28.05G SFP28 850nm 100m Transceiver
Hot Pluggable, Duplex LC, Multi Mode
PSFP32-3831MF

Features

- ♦ Hot-pluggable SFP+ footprint
- ♦ Supports up to 28.05Gbps bit rates
- ♦ 850nm VCSEL laser and PIN photodiode
- ♦ 100m over M5F MMF (50/125 um OM4)
- ♦ 70m over M5E MMF (50/125um OM3)
- ♦ 20m on MMF (50/125um OM2)
- ♦ Compliant with SFP+ MSA and SFF-8472 with duplex LC receptacle
- ♦ Single +3.3V power supply
- ♦ Real Time Digital Diagnostic Monitoring
- ♦ Operating case temperature: 0°C to 70°C
- ♦ RoHS compliant

Applications

- ♦ Tri-Rate 8.5/14.025/28.05 Gb/s Fibre Channel

Ordering Information

| Part Number	Product Description
PSFP32-3831MF	SFP28 28.05G 850nm LC 70m OM3-MMF / 100m OM4-MMF

Description

PSFP32-3831MF SFP28 transceivers are high performance, cost effective modules supporting data rate of 28.05Gbps over multimode fiber.

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.

The transceivers are compatible with SFP Multi-Source Agreement and SFF-8472 digital diagnostics functions.

PSFP32-3831MF

Module Block Diagram
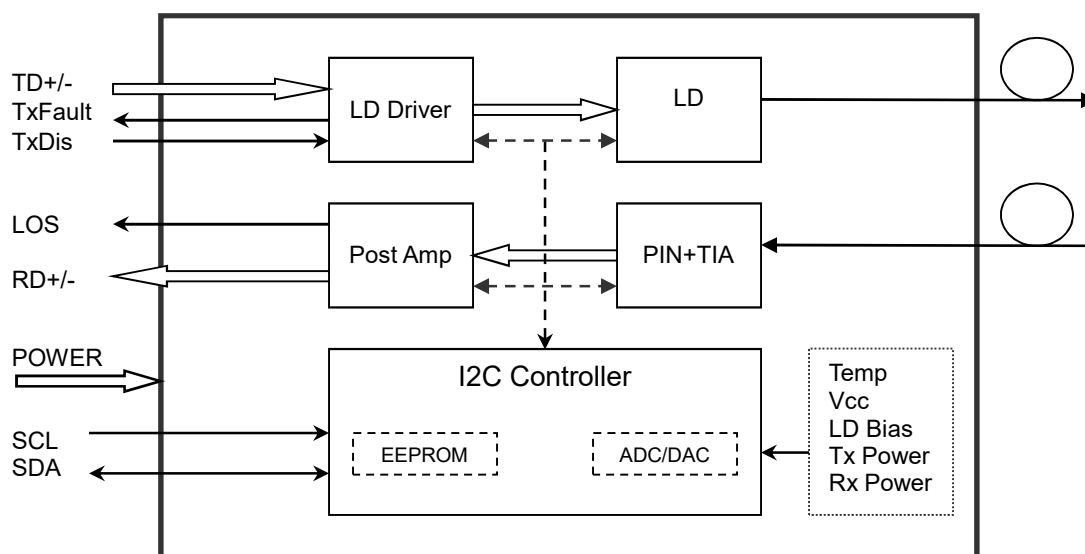
Module Block Diagram

Absolute Maximum Rating

Parameters	Symbol	Min.	Max.	Unit
Power Supply Voltage	V_{CC}	-0.5	4	V
Storage Temperature	T_S	-40	85	°C
Operating Case Temperature	T_C	0	70	°C
Relative Humidity	RH	5	85	%

Recommended Operating Condition

Parameter	Symbol	Min.	Typical	Max	Unit
Power Supply Voltage	V_{CC}	3.135	3.3	3.465	V
Power Supply Current	I_{CC}			300	mA
Operating Case Temperature	T_C	0		70	°C
Data Rate			28.05		Gbps

