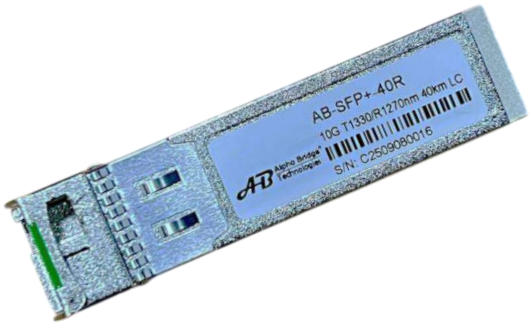
Alpha Bridge AB-SFP+-40R Datasheet

Alpha Bridge® Technologies

AB-SFP+-40R Datasheet



Features

- Support 9.95Gb/s to 10.3Gb/s data rates
- Simplex LC Connector Bi-Directional SFP+ Optical Transceiver
- Single 3.3V Supply
- Up to 40km on 9/125um SMF
- 1330nm DFB Laser transmitter,1270nm receiver
- SFP+ MSA SFF-8431 Compliant
- Digital Diagnostic SFF-8472 Compliant
- RoHS compliant and Lead-Free
- Operating case temperature: 0°C ~70°C

Applications

- 10GBASE-ER at 10.3125Gbps
- 10GBASE-EW at 9.953Gbps
- Other Optical Links

Description

The SFP+ BWDM series single mode transceiver is a small form factor pluggable module for duplex optical data communications such as 10GBASE-ER/EW defined by IEEE 802.3ae. It is with the SFP+ 20-pin connector to allowhot plug capability.

The SFP+ BWDM module is designed for single-mode fiber and operates at a nominal wavelength of 1330nm; The transmitter section uses a multiple quantum well DFB, which is class 1 laser compliant according to International Safety Standard IEC-60825. The receiver section uses an integrated InGaAs detector (IDP) mountedin an optical header and a limiting post-amplifier IC

Absolute Maximum Ratings

Parameters	Symbol	Min.	Max.	Units
Supply Voltage	*VCC*	-0.5	3.6	V
Storage Temperature	*Tc*	-40	85	°C
Operating Case Temperature	*Tc*	0	70	°C
Relative Humidity	*RH*	0	85	%

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Units
Supply Voltage	*VCC*	3	3.3	3.6	V
Supply Current	*Icc*		300	450	mA
Operating Case Temperature	*TC*	0	25	70	°C
Module Power Dissipation	*Pm*	-	1	1.5	W

Notes:

1. Supply current is shared between VCCTX and VCCRX
2. In-rush is defined as current level above steady state current requirements.

Diagnostics

Parameters	Symbol	Accuracy	Unit	Notes
Temperature monitor absolute error	*DMI_Temp*	± 3	°C	
Supply voltage monitor absolute error	*DMI_VCC*	±0.3	V	
TX power	*DMI_TX*	± 3 dB	dBm	
RX power	*DMI_RX*	± 3 dB	dBm	
Bias Current monitor	*DMI_Ibias*	± 10%	mA	

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Units	Notes
Transmitter						
Optical Wavelength	λC	1320	1330	1340	nm	
Side Mode Suppression Ratio	*SMSR*	30			dB	
Spectral Width (-20dB)	$\Delta\lambda$			1	nm	
Average Output Power	*Pop*	1		5	dBm	1
Extinction Ratio	*ER*	3.5			dB	
Eye Mask	*Compliant with IEEE 802.3*					
Transmitter Dispersion Penalty	*TDP*			3.2	dB	
Launch Power of OFF Transmitter	*POUT_OFF*			-30	dBm	
Relative Intensity Noise	*RIN*			-128	dB/Hz	
Receiver						
Center wavelength	λC	1260	1270	1280	nm	
Average Receiver Power	*PSENS*			-15	dBm	1,2
Receiver Overload	P_{MAX}			0.5	dBm	
LOS Assert	LOS_A	-30			dBm	
LOS De-assert	LOS_D			-15	dBm	
LOS Hysteresis	LOS_H	0.5			dB	

Note:

1. Average Receiver Power (Min) is informative and not the principal indicator of signal strength. A receivedpower below this value cannot be compliant.
2. Measured with a PRBS2^{31}-1 test pattern @10.3125Gbps, BER≦10-12

