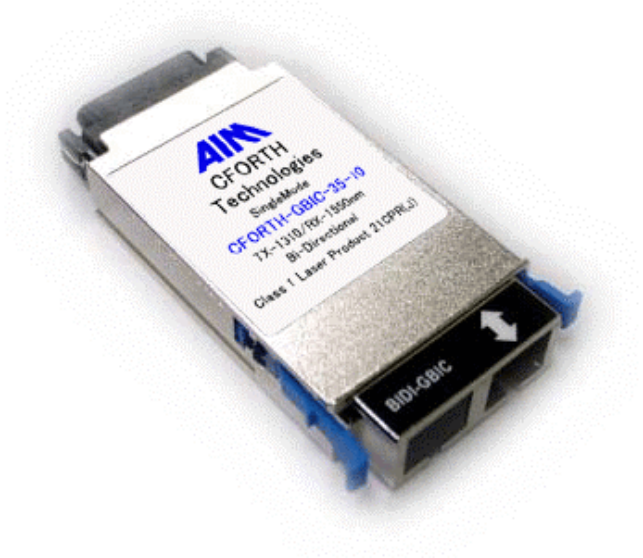
Bi-Directional Transceiver

GBIC, SC Simplex Connector , 3.3V/5V

1.0625 Gbps Fiber Channel/1.25 Gbps Gigabit Ethernet



Features

- Compliant with Gigabit Interface Converter Specification
- Compliant with IEEE802.3z Gigabit Ethernet standard
- Compliant with Fiber Channel standard
- SCA-2 Host connector
- Simplex SC connector
- Differential PECL inputs and outputs
- Dual power supply 3.3V/5V
- TTL signal detect indicator
- Hot Pluggable
- Class 1 laser product complies with EN 60825-1

Ordering Information

PART NUMBER	*TX/RX*	*VOLTAGE*	*TEMPERATURE*	*LD Type*	*Distance*
CFORTH-GBIC-35-10	1310/1550	3.3V/5V	0℃ to 70℃	1310 FP	10km
CFORTH-GBIC-53-10	1550/1310	3.3V/5V	0℃ to 70℃	1550 DFB	10km
CFORTH-GBIC-35-20	1310/1550	3.3V/5V	0℃ to 70℃	1310 FP	20km
CFORTH-GBIC-53-20	1550/1310	3.3V/5V	0℃ to 70℃	1550 DFB	20km
CFORTH-GBIC-35-40	1310/1550	3.3V/5V	0℃ to 70℃	1310 DFB	40km
CFORTH-GBIC-53-40	1550/1310	3.3V/5V	0℃ to 70℃	1550 DFB	40km
CFORTH-GBIC-35-60	1310/1550	3.3V/5V	0℃ to 70℃	1310 DFB	60km
CFORTH-GBIC-53-60	1550/1310	3.3V/5V	0℃ to 70℃	1550 DFB	60km

Absolute Maximum Ratings

PARAMETER	SYMBOL	MIN	MAX	UNITS	NOTE
Storage Temperature	T_S	–40	85	°C	
Supply Voltage	*Vcc*	–0.5	6.0	V	
Input Voltage	V_{IN}	–0.5	*Vcc*	V	
Output Current	I_o	---	50	mA	
Operating Current	I_{OP}	---	400	mA	

Recommended Operating Conditions

PARAMETER	SYMBOL	MIN	MAX	UNITS	NOTE
Ambient Operating Temperature	T_{AMB}	0	70	°C	
Supply Voltage	*Vcc*	3.1	5.25	V	
Supply Current	$I_{TX} + I_{RX}$	---	300	mA	

Transmitter Electro-optical Characteristics

***Vcc* = 3.1 V to 5.25 V, T_A = 0 °C to 70 °C**

PARAMETER		SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Output Optical Power 9/125 μm fiber	CFORTH-GBIC-35-10 CFORTH-GBIC-53-10	P_{out}	-9	-6	-3	dBm	Average
	CFORTH-GBIC-35-20 CFORTH-GBIC-53-20	P_{out}	-8	-5	-3	dBm	
	CFORTH-GBIC-35-40 CFORTH-GBIC-53-40	P_{out}	-3	0	+2	dBm	
	CFORTH-GBIC-35-60	P_{out}	0	---	+5	dBm	
	CFORTH-GBIC-53-60	P_{out}	-2	---	+4	dBm	
Extinction Ratio	CFORTH-GBIC-35-10 CFORTH-GBIC-53-10 CFORTH-GBIC-35-20 CFORTH-GBIC-53-20	*ER*	9	---	---	dB	
	CFORTH-GBIC-35-40 CFORTH-GBIC-53-40 CFORTH-GBIC-35-60 CFORTH-GBIC-53-60	*ER*	7	---	---	dB	
Center Wavelength	CFORTH-GBIC-35-10 CFORTH-GBIC-35-20	λ_C	1270	1310	1355	nm	
	CFORTH-GBIC-53-10 CFORTH-GBIC-53-20 CFORTH-GBIC-53-40 CFORTH-GBIC-53-60	λ_C	1530	1550	1570	nm	
	CFORTH-GBIC-35-40 CFORTH-GBIC-35-60	λ_C	1290	1310	1330	nm	

