ASP010I01310010

10G SFP+ 10km Transceiver series

Product Features

- Data rate up to 11.3 Gbps
- Maximum link length of 10km using single mode fiber
- DWDM EML transmitter and APD receiver
- Electrically hot-pluggable
- Digital diagnostic monitoring
- Compliant with SFP+ MSA with LC connector
- Case operating temperature range: -40°C to 85°C
- Single 3.3V power supply with power dissipation < 1.0W

Standards Compliance

- SFP+ MSA SFF-8431
- SFF-8472
- RoHS Compliant

Applications

- 10GBASE-LR/LW
- OBSAI Rates 6.144 Gb/s, 3.072Gb/s, 1.536Gb/s, 0.768Gb/s
- CPRI Rates 10.138GB/s, 9.83Gb/s, 7.373Gb/s, 6.144Gb/s, 4.915Gb/s, 2.458Gb/s, 1.229Gb/s, 0.614Gb/s.
- Other Optical links

Order information

Part Number	Laser	Distance	Interface	Temp	DDMI	Note
ASP010I01310010	1310nm DFB	10km	LC	I-temp	Yes	

Absolute Maximum Rating

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Storage Temperature	Ts	-40	-	85	ºC	
Relative Humidity	RH	5	-	95	%	
Power Supply Voltage	VCC	-0.3	-	4	V	
Signal Input Voltage		Vcc-0.3	-	Vcc+0.3	V	

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Case Operating Temperature	Tcase	-40	-	85	ºC	Industrial
Power Supply Voltage	VCC	3.14	3.3	3.47	V	
Power Supply Current	ICC	-		490	mA	
Data Rate	BR		10.3125	11.3	Gbps	
Transmission Distance	TD		-	1	km	9/125 SMF

Optical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit
Transmitter					
Average Launched Power	POUT	-1		4	dBm
Center Wavelength	λc	1270	1310	1355	nm
SMSR		30			dB
Optical Extinction Ratio	ER	3.5			dB
Spectral Width (-20dB)	σ			1	nm
Transmitter OFF Output Power	POff			-30	dBm
Transmitter and Dispersion Penalty	TDP			3.2	dB
Output Eye Mask	Compliant with IEEE 802.3ae				
Receiver					
Wavelength Range	λ	1260		1565	nm
Receiver Sensitivity@9.953 Gb/s	RSENS			-14.4	dBm
Receiver Sensitivity@11.3 Gb/s RSENSE	RSENS			-12.6	dBm
Input Saturation Power (Overload)	Psat	0.5			dBm
Receiver Reflectance	Rrx			-27	dB

LOS De -Assert	LOSD			-26	dBm
LOS Assert	LOSA	-28			dBm

Notes:

1. Launched power (avg.) is power coupled into a single mode fiber with master connector.
2. λc refer to the selected wavelength as listed in the wavelength selection table.
3. Measured at 1528~1600nm,ER>8.2dBm, PRBS 231-1 and BER better than or equal to 10E-12; Measured with 80km transport
4. Measured at 1528~1600nm,ER>8.2dBm, PRBS 231-1 and BER better than or equal to 10E-12; Measured with 80km transport.

Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit
Supply Voltage	Vcc	3.14	3.3	3.46	V
Supply Current	Icc			490	mA
Transmitter					
CML Inputs	Vin	150		1200	mVpp
Single ended data input swing	Vin,pp	180		700	mV
Transmit Disable Voltage	VD			3.45	V
Transmit Enable Voltage	VEN	Vee		Vee+ 0.3	V
Transmit Disable Assert Time				10	us
Receiver					
Differential data output swing	Vout,pp	350		700	mV
Data output rise time	tr	28			ps
Data output fall time	tf	28			ps
LOS output high level	V_{LOS-H}	2.0		VccHOST	V
LOS output low level	V_{LOS-L}	Vee		Vee+0.8	V
Power Supply Rejection	PSR	100			mVpp

Notes:

1. Measured with receive Pin=Psen, Vcc=3.3V, operation temperature range without air flow.
2. Connected directly to TX data input pins. AC coupled thereafter.
3. Or open circuit.
4. Into 100 ohms differential termination.
5. These are unfiltered 20-80% values
6. Loss Of Signal is LVTTL. Logic 0 indicates normal operation; logic 1 indicates no signal detected.
7. Receiver sensitivity is compliant with power supply sinusoidal modulation of 20 Hz to 1.5 MHz up to specified value applied through the recommended power supply filtering network.

