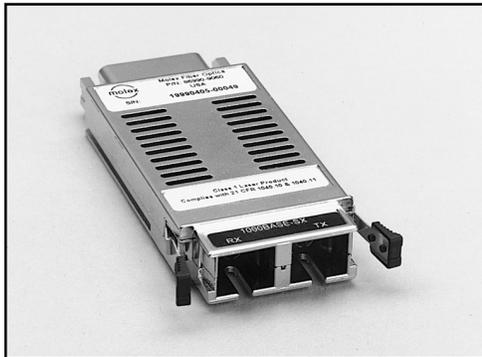


Gigabit Ethernet Transceiver, 850nm GBIC



Features & Benefits

- Compliant with Gigabit Ethernet IEEE 802.3z standard
- Meets all requirements of GBIC specification
- Serial ID interface (Annex D, Mod Definition 4)
- Data rates to 1.25 Gbps
- Link distances up to 550m
- 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 Gigabit Ethernet 850nm GBIC is a compact optical transceiver capable of optical gigabit transmission over inexpensive multimode fiber for distances up to 550m.

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	-	1.25	Gbps	-
Fiber Length	-	2	-	550	m	Speed:1.25 Gbps, fiber: 50 μ m core/500 MHz•km
		2 2	-	220 275	m	62.5 μ m core/160 MHz•km 62.5 μ m core/200 MHz•km
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:150 Ω
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}	830	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
Coupled Power Ratio	CPR	9	-	-	dB	-
Eye Opening	-	57	-	-	%	-
Duty Cycle	-	-	52	-	%	-
Bit Error Rate	BER	-	-	10 ⁻¹²	-	at P _{in} = -17 dBm
Jitter	-	-	-	-	-	IEEE 802.3z compliant
Receiver Bandwidth	-	900	-	1500	MHz	-
Optical Input Wavelength	λ_{rx}	770	-	860	nm	-
Stressed Receiver Sensitivity	P _{inst}	-	-	-12.5	dB	For 62.5 μ m fiber
				-13.5		For 50 μ m fiber

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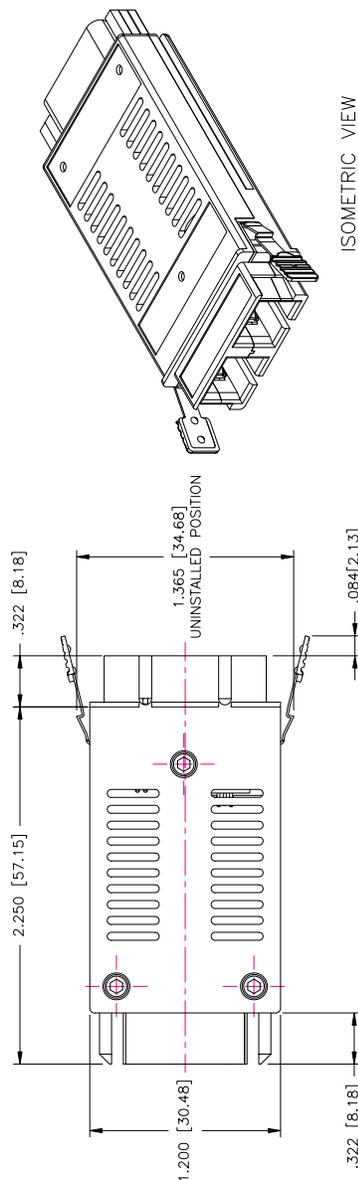
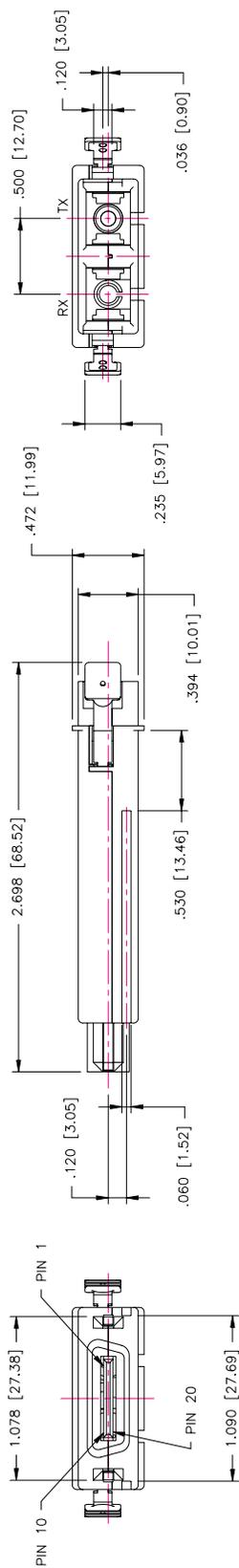
Optical Performance Specifications

