

Alpha Bridge
ASFPP-10G-ER1310
Datasheet



Features

- Supports from 9.83Gb/s to 11.3 Gb/s bit rates
- Compliant with IEEE 802.3ae 10GBASE-LR/LW
- Compliant with 10GFC
- Compliant with SFF-8431
- Hot-pluggable SFP+ footprint
- 1310nm DFB laser transmitter and PIN receiver
- Duplex LC connector
- Built-in digital diagnostic functions
- Up to 40km on SMF
- Single power supply 3.3V
- RoHS Compliant
- Class 1 laser product complies with EN 60825-1
- Operating temperature range: 0°C to 70°C

Applications

- 10GBASE-LR/LW Ethernet
- 10G Fibre Channel

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Units	Note
Data Rate	DR	9.83	10.3125	11.3	Gb/s	1
Bit Error Rate	BER	12-Oct				
Operating Temperature	T_c	0		70	°C	2
Storage Temperature	T_{STO}	-40		85	°C	3
Supply Current	I_{CC}		250	270	mA	4
Input Voltage	VCC	3.14	3.3	3.46	V	
Maximum Voltage	VMAX	-0.5		4	V	4

Notes:

1. IEEE 802.3ae
2. Case temperature
3. Ambient temperature
4. For electrical power interface

Link Distances

Data Rate	Fiber Type	Distance Range (m)
9.83 –11.3 Gb/s	9/125umSMF	40

Transmitter Electro-optical Characteristics

$V_{CC}=3.14V$ to $3.46V$, $T_c=0^{\circ}C$ to $70^{\circ}C$

Parameter	Symbol	Min.	Typ.	Max.	Units	Notes
Output Optical Power	PTX	2		5	dBm	1
Optical Center Wavelength	λ_C	1290	1310	1330	nm	
Extinction Ratio	ER	3.5	5.5		dB	
Spectral Width (-20dB)	$\Delta\lambda$			0.6	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Relative Intensity Noise	RIN			-128	dB/ Hz	
Transmitter Dispersion Penalty	TDP			3.2	dB	
Transmitter Jitter		According to IEEE 802.3ae requirement				
Launch Power of OFF Transmitter	$POUT_OFF$			-30	dBm	1

Input differential impedance	<i>RIN</i>		100		Ω	
Differential data input swing	<i>VIN_PP</i>	180		700	mV	
Transmit disable voltage	<i>VD</i>	2		VCC	V	
Transmit enable voltage	<i>VEN</i>	VEE		VEE+0.8	V	

Notes:

1. Average

Receiver Electro-optical Characteristics

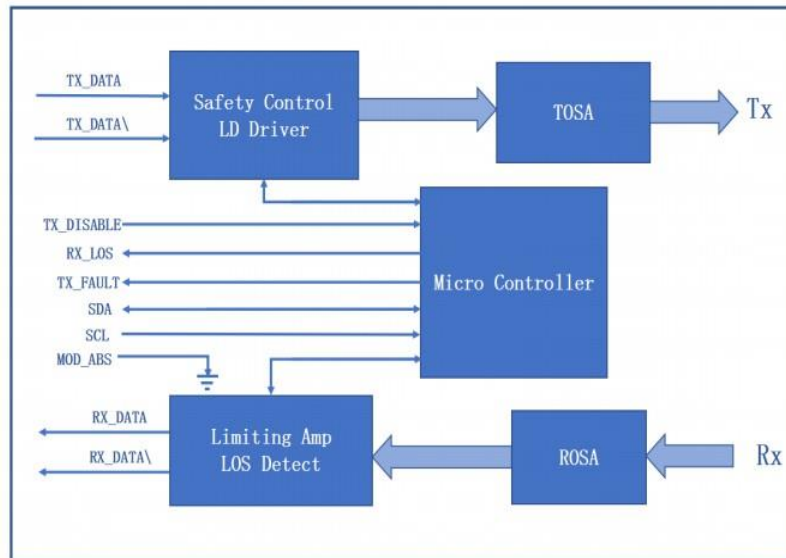
V_{CC}=3.14V to 3.46V, T_C=0°C to 70°C

Parameter	Test Point	Min	Typ.	Max	Units	Notes
Optical Center Wavelength	λ_c	1260		1600	nm	
Receiver Overload	POL	0.5			dBm	
Receiver Sensitivity @10.3Gb/s	RX_SEN1			-14.4	dBm	1
Receiver Reflectance	TRRX			-12	dB	
LOS Assert	LOSA	-30			dBm	
LOS De-Assert	LOSD			-16	dBm	
LOS Hysteresis	LOSH	0.5			dB	
Single ended data output swing	V _{OUT_PP}	300		850	mV	
Data output rise time/fall time (20%-80%)	t _r /t _f	28			ps	
LOS Assert	LOS _A	2		V _{CC HOST}	V	
LOS De-Assert	LOS _D	VEE		VEE+0.5	V	

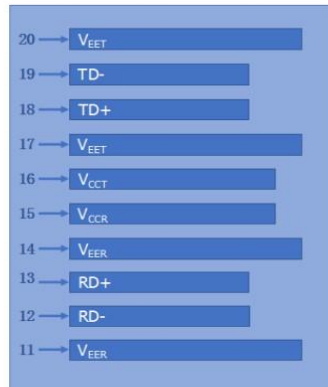
Notes:

