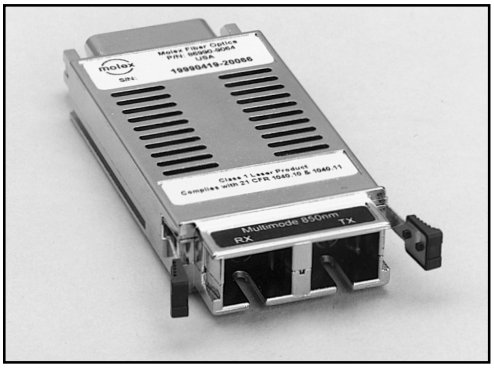
Fibre Channel Transceiver, 850nm GBIC



Features & Benefits

- Complies with all Fibre Channel requirements
- Meets all requirements of GBIC specifications
- Serial ID interface (Annex D, Mod Definition 4)
- Data rates to 1.063 Gbps
- Link distances up to 500m
- Single +5V power supply
- ECL/PECL compatible

Applications

- Data communication networks
- Telecommunication networks
- Broadband deployments
- Cross-connects
- ATM switches
- Disk array links
- Workstation & mainframe backbones
- Network interface cards

The Molex Fibre Channel 850nm GBIC is a compact optical transceiver capable of optical gigabit transmission over inexpensive multimode fiber for distances up to 500m.

Innovative design principles allow this product to meet stringent EMI requirements as well as all CDRH and IEC 825-1 Class 1 eye safety requirements. The GBIC module provides complete serial ID (Annex D, Module Definition 4) compliance. A long wavelength version of this device is also available.

Optical Performance Specifications

Parameter	Symbol	Min.	Typ.	Max.	Units	Notes / Conditions
Data Rate	-	0.100	-	1.063	Gbps	-
Fiber Length	-	2	-	500	m	50μm core
		2	-	300	m	62.5μm core
Input DC Voltage	V_{cc}	+4.75	+5.0	+5.25	V	V_{cc} referenced to GND
Maximum DC Voltage	V_{max}	-	-	6	V	Laser safety circuit will operate from 0V to V_{max}
Supply Current (Transmitter and Receiver)	I_{tx}	-	-	300	mA	Steady state, after t_{init}
Surge Current	I_{surge}	-	-	30	mA	Hot plug, above actual steady state current
Input and Output Differential Impedance	Z_{in}/Z_{out}	-	-	-	Ω	Nominal:150Ω
Input Voltage	V_{in}	650	-	2000	mV_{pp}	AC coupled ECL levels
Differential Skew	-	-	-	20	ps	-
Data Output Voltage	V_{out}	400	720	1000	mV_{pp}	AC coupled ECL levels
PECL Skew	-	-	-	205	ps	-
Transmitter Center Wavelength	λ_{tx}	770	850	860	nm	-
Spectral Width (RMS)	$\Delta\lambda$	-	-	0.85	nm	Transmitter
Optical Output Power	P_o	-9.5	-	-4	dBm	Average power, OFSTP-2, at 830nm
Optical Rise/Fall Time	t_r / t_f	-	-	260	ps	20% - 80%
Transmitter Extinction Ratio	-	9	-	-	dB	Transmitter
Eye Opening	-	57	-	-	%	-
Duty Cycle	-	-	52	-	%	-
Bit Error Rate	BER	-	-	10^{-12}	-	at P_{in} = -16 dBm
Jitter	-	-	-	-	-	100-M5-SN-I and 100-M6-SN-I compliant

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Optical Performance Specifications