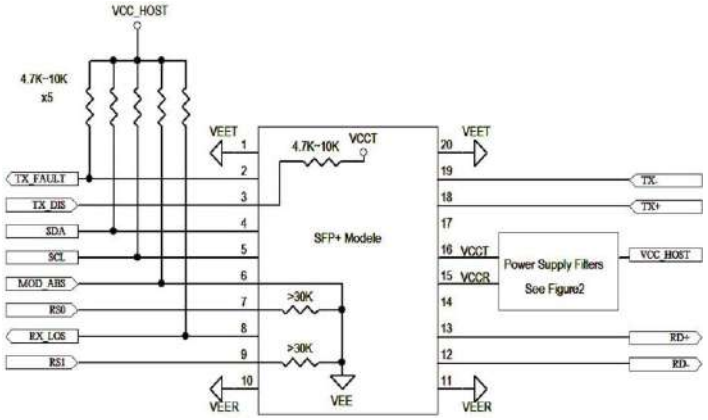
Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Units	Note
Transmitter						
Input differential impedance	R_{IN}		100		Ω	2
Single-ended data input swing	*Vin_PP*	150		1200	mVpp	
Transmit Disable Voltage	V_D	2		Vcc	V	
Transmit Enable Voltage	V_{EN}	VEE		VEE+0.8	V	3
Receiver						
Output Differential impedance	*Rout*		100		Ω	2
Single-Ended Data Output Swing	V_{OUT_PP}	300		700	mV	4
LOS Fault	VLOS fault	2		VCCHOST	V	5
LOS Normal	VLOS norm	VEE		VEE+0.8	V	5

Notes:

1. Module power consumption never exceeds 1W.
2. AC coupled.
3. Or open circuit.
4. Into 100-ohm differential termination.
5. LOS is LVTTL. Logic 0 indicates normal operation; logic1 indicates no signal detected.

Block Diagram of Transceiver



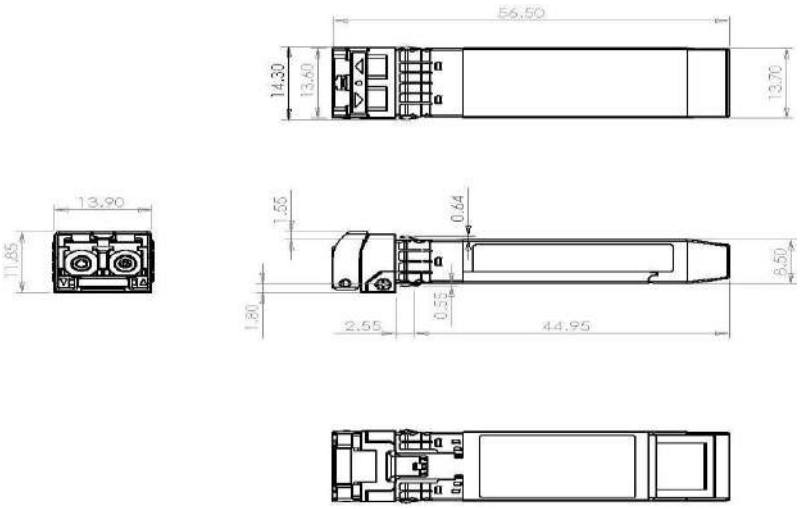
Pin Descriptions

Pin	Name	Description	Notes
1	V_{EET}	Transmitter ground (common with receiver ground)	1
2	TX_FAULT	Transmitter Fault	2
3	TX_DISABLE	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	No connection required	
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation	5
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:

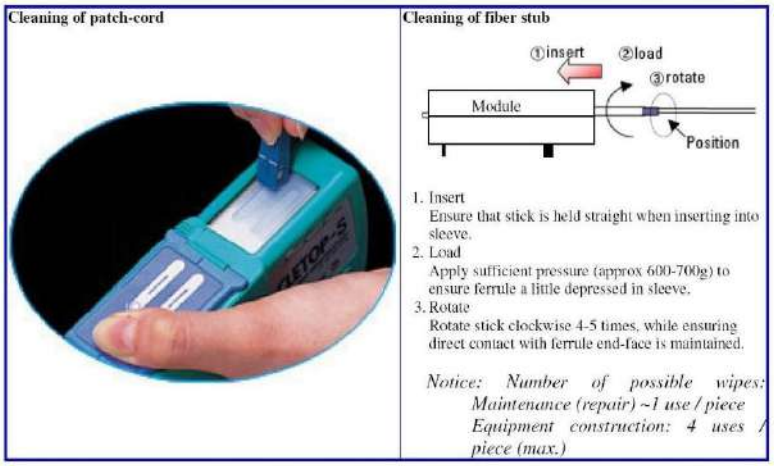
1. Module circuit ground is isolated from module chassis ground within the module.
2. should be pulled up with 4.7k – 10k ohms on host board to a voltage between 3.15Vand 3.6V.
3. TX Disable is an input contact with a 4.7k~10kΩ pullup to VccT inside the module.
4. Mod_ABS is connected to VeeT or VeeR in the SFP+ module. The host may pull this contact up to Vcc_Host with a resistor in the range 4.7 kΩ to10 kΩ. Mod_ABS is asserted “High” when the SFP+ module is physicallyabsent from a host slot.
5. RS0 and RS1 are module inputs and are pulled low to VeeT with > 30 kΩ resistors in the module.

Dimensions



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, theoptical 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	Descriptions
AB-SFP+-40R	10Gbps, Tx1330/Rx1270nm, 40km, LC, DDM, SFP+ 0ºC ~ +70ºC

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