Spectral Width (RMS)	CFORTH-GBIC-35-10 CFORTH-GBIC-35-20	$\Delta\lambda$	---	---	3	nm	
Spectral Width (-20dB)	CFORTH-GBIC-53-10 CFORTH-GBIC-53-20 CFORTH-GBIC-35-40 CFORTH-GBIC-53-40 CFORTH-GBIC-35-60 CFORTH-GBIC-53-60	$\Delta\lambda$	---	---	1.0	nm	
Side Mode Suppression Ratio	CFORTH-GBIC-53-10 CFORTH-GBIC-53-20 CFORTH-GBIC-35-40 CFORTH-GBIC-53-40 CFORTH-GBIC-35-60 CFORTH-GBIC-53-60	*SMSR*	30	---	---	dB	
Rise/Fall Time, (20–80%)		$T_{r,\,f}$	---	---	260	ps	
Relative Intensity Noise		*RIN*	---	---	–120	dB/Hz	
Total Jitter		*TJ*	---	---	227	ps	
Output Eye		Compliant with IEEE802.3z					
Max. P_{out} TX-DISABLE Asserted		P_{OFF}	---	---	–45	dBm	
Differential Input Voltage		V_{DIFF}	0.4	---	2.0	V	
Transmit Fault Output-Low		TX_FAULT_L	0.0	---	0.5	V	
Transmit Fault Output-High		TX_FAULT_H	2.4	---	V_{CC}	V	
Time to initialize, include reset of TX_FAULT		*t_init*	---	---	300	ms	
TX_FAULT from fault to assertion		*t_fault*	---	---	100	μs	
TX_DISABLE time to start reset		*t_reset*	10	---	---	μs	

Receiver Electro-optical Characteristics

***Vcc* = 3.1 V to 5.25 V, T_A = 0 °C to 70 °C**

PARAMETER		*SYMBOL*	*MIN*	*TYP.*	*MAX*	*UNITS*	*NOTE*
Optical Input Power-maximum	CFORTH-GBIC-35-10 CFORTH-GBIC-53-10 CFORTH-GBIC-35-20 CFORTH-GBIC-53-20	P_{IN}	-3	---	---	dBm	BER < 10^{-12}
	CFORTH-GBIC-35-40 CFORTH-GBIC-53-40 CFORTH-GBIC-35-60	P_{IN}	-1	---	---	dBm	BER < 10^{-12}
	CFORTH-GBIC-53-60	P_{IN}	0	---	---	dBm	BER < 10^{-12}
Optical Input Power-minimum (Sensitivity)	CFORTH-GBIC-35-10 CFORTH-GBIC-53-10	P_{IN}	---	-25	–21	dBm	BER < 10^{-12}
	CFORTH-GBIC-35-20 CFORTH-GBIC-53-20	P_{IN}	---	-25	-23	dBm	
	CFORTH-GBIC-35-40 CFORTH-GBIC-53-40	P_{IN}	---	-25	-23	dBm	
	CFORTH-GBIC-35-60	P_{IN}	---	-26	-24	dBm	
	CFORTH-GBIC-53-60	P_{IN}	---	-27	-25	dBm	
Operating Center Wavelength	CFORTH-GBIC-35-10 CFORTH-GBIC-35-20 CFORTH-GBIC-35-40 CFORTH-GBIC-35-60	λ_C	1480	---	1600	nm	
	CFORTH-GBIC-53-10 CFORTH-GBIC-53-20 CFORTH-GBIC-53-40 CFORTH-GBIC-53-60	λ_C	1260	---	1360	nm	
Optical Return Loss		*ORL*	14	---	---	dB	
Signal Detect-Asserted	CFORTH-GBIC-35-10 CFORTH-GBIC-53-10	P_A	---	---	–20	dBm	
	CFORTH-GBIC-35-20 CFORTH-GBIC-53-20	P_A	---	---	-23	dBm	
	CFORTH-GBIC-35-40 CFORTH-GBIC-53-40	P_A	---	---	-23	dBm	
	CFORTH-GBIC-35-60	P_A	---	---	-24	dBm	
	CFORTH-GBIC-53-60	P_A	---	---	-25	dBm	
Signal Detect-Deasserted		P_D	–35	---	---	dBm	
Differential Output Voltage		V_{DIFF}	0.5	---	1.2	V	
Data Output Rise, Fall Time (20–80%)		$T_{r,f}$	---	---	0.35	ns	
Receiver Loss of Signal Output Voltage-Low		RX_LOS_L	0	---	0.5	V	
Receiver Loss of Signal Output Voltage-High		RX_LOS_H	2.4	---	V_{CC}	V	

Description

Transmitter and Receiver Optical Sub-assembly Section

A 1550 nm InGaAsP laser and an InGaAs PIN photodiode integrate with an WDM filter to form a bi-directional single fiber optical subassembly (OSA). The laser of OSA is driven by a LD driver IC which converts differential input PECL logic signals into an analog laser driving current. And, The photodiode of OSA is connected to a circuit providing post-amplification quantization, and optical signal detection.