Parameter		Symbol	Min.	Typ.	Max.	Units	Notes / Conditions
Optical Input Wavelength		λ_{RX}	770	-	860	nm	-
Control and Sense Signals From Host Board to GBIC	Low	V_{IL}	0	-	0.8	V	4.7K to 10K, pull-up to V_{cc}, resistor provided internally in the GBIC
	High	V_{IH}	2.0	-	V_{cc}+0.3		
Control and Sense Signals From Host GBIC to Board	Low	V_{OL}	0.0	-	0.5	V	4.7K to 10K, pull-up to V_{cc}host, which can be either 3.3V or 5V, resistor provided externally on the host board
	High	V_{OH}	V_{cc}host -0.5	-	V_{cc}host +0.3		
Input Sensitivity		P_{in}	-16	-	-	dBm	-
RX_LOS Deasserted		P_d	-30	-	-16	dBm	-
RX_LOS Hysteresis		$P_a - P_d$	1	-	4	dB	No chattering
RX_LOS Assert Delay		t_{loss_on}	-	-	100	μs	From detection loss of light to assertion
RX_LOS Deassert Delay		t_{loss_off}	-	-	100	μs	From detection presence of light to deassertion
TX DISABLE Assert Time		T_{off}	-	-	10	μs	From rising edge of TX DISABLE to fall of output signal below 10% of nominal
TX DISABLE Deassert Time		T_{on}	-	-	1	ms	From falling edge of TX DISABLE to rise of output signal above 10% of nominal
Initialization Time, Including Reset of TX FAULT		T_{init}	-	-	300	ms	From power on or hot plug after V_{dd} > 4.75V or from negation of TX DISABLE during reset of TX FAULT
TX FAULT		T_{fault}	-	-	100	μs	From occurrence of fault (output safety violation or V_{dd} < 4.5V)
Optical Output TX DISABLE Asserted		P_{off}	-	-	-35	dBm	Into fiber, average, steady state
TX DISABLE		T_{reset}	10	-	-	μs	TX DISABLE HIGH before TX DISABLE set LOW
Operating Temperature		T_{op}	0	-	70	°C	-
Operating Humidity		-	8	-	80	%RH	-
Storage Temperature		T_{store}	-40	-	85	°C	-
Relative Intensity Noise		RIN	-	-	-116	dB/Hz	-
Eye Safety		-	-	-	-	-	Class 1 laser product
GBIC Insertion Force		-	0	-	20	N	-
GBIC Extraction Force		-	0	-	15	N	-
GBIC Retention Force		-	130	N/A	N/A	N	Latches locked
Insertion/Removal Cycles		-	100	-	-	cycles	-
Average Failure Rate		AFR	-	-	-	-	TBD

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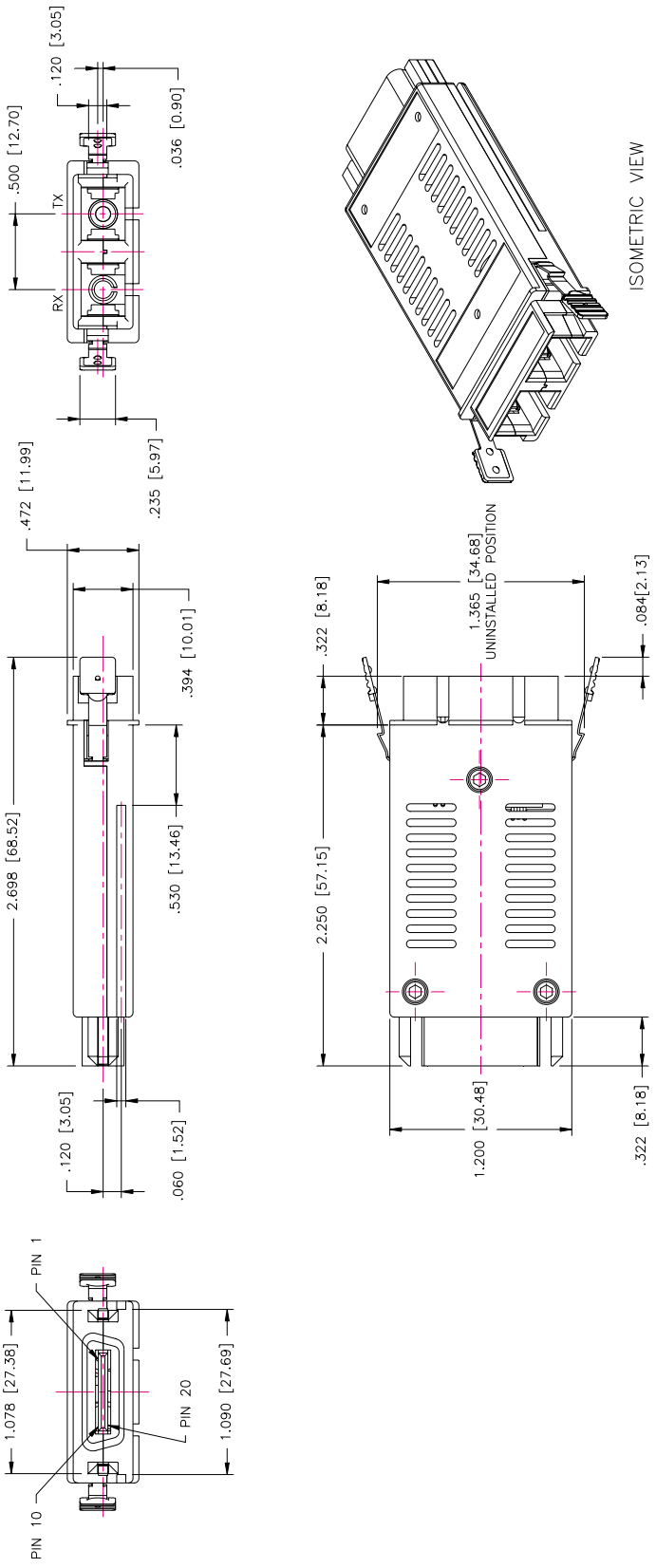
Mechanical Dimensions