Optical and Electrical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Transmitter						
Centre Wavelength	λc	840	850	860	nm	
Spectral Width (RMS)	Δλ			0.57	nm	

|							
Side-Mode Suppression Ratio		SMSR	-	-	-	dB	
Average Output Power		P$_{OUT}$	-6.2		2	dBm	1
Extinction Ratio		ER	2.0			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		Vcc	V	
	Enable		0		0.8	V	
TX Fault	Fault		2.0		Vcc	V	
	Normal		0		0.8	V	
Receiver							
Centre Wavelength		λc	840	850	860	nm	
Receiver Sensitivity		SEN			-10.2	dBm	3
Receiver Overload			2			dBm	3
LOS De-Assert		LOS$_D$			-13	dBm	
LOS Assert		LOS$_A$	-30			dBm	
LOS Hysteresis			0.5		4	dB	
Data Output Swing Differential		V$_{OUT}$	500		900	mV	4
LOS	High		2.0		Vcc	V	
	Low				0.8	V	

Notes:
1. The optical power is launched into MMF.
2. PECL input, internally AC-coupled and terminated.
3. For 32GFC with FEC, receiver sensitivity is defined at 1E-6 BER level, not 1E-12 BER level.
4. Internally AC-coupled.

Timing and Electrical

Parameter	Symbol	Min	Typical	Max	Unit
Tx Disable Negate Time	t_on			2	ms
Tx Disable Assert Time	t_off			100	µs
Time To Initialize, including Reset of Tx Fault	t_init			300	ms
Tx Fault Assert Time	t_fault			100	µs
Tx Disable To Reset	t_reset	10			µs
LOS Assert Time	t_loss_on			100	µs
LOS De-assert Time	t_loss_off			100	µs
Serial ID Clock Rate	f_serial_clock		100	400	KHz
MOD_DEF (0:2)-High	V$_H$	2		Vcc	V
MOD_DEF (0:2)-Low	V$_L$			0.8	V

Pin Definition
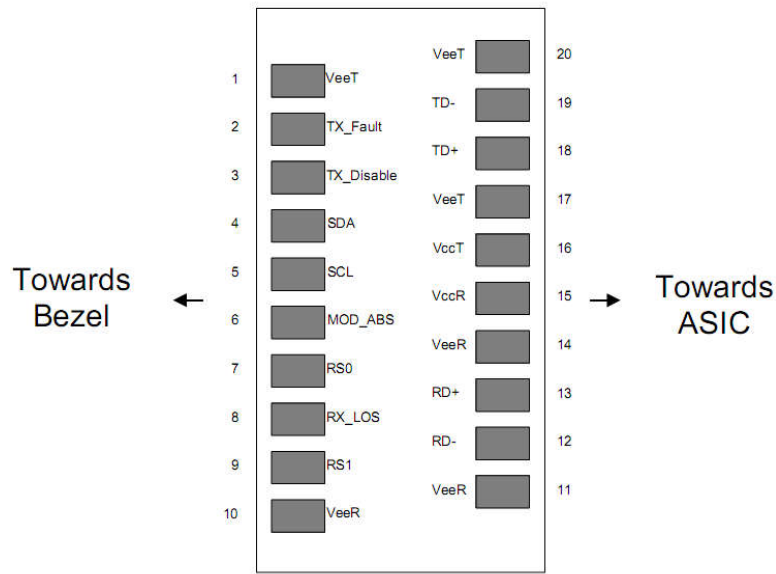
Pin Descriptions

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. 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 Vcc+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. 2) Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.

3. 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. 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. 5) TD-/+: These are the differential transmitter inputs. They are internally AC-coupled, differential lines with 100Ω differential termination inside the module.

Digital Diagnostic Memory Map

The transceivers provide serial ID memory contents and diagnostic information about the present operating conditions by the 2-wire serial interface (SCL, SDA).

The diagnostic information with internal calibration or external calibration all are implemented, including received power monitoring, transmitted power monitoring, bias current monitoring, supply voltage monitoring and temperature monitoring.

