

GL10-MM850SRC

SFP+ 10.3125Gb/s 300m Transceiver

PRODUCT FEATURES

- Hot-plug-gable SFP+ footprint
- Support 10.5Gbps bit rate
- 850nm VCSEL laser and PIN photo-detector
- Maximum link length of 300m on OM3 MMF
- Power Dissipation <1W
- Single +3.3V power supply
- LC duplex connector
- Operating Case temperature range
- 0°C to 70°C
- RoHS-6 compliant
- Compliant with SFF-8431
- Compliant with SFF-8472
- Compliant with IEEE 802.3ae 10GBASE-SR

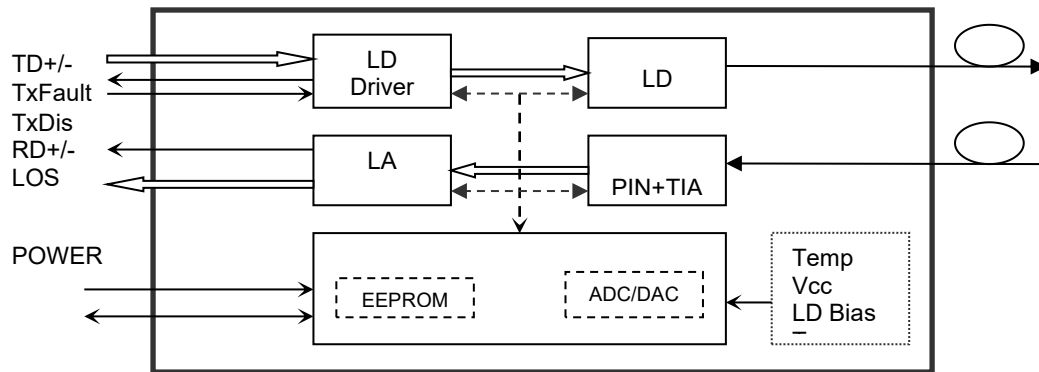
APPLICATIONS

- 10GBASE-LW at 9.953Gbps
- Compliant with 16G/8G/4G Fiber Channel
- 10G Ethernet
- Other Optical Links

PRODUCT DESCRIPTION

The GL10-MM850SRC SFP+ transceivers are high performance, cost effective modules supporting data rate of 10.3125Gbps and 300m transmission distance with MMF. The transceiver consists of three sections: a VCSEL laser transmitter, a PIN photodiode integrated with a trans-impedance preamplifier (TIA) and MCU control unit. All modules satisfy class I laser safety requirements.

Transceiver functional diagram



Ordering information

Product part Number	Data Rate (Gbps)	Media	Wavelength (nm)	Transmission Distance(km)	Temperature Range T _{case} / °C	
GL10-MM850SRC	10.3125	SMF	850	0.3	0~70	Commercial

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Power Supply Voltage	V _{CC}	0		3.6	V	
Storage Temperature	T _s	-40		+85	°C	
Relative Humidity	RH	5		85		Non-condensing
Operating Case Temperature	T _c	0		+70		

Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Power Supply Voltage	V _{CC}	3.135	3.3	3.465	V	
Power Dissipation	P _D			1	W	
Power Supply Current	I _{CC}			300	mA	
Data Rate			10.3125		Gbps	
Clock Rate-I2C				400	kHz	
Transmitter						

Input Differential impedance	Z_{IN}		100		ohm
Differential data input swing	V_{IN}	250		900	mV
Transmit Disable Voltage	V_{DIS}	2		$V_{CC}+0.3$	V
Transmit Enable Voltage	V_{EN}	0		0.8	V
Transmit Fault Assert Voltage		2		$V_{CC}+0.3$	V
Transmit Fault De-Assert Voltage		0		0.8	V
Receiver					
Output Differential impedance	Z_{out}		100		ohm
Differential data Output Swing	V_{out}	300		850	mV
Rx_LOS Output Voltage-High		2		$V_{CC}+0.3$	V
Rx_LOS Output Voltage-Low		0		0.8	V