1. Measured with the PRBS 2³¹-1 test mode, BER<10⁻¹²

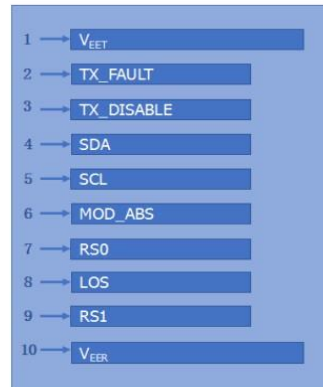
Block Diagram of Transceiver



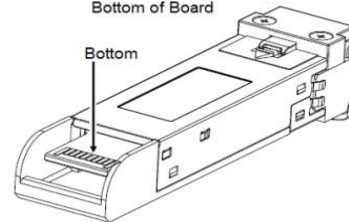
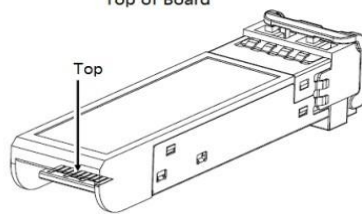
Pin assignment



Top of Board



Bottom of Board

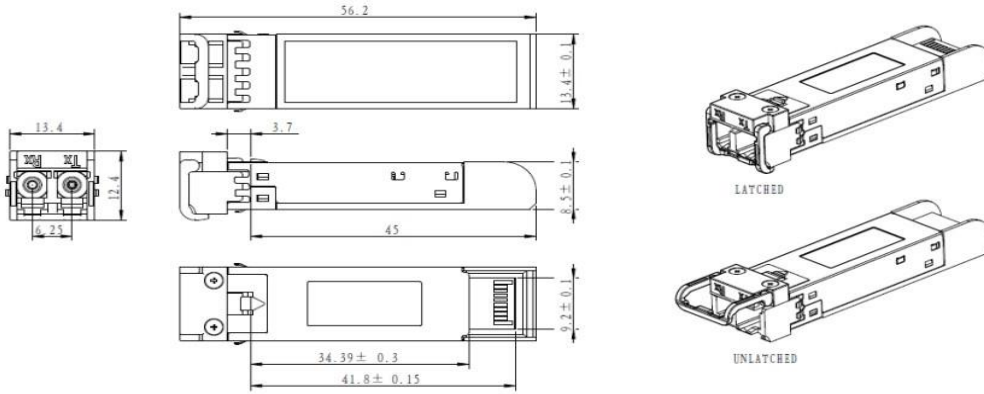


Pin	Symbol	Function/Description	Notes
1	VEET	Transmitter ground (common with receiver ground)	1
2	TX_FAULT	Transmitter Fault	
3	TX_DISABLE	Transmitter Disable. Laser output disabled on high or open	2
4	SDA	2-wire Serial Interface Data Line	3
5	SCL	2-wire Serial Interface Clock Line	3
6	MOD_ABS	Module Absent. Grounded within the module	3
7	RS0	No connection required	
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation	4
9	RS1	No connection required	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 isolated from chassis ground
2. Disabled: TDIS>2V or open, Enabled: TDIS<0.8V
3. Should Be pulled up with 4.7k –10k ohm on host board to a voltage between 2V and 3.6V
4. LOS is open collector output

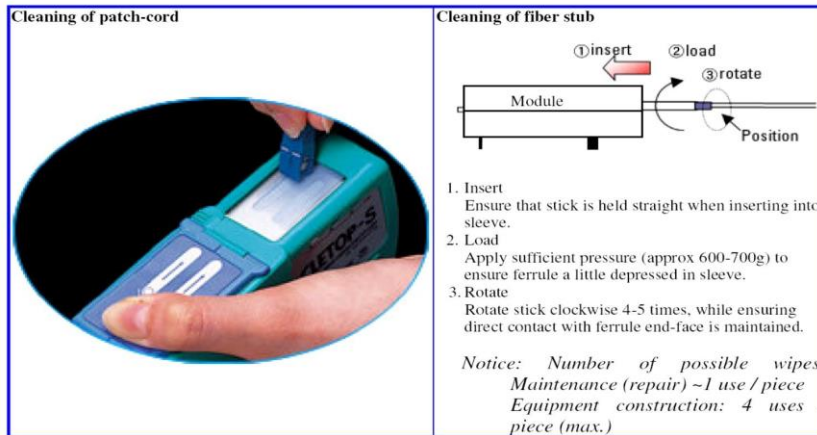
Dimensions



ALL DIMENSIONS ARE ±0.2mm UNLESS OTHERWISE SPECIFIED UNIT: mm

Optical Receptacle Cleaning Recommendations:

All fiber stubs inside the receptacle portions were cleaned before shipment. In the event of contamination of the optical ports, the recommended cleaning process is the use of forced nitrogen. If contamination is thought to have remained, the optical ports can be cleaned using a NTT international Cletop® stick type and HFE7100 cleaning fluid. Before the mating of patch-cord, the fiber end should be cleaned up by using Cletop® cleaning cassette.



Note: The pictures were extracted from NTT-ME website. And the Cletop® is a trademark registered by NTT-ME

Ordering Information

Model Number	Part Number	Voltage	Temperature
ASFPP-10G-ER13	OPAK-S40-13-CD	3.3V	0°C to 70°C

Note: All information contained in this document is subject to change without notice

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