

**Alpha Bridge
AB-25G-40
Datasheet**

Features

- Operating data rate up to 25.78 Gbps
- Up to 40km transmission distance
- High sensitivity APD photodiode and TIA
- Rate Adaptation
- LC single connector
- Hot pluggable 20pin connector
- Low power consumption <1.5 W
- Single +3.3V±5% power supply
- Compliant with SFF-8472
- Fully RoHS Compliant
- Operating case temperature: Commercial:
0°C ~ 70°C Industrial: -40°C ~ 85°C

Applications

- 25GE BASE-ER Ethernet
- CPRI Option 10/eCPRI

Standards

- SFF-8472
- SFF-8431, SFF-8432

Absolute Maximum Ratings

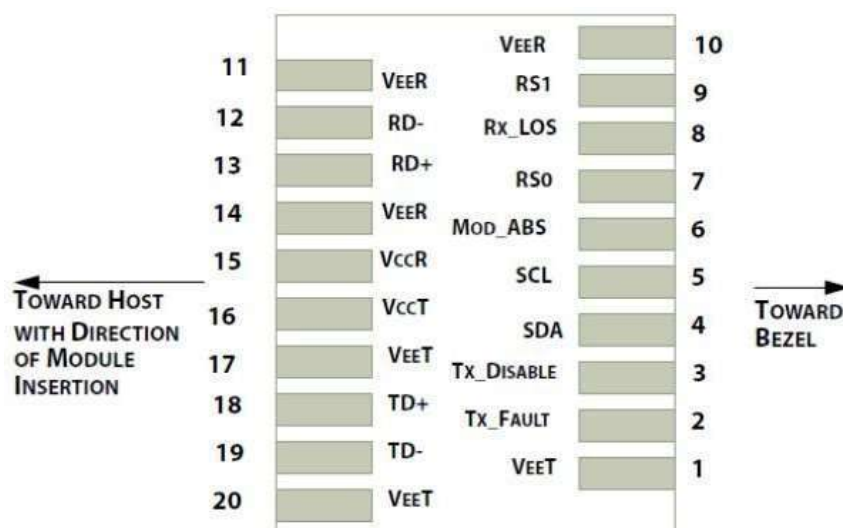
Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the data sheet. Exposure to absolute maximum ratings will cause permanent damage and/or adversely affect device reliability.

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Storage Temperature	TS	-40		+85	°C	
Operating Relative Humidity	RH	0		+85	%	No condensation

General Specifications

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Operating Case Temperature	Tc	-40	-	85	°C	
Power Supply Voltage	Vcc	3.15	3.3	3.45	V	
Maximum Power Dissipation	PD	-	-	1.5	W	
Lane Baud Rate	BRLANE	-	25.78	-	Gbps	
Max Supported Link Length	L	-	-	40	Km	

Pin Descriptions



Pin Definitions

Pin Number	Symbol	Name	Description
1,17,20	VeeT	Transmitter Signal Ground	Connected to signal ground on the host board.
2	TX Fault	Transmitter Fault Out (OC)	Module transmitter fault output.
3	TX Disable	Transmitter Disable In (LVTTTL)	Module transmitter disable control.
4	SDA	Module Definition Identifiers	Serial ID with SFF 8472 Diagnostics Module Definition pins should be pulled up to Host Vcc with 10 kΩ resistors.
5	SCL		
6	MOD-ABS		
7	RS0	Receiver Rate Select (LVTTTL) Transmitter Rate Select (LVTTTL)	Rate select 0(Rx): Low=CDR Bypass; High=CDR Select Rate select 1(Tx): Low=CDR Bypass; High=CDR Select
9	RS1		
8	LOS	Loss of Signal Out (OC)	Receiver loss of signal.
10,11,14	VeeR	Receiver Signal Ground	Connected to signal ground on the host board.
12	RD-	Receiver Negative DATA Out (CML)	Receiver inverted data output, internally AC coupled and terminated
13	RD+	Receiver Positive DATA Out (CML)	Receiver non-inverted data output, internally AC coupled and terminated.
15	VccR	Receiver Power Supply	Receiver Power 3.3V Supply.
16	VccT	Transmitter Power Supply	Transmitter Power 3.3V Supply.
18	TD+	Transmitter Positive DATA In (CML)	Transmitter non-inverted data input, internally AC coupled and terminated.
19	TD-	Transmitter Negative DATA In (CML)	Transmitter inverted data Input, internally AC coupled and terminated.

Digital Diagnostic Functions

Parameter	Symbol	Min	Typical	Max	Units	Notes
Bit Rate (per lane)	BR	-	25.78	-	Gb/s	
Electrical Bit Error Rate (per lane)	BER	-	-	5E-5	-	

Electrical Characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Transmitter						
Input Differential Impedance	RIN		-	100	-	Ω
Single-ended Data Input Swing	VIN		90	-	450	mVp-p
Transmit Disable Voltage	VDIS		2	-	VCCHOST	V
Transmit Enable Voltage	VEN		VEE	-	VEE+0.8	V
Transmit Fault Assert Voltage	VFA		2	-	VCCHOST	V
Transmit Fault De-Assert Voltage	VFDA		VEE	-	VEE+0.4	V
Receiver						
Single-ended Data Output Swing	VOD		200	-	450	mVp-p
LOS Fault	VLOSFT		2	-	VCCHOST	V
LOS Normal	VLOS NR		VEE	-	VEE+0.4	V