Pin Assignment

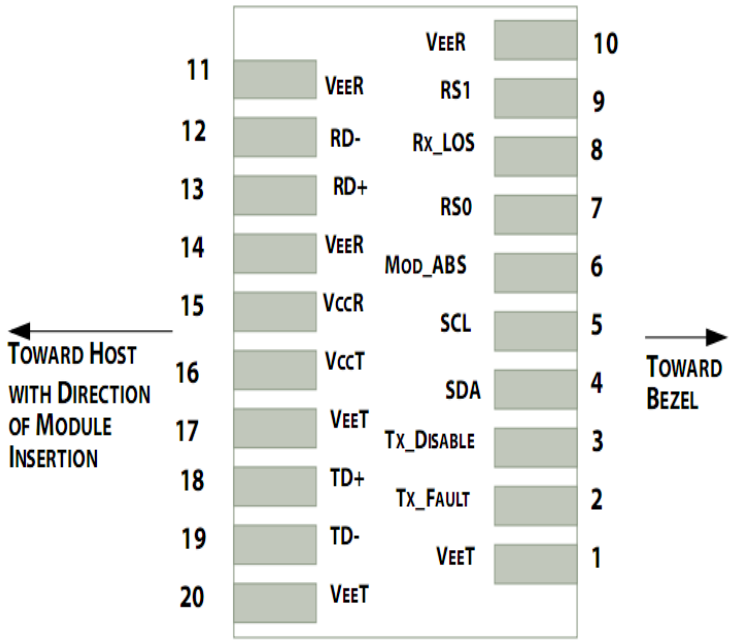


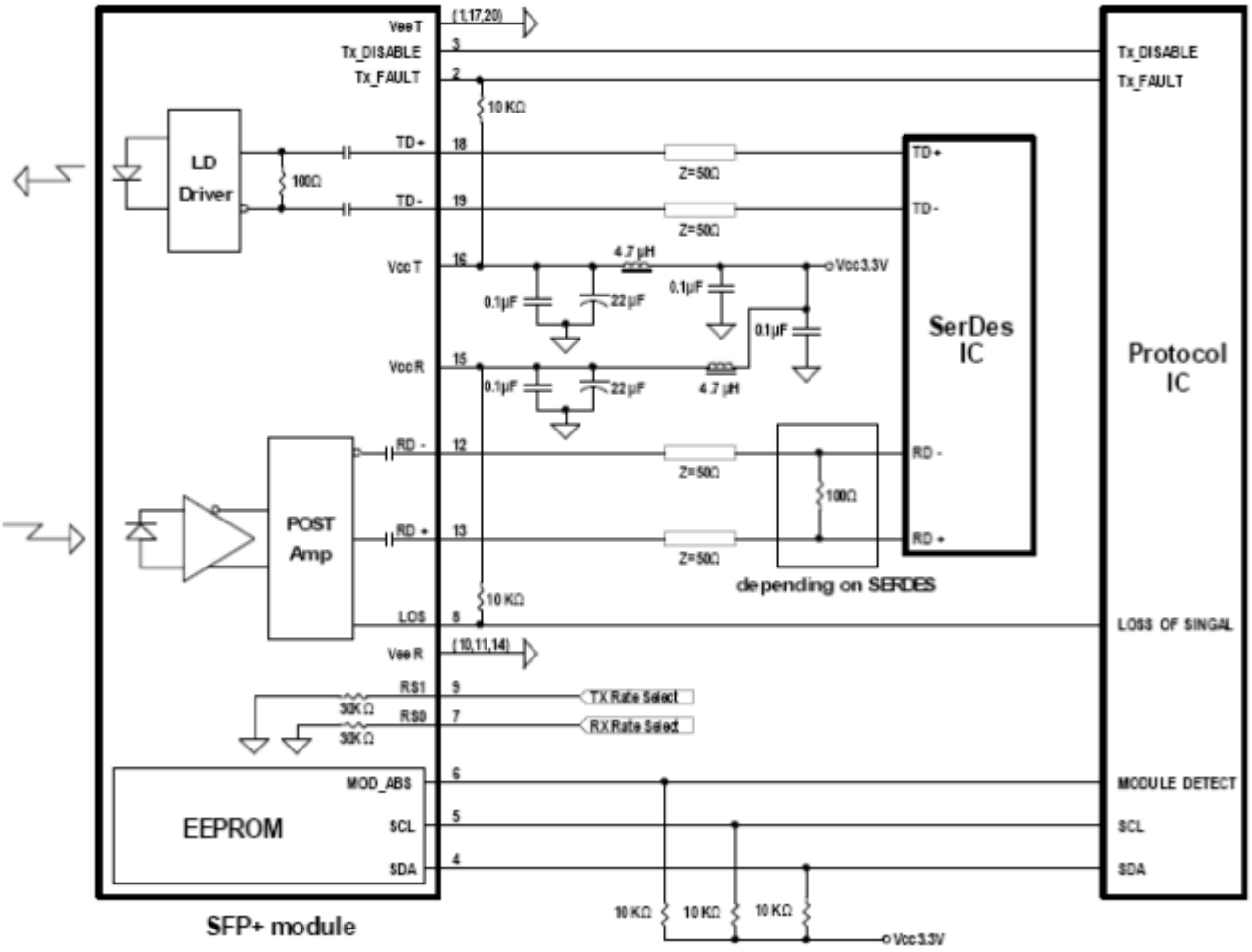
Figure 1 Pin out of connector block on host board.

