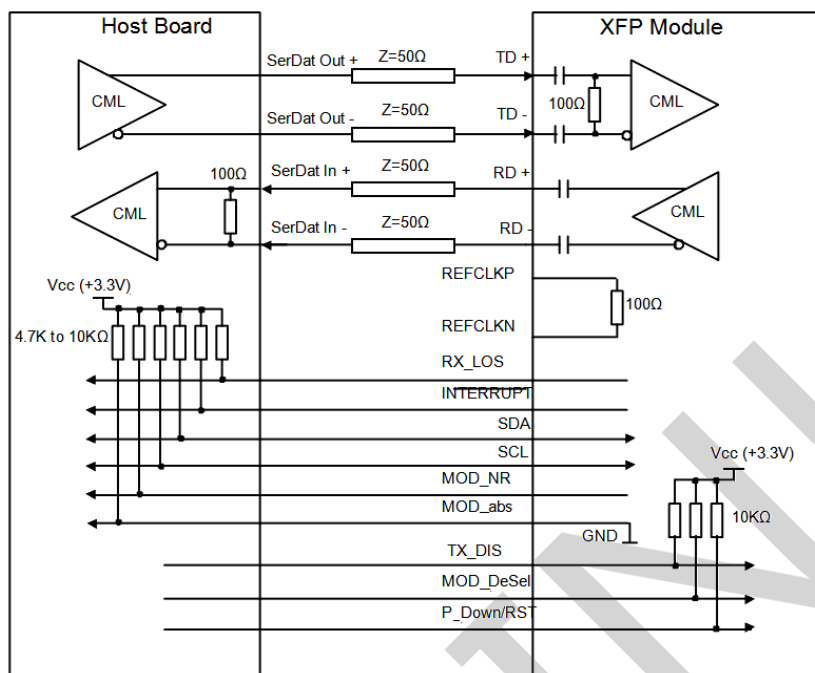
Pin	Logic	Symbol	Name/Description	Re
1		GND	Module Ground	1
2		VEE5	Optional -5.2 Power Supply – Not required	
3	LVTTL-I	Mod-Desel	Module De-select; When held low allows the module to, respond to 2-wire serial interface commands	
4	LVTTL-O	Interrupt	Interrupt (bar); Indicates presence of an important condition which can be read over the serial 2-wire interface	2

5	LVTTL-I	TX_DIS	Transmitter Disable; Transmitter laser source turned off	
6		VCC5	+5 Power Supply – Not required	
7		GND	Module Ground	1
8		VCC3	+3.3V Power Supply	
9		VCC3	+3.3V Power Supply	
10	LVTTL-I	SCL	Serial 2-wire interface clock	2
11	LVTTL-	SDA	Serial 2-wire interface data line	2
12	LVTTL-O	Mod_Abs	Module Absent; Indicates module is not present. Grounded in the	2
13	LVTTL-O	Mod_NR	Module Not Ready;	2
14	LVTTL-O	RX_LOS	Receiver Loss of Signal indicator	2
15		GND	Module Ground	1
16		GND	Module Ground	1
17	CML-O	RD-	Receiver inverted data output	
18	CML-O	RD+	Receiver non-inverted data output	
19		GND	Module Ground	1
20		VCC2	+1.8V Power Supply – Not required	
21	LVTTL-I	P_Down/ RST	Power Down; When high, places the module in the low power stand-by mode and on the falling edge of P_Down initiates a module reset	
			Reset; The falling edge initiates a complete reset of the module	
22		VCC2	+1.8V Power Supply – Not required	
23		GND	Module Ground	1
24	PECL-I	RefCLK+	Reference Clock non-inverted input, AC coupled on the host board –	3
25	PECL-I	RefCLK-	Reference Clock inverted input, AC coupled on the host board – Not	3
26		GND	Module Ground	1
27		GND	Module Ground	1
28	CML-I	TD-	Transmitter inverted data input	
29	CML-I	TD+	Transmitter non-inverted data input	
30		GND	Module Ground	1

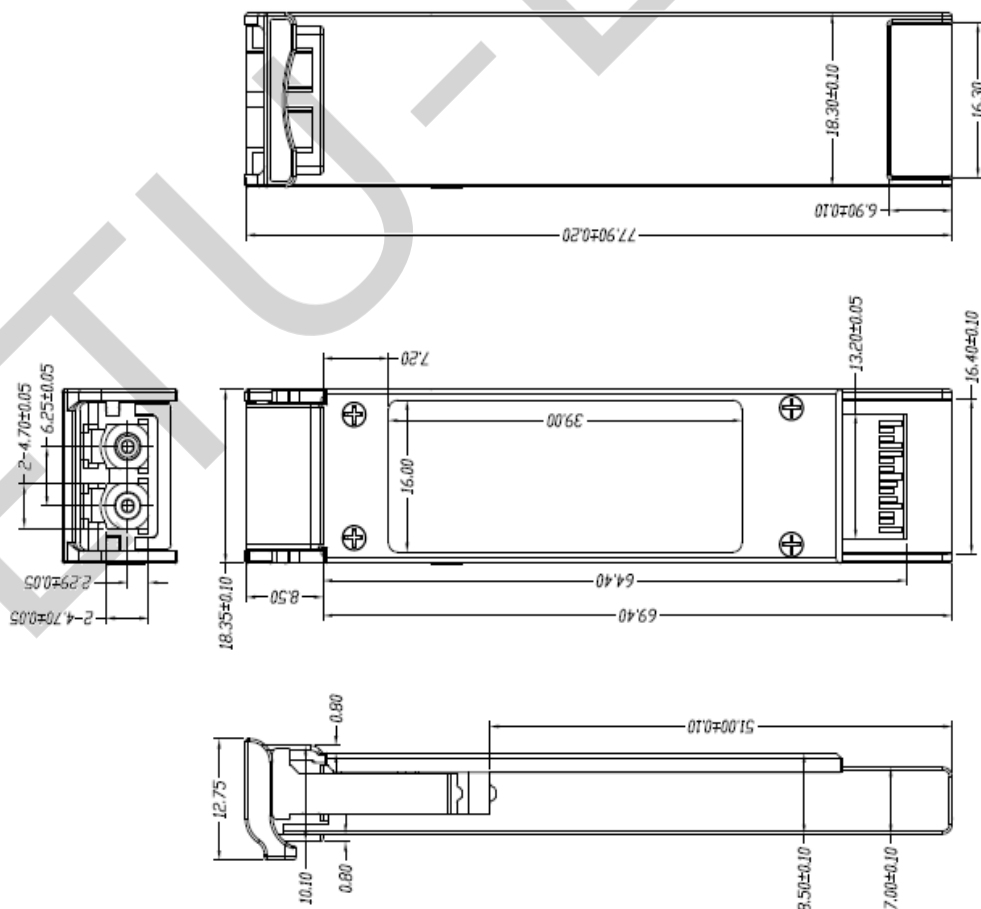
Notes:

1. Module circuit ground is isolated from module chassis ground within the module.
2. Open collector, should be pulled up with 4.7k – 10k ohms on host board to a voltage between 3.15V and 3.6V.
3. A Reference Clock input is not required.

Recommended Interface Circuit



Mechanical Diagram



Revision History

Version No.	Date	Description
1.0	February 8, 2016	Preliminary datasheet
2.0	July 26, 2024	Format change

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