Optical Characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Transmitter						
Center Wavelength	λ		1260	1270	1280	nm
Center Wavelength	λ		1300	1310	1320	nm
Average Output Power	Pav		0	-	6	dBm
Spectral Width (-20dB)	σ		-	-	1	nm
Extinction Ratio	ER		3.5	-	-	dB
Side Mode Suppression Ratio	SMSR		30	-	-	dB
Average Launch Power of OFF Transmitter	POFF		-	-	-30	dBm
Relative Intensity Noise	RIN		-	-	-128	dB/Hz
Receiver						
Center Wavelength	λ_C		1300	1310	1320	nm
Center Wavelength	λ_C		1260	1270	1280	nm
Receiver Sensitivity	SEN	Note1	-	-	-19	dBm
Receiver Overload	Pmax		-5	-	-	dBm
Receiver Reflectance			-	-	-12	dB
LOS Assert	LOSA		-35	-		dBm
LOS De-Assert LOS	LOSD		-	-	-21	dBm
LOS Hysteresis			0.5	-		dB

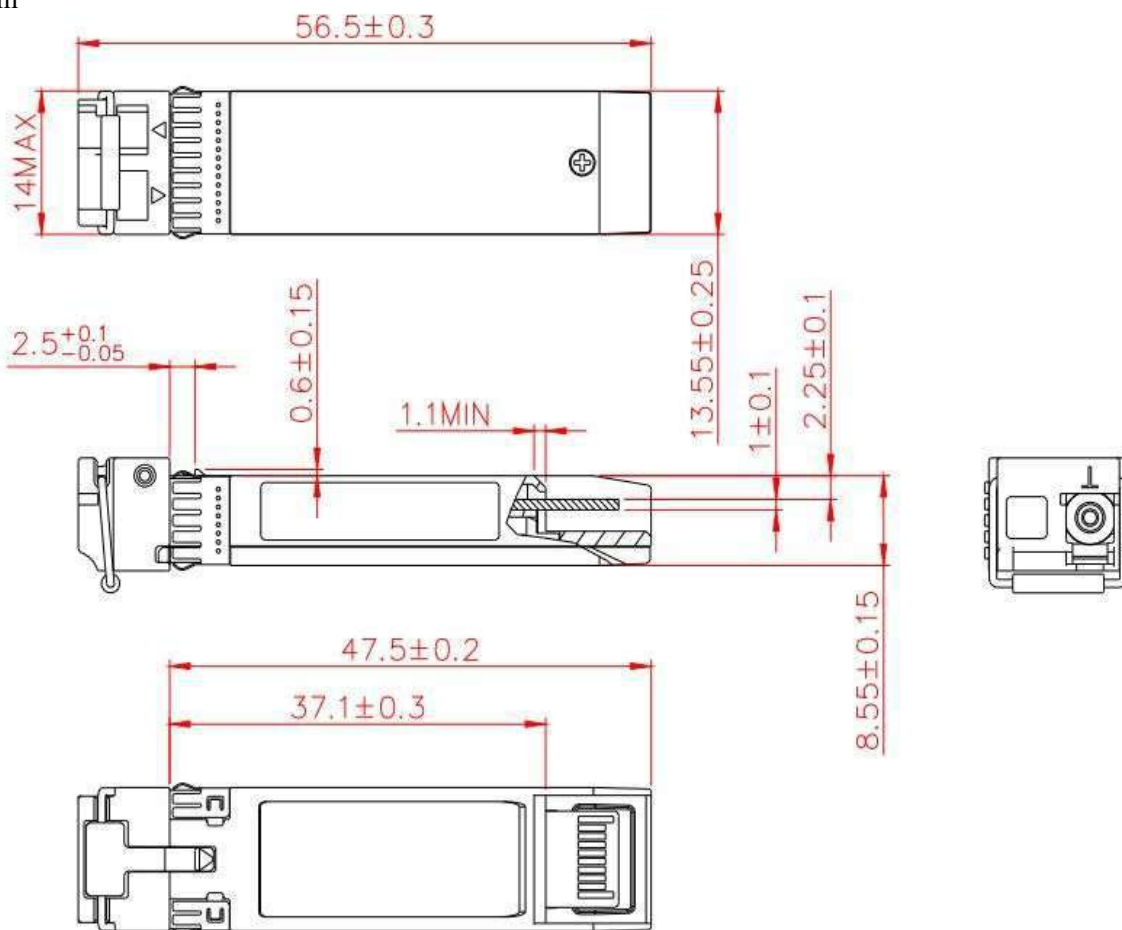
Note1: Measured at 25.78125Gb/s, ER>3.5dBm, PRBS 231-1 and BER better than or equal to 5E-5;

DIGITAL DIAGNOSTIC SPECIFICATION

Parameter	Symbol	Accuracy	Units	Notes
Transceiver Case Temperature	DMI_TEMP	± 5	$^{\circ}\text{C}$	
Supply voltage monitor absolute error	DMI_VCC	± 3	%	
Channel Bias current monitor	DMI_IBIAS	± 10	%	
Channel RX power monitor absolute error	DMI_RX	± 3	dB	
Channel TX power monitor absolute error	DMI_TX	± 3	dB	

MECHANICAL SPECIFICATIONS

Unit: mm



Ordering information

Part Number	Product Description
AB-25G-40	25G SFP28 1310nm 40km Dual LC

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