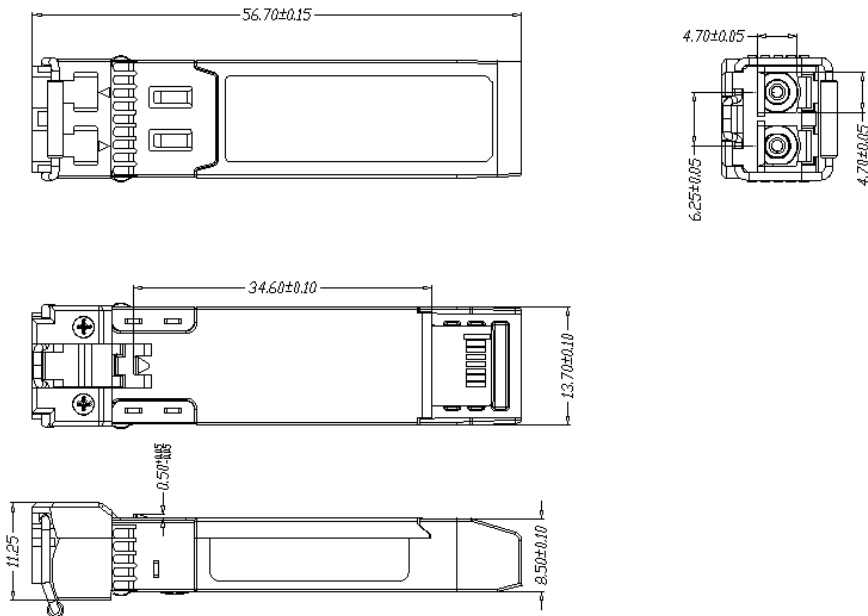The digital diagnostic memory map specific data field defines as following.
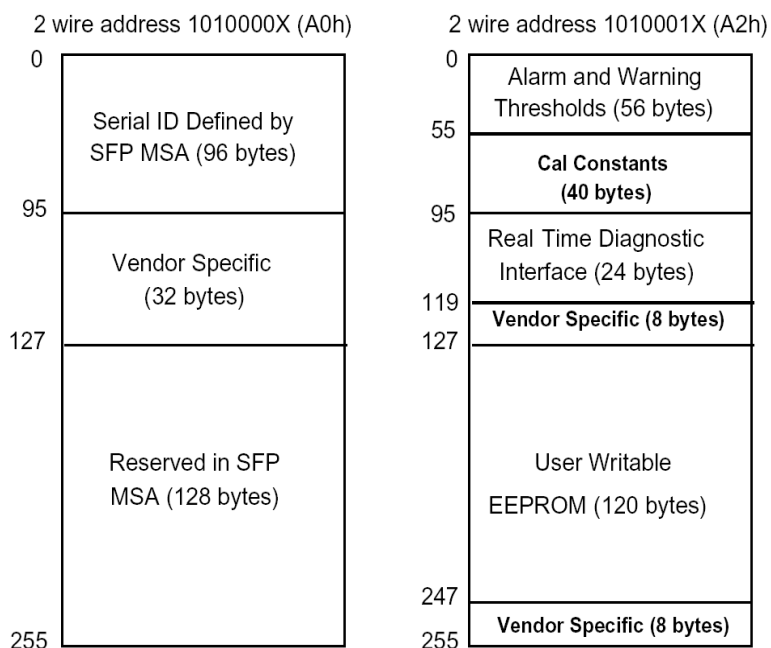
Digital Diagnostic Memory Map

Recommended Interface Circuit
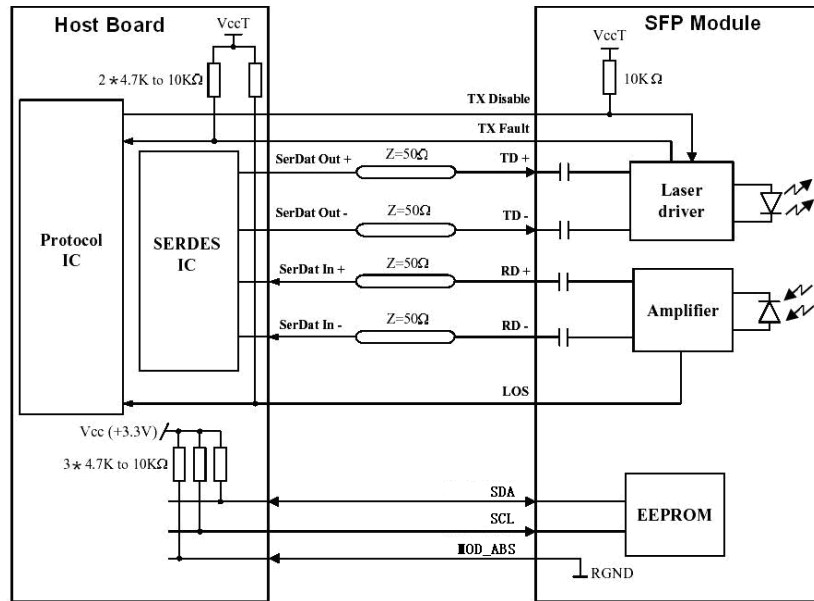
Recommended Interface Circuit

Mechanical Specifications

Mechanical Dimension