Optical Parameters

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Power budget		7.3			dB	
Data Rate		1	10.3125	10.5	Gbps	
Transmitter						
Center Wavelength	λ	840	850	860	nm	
RMS spectral width	$\Delta \lambda$			0.45	nm	
Average Optical Power	P_{AVG}	-5.0		-1.0	dBm	
Laser Off Power	P_{OFF}			-30	dBm	
Extinction Ratio	ER	3.0			dB	
Transmitter Dispersion Penalty	TDP			3.9	dB	
Relative Intensity Noise	RIN			-128	dB/H z	
Receiver						
Center Wavelength	λ	840	850	860	nm	
Receiver Sensitivity (OMA)	R_{SENSE1}			-11.1	dBm	1
Maximum Input Power	P_{max}	+0.5			dBm	
Los Assert	LOS_A	-30			dBm	
Los Dessert	LOS_D			-14	dBm	
Los Hysteresis	LOS_H	0.5			dB	
Receiver Reflectance	R_{REFL}			-12	dB	

Note1:Sensitivity for 10.3125Gb/s PRBS31 and BER better than or equal to 1E-12.

General Specifications

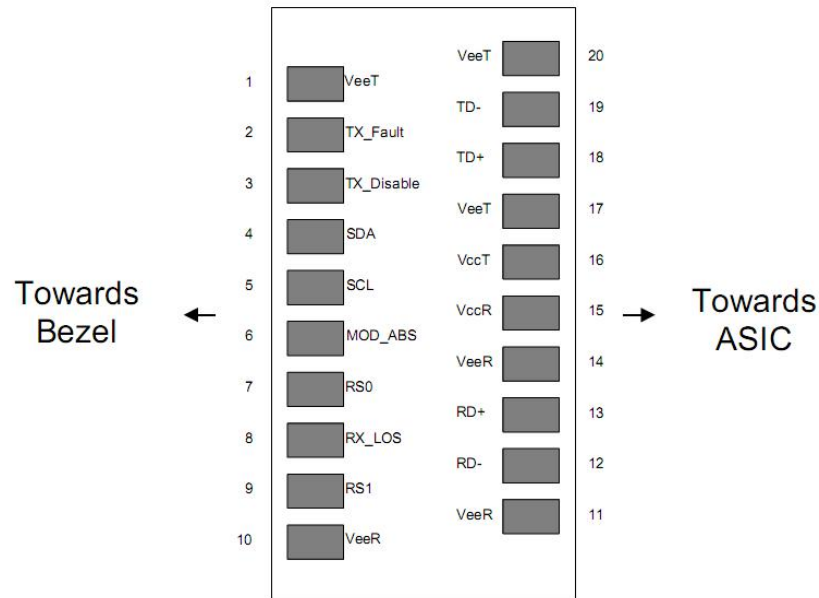
Parameter		Symbol	Min.	Typical	Max.	Unit	Note
Bit Rate		BR	1	10.3125	10.5	Gbps	
Bit Error Ratio		BER			E-12		PRBS31
Maximum Supported Distances							
Fiber Type	Bandwidth (850nm)						
62.5um	160MHz*km				26	m	
62.5um	200MHz*km				33	m	OM1
50um	400MHz*km				66	m	
50um	500MHz*km				82	m	OM2
50um	2000MHz*km				300	m	OM3
50um	4700MHz*km				400	m	OM4

Digital Diagnostic Functions

GL10-MM850SRC transceivers can be used in host systems that require either internally or externally calibrated digital diagnostics.

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Temperature monitor absolute error		-3		3	°C	
Laser power monitor absolute error		-3		3	dB	
RX power monitor absolute error		-3		3	dB	
Supply voltage monitor absolute error		-100		100	mV	
Bias current monitor		-10%		10%	mA	