All dimensions in inches [**mm**]

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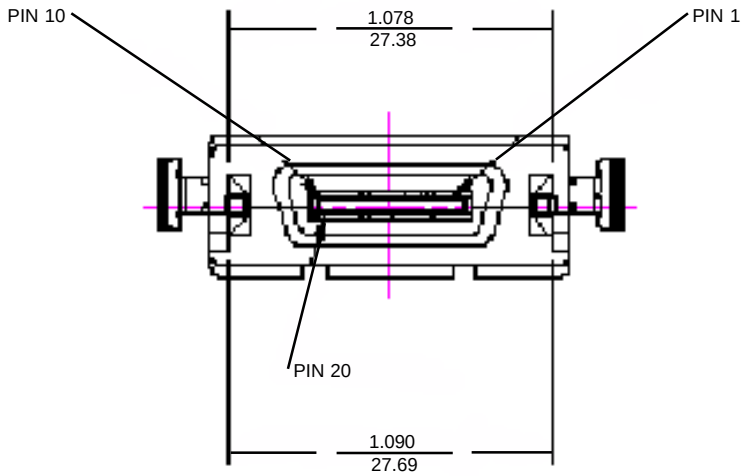


All dimensions in INCHES / **mm**

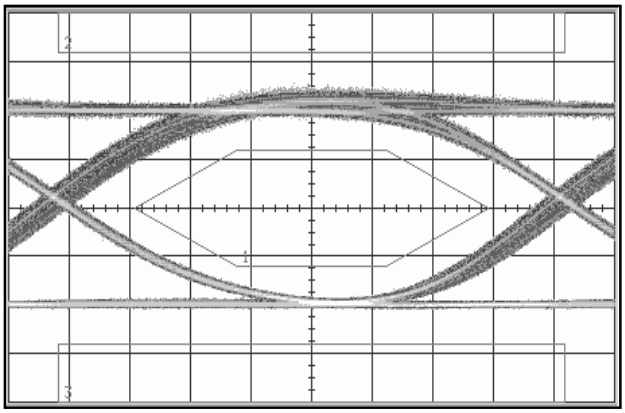
Pin Name*	Pin #	Sequence	Pin Name*	Pin #	Sequence
RX_LOS	1	2	RGND	11	1
RGND	2	2	-RX_DAT	12	1
RGND	3	2	+RX_DAT	13	1
MOD_DEF(0)**	4	2	RGND	14	1
MOD_DEF(1)**	5	2	$V_{DD}R$	15	2
MOD_DEF(2)**	6	2	$V_{DD}T$	16	2
TX_DISABLE	7	2	TGND	17	1
TGND	8	2	+TX_DAT	18	1
TGND	9	2	-TX_DAT	19	1
TX_FAULT	10	2	TGND	20	1

*For further explanation see the GBIC standard.
**Reference GBIC standard, Annex D: Module definition “4”

Eye Pattern

Typical Eye Pattern (Optical Eye)

Time Scale : 113 ps/div



1.0625 Gbps

Standard Part Numbers

Order Number	Description
86990-9064	Fibre Channel transceiver, 850nm GBIC