Pin	Symbol	Name/Description	NOTE
1	V_{EET}	Transmitter Ground (Common with Receiver Ground)	1
2	T_{FAULT}	Transmitter Fault.	2
3	T_{DIS}	Transmitter Disable. Laser output disabled on high or open.	3
4	SDA	2-wire Serial Interface Data Line	4
5	SCL	2-wire Serial Interface Clock Line	4
6	MOD_ABS	Module Absent. Grounded within the module	4
7	RS0	Rate Select 0	5
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	6
9	RS1	No connection required	1
10	V_{EER}	Receiver Ground (Common with Transmitter Ground)	1
11	V_{EER}	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	V_{EER}	Receiver Ground (Common with Transmitter Ground)	1

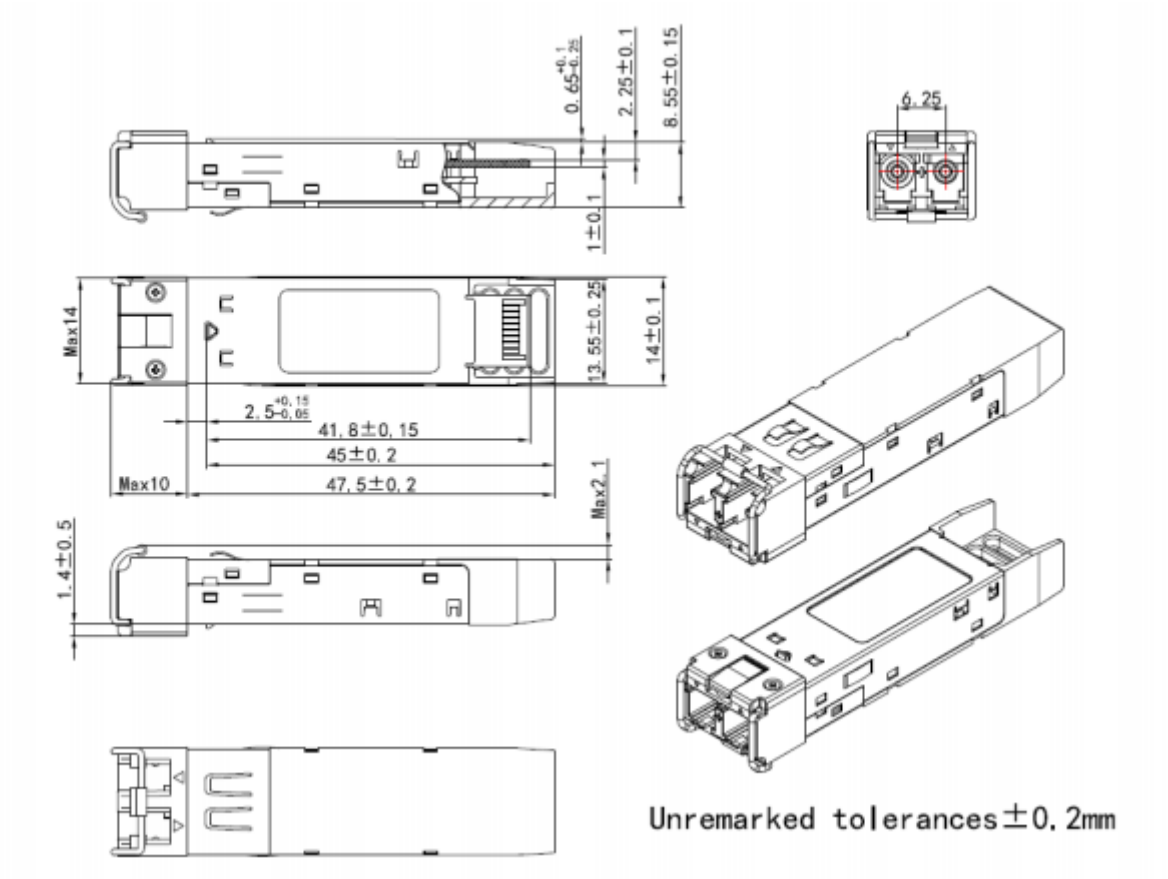
15	V_{CCR}	Receiver Power Supply	
16	V_{CCT}	Transmitter Power Supply	
17	V_{EET}	Transmitter Ground (Common with Receiver Ground)	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	V_{EET}	Transmitter Ground (Common with Receiver Ground)	1

Notes:

1. Circuit ground is internally isolated from chassis ground.
2. T_{FAULT} is an open collector/drain output, which should be pulled up with a 4.7kΩ– 10 kΩ resistor on the host board if intended for use. Pull up voltage should be between 2.0V to Vcc + 0.3V.A high output indicates a transmitter fault caused by either the TX bias current or the TX output power exceeding the preset alarm thresholds. A low output indicates normal operation. In the low state, the output is pulled to <0.8V.
3. Laser output disabled on T_{DIS} >2.0V or open, enabled on T_{DIS} <0.8V.
4. Should be pulled up with 4.7kΩ- 10kΩ on host board to a voltage between 2.0V and 3.6V. MOD_ABS pulls line low to indicate module is plugged in.
5. Internally pulled down per SFF-8431 Rev 4.1.
6. LOS is open collector output. It should be pulled up with 4.7kΩ – 10kΩ on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.



Outline Dimensions



Document Revision

Version No.	Date	Description
1.0	2019-04-24	Initial release
2.0	2021-02-11	Match format