Pin Description



Pin	Signal Name	Description	Plug Seq.	Notes
1	V _{EET}	Transmitter Ground	1	
2	TX FAULT	Transmitter Fault Indication	3	Note 1
3	TX DISABLE	Transmitter Disable	3	Note 2
4	SDA	SDA Serial Data Signal	3	
5	SCL	SCL Serial Clock Signal	3	
6	MOD_ABS	Module Absent. Grounded within the module	3	
7	RS0	Not Connected	3	
8	LOS	Loss of Signal	3	Note 3
9	RS1	Not Connected	3	
10	V _{EER}	Receiver ground	1	
11	V _{EER}	Receiver ground	1	
12	RD-	Inv. Received Data Out	3	Note 4
13	RD+	Received Data Out	3	Note 4
14	V _{EER}	Receiver ground	1	
15	V _{CCR}	Receiver Power Supply	2	
16	V _{CCT}	Transmitter Power Supply	2	
17	V _{EET}	Transmitter Ground	1	
18	TD+	Transmit Data In	3	Note 5

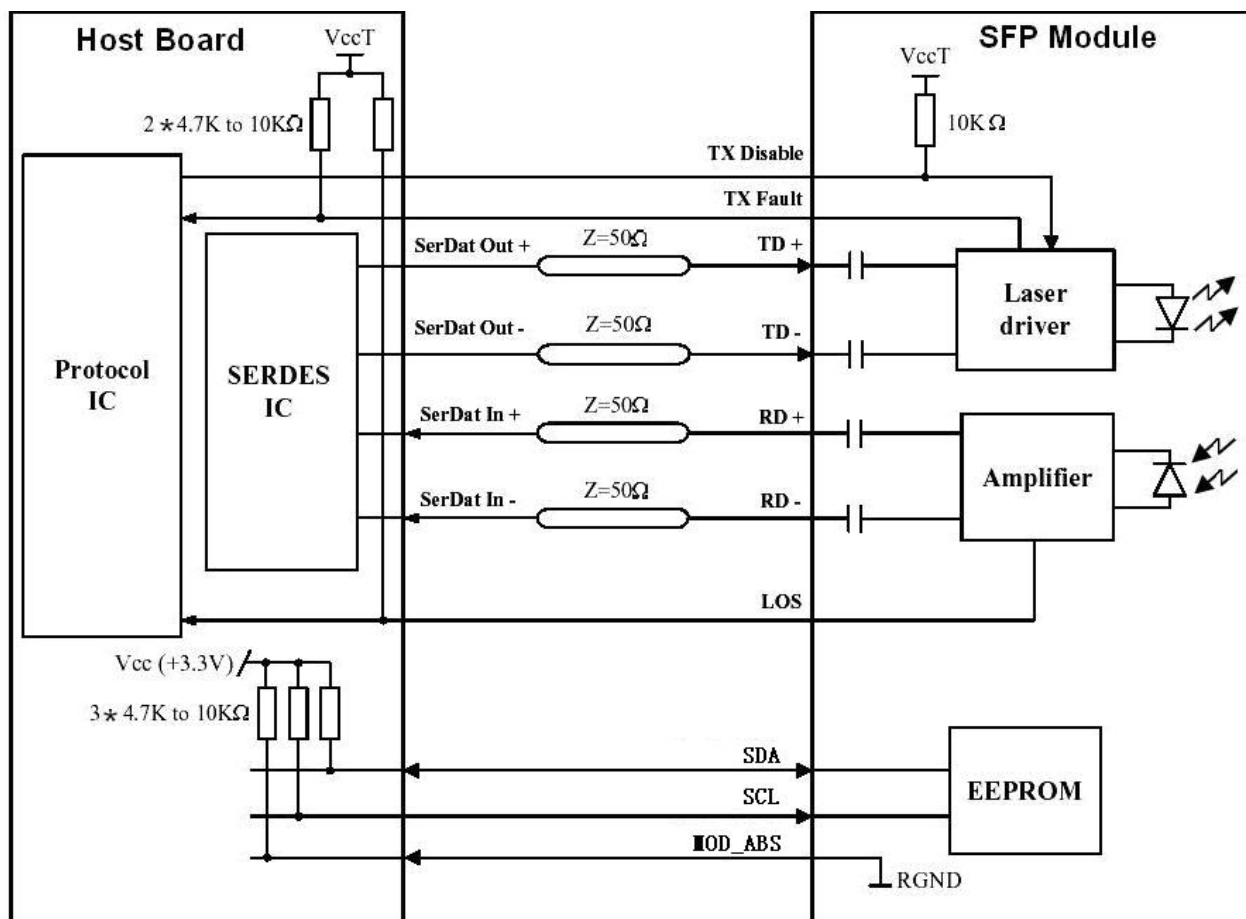
19	TD-	Inv. Transmit Data In	3	Note 5
20	V _{EET}	Transmitter Ground	1	