TX_FAULT

When sensing an improper power level in the laser driver, the GBIC set this signal high and turns off the Laser. TX_FAULT can be reset with the TX_DISABLE line. The signal is in TTL level.

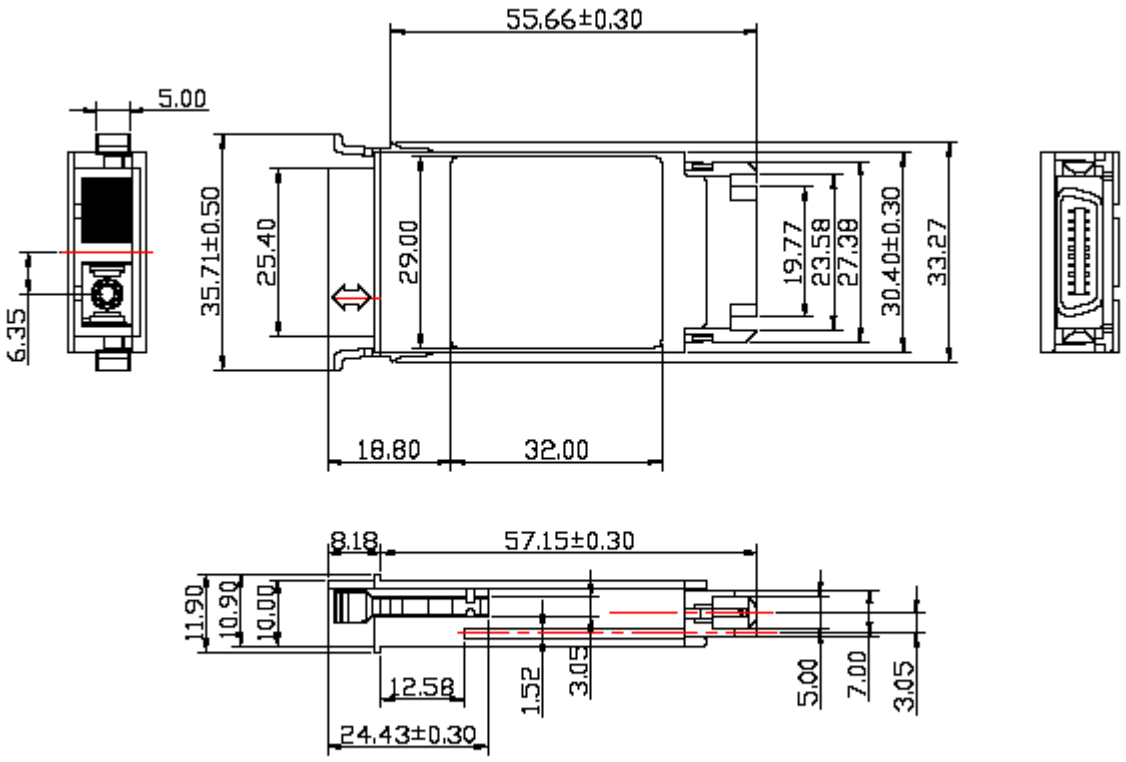
TX_DISABLE

The TX_DISABLE signal is high (TTL logic “1”) to turn off the laser output. The laser will turn on within 1ms when TX_DISABLE is low (TTL logic “0”).

Receive Loss (RX_LOS)

The RX_LOS is high (logic “1”) when there is no incoming light from the companion transceiver. This signal is normally used by the system for the diagnostic purpose. The signal is operated in TTL level.

Dimensions



ALL DIMENSIONS ARE±0.20mm UNLESS OTHERWISE SPECIFIED

Unit: mm

Eye Safety

AIM CFORTH series single mode transceiver is a class 1 laser product. It complies with EN 60825-1 and FDA 21 CFR 1040.10 and 1040.11. In order to meet laser safety requirements the transceiver shall be operated within the Absolute Maximum Ratings.

Caution

All adjustments have been done at the factory before the shipment of the devices. No maintenance and user serviceable part is required. Tampering with and modifying the performance of the device will result in voided product warranty.

Required Mark

Class 1 Laser Product
Complies with
21 CFR 1040.10 and 1040.11

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