Notes:

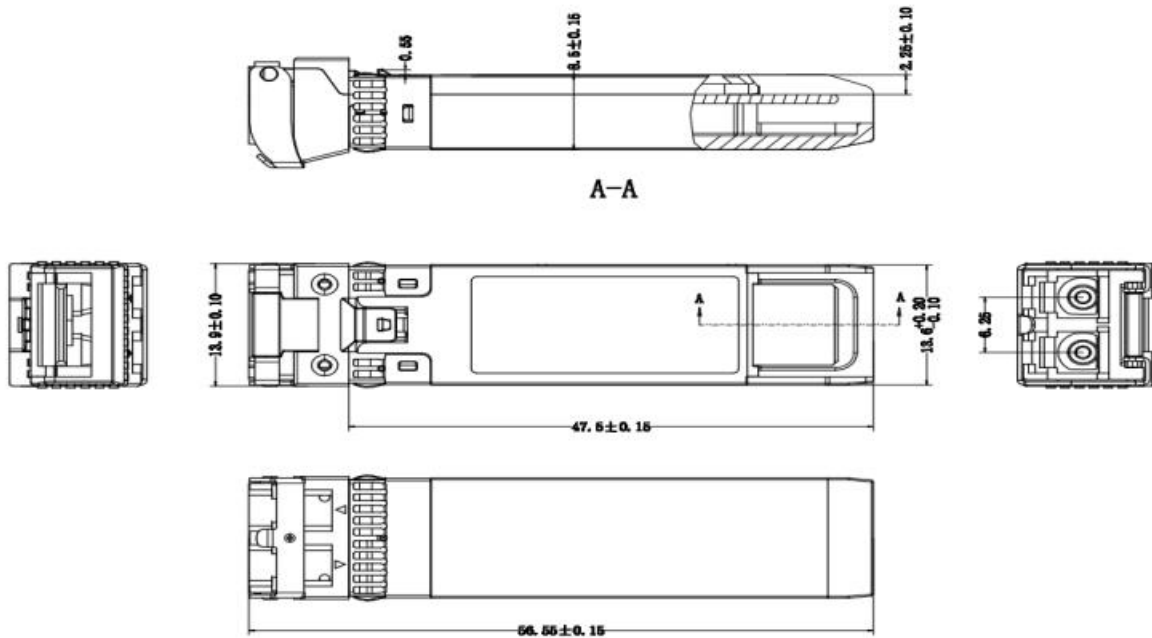
Plug Seq.: Pin engagement sequence during hot plugging.

- 1) TX Fault is an open collector output, which should be pulled up with a 4.7k~10kΩ resistor on the host board to a voltage between 2.0V and V_{cc}+0.3V. Logic 0 indicates normal operation; Logic 1 indicates a laser fault of some kind. In the low state, the output will be pulled to less than 0.8V.
- 2) Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.
- 3) LOS is open collector output. Should be pulled up with 4.7k~10kΩ on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.
- 4) RD-/+ : These are the differential receiver outputs. They are internally AC-coupled 100 differential lines which should be terminated with 100Ω (differential) at the user SERDES.
- 5) TD-/+ : These are the differential transmitter inputs. They are internally AC-coupled, differential lines with 100Ω differential termination inside the module.

Recommended Interface Circuit



Mechanical Dimensions



Regulatory Compliance

Feature	Reference	Performance
Electrostatic discharge (ESD)	IEC/EN 61000-4-2	Compatible with standards
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN 55022 Class B (CISPR 22A)	Compatible with standards
Laser Eye Safety	IEC/EN 60825-1, 2	Class 1 laser product
ROHS	2002/95/EC	Compatible with standards
EMC	EN61000-3	Compatible with standards