Parameter		Symbol	Min.	Typ.	Max.	Units	Notes / Conditions
Control and Sense Signals From Host Board to GBIC	Low	V_{IL}	0	-	0.8	V	4.7K to 10K, pullup 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, pullup 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}	-17	-	-	dBm	-
RX_LOS Deasserted		P_d	-30	-	-17	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		-	-	-	-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	$^{\circ}C$	-
Operating Humidity		-	8	-	80	%RH	-
Storage Temperature		T_{store}	-40	-	85	$^{\circ}C$	-
Relative Intensity Noise		RIN	-	-	-117	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

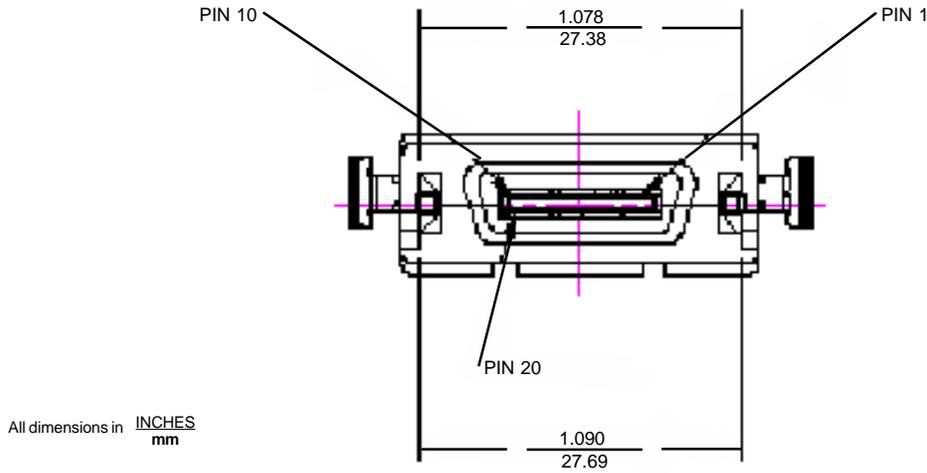
Gigabit Ethernet Transceiver, 850nm GBIC



Mechanical Dimensions



Mechanical Dimensions



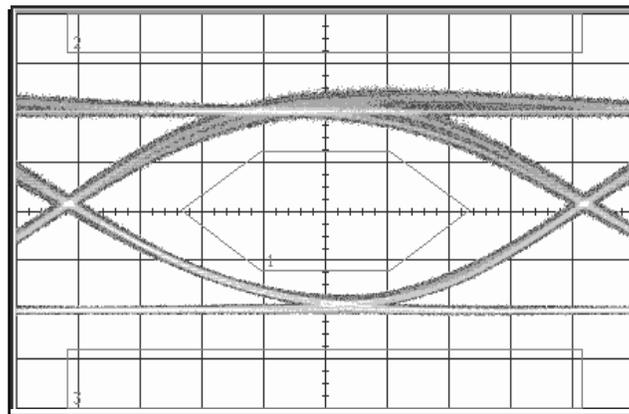
Pin Name*	Pin #	Sequence	Pin Name*	Pin #	Sequence
RX_LOS	1	2	RGND	11	1
RGND	2	2	-RX_DAT	12	1
RGND	3	2	+RX_DAT	13	1
MOD_DEF(0)**	4	2	RGND	14	1
MOD_DEF(1)**	5	2	V _{DD} R	15	2
MOD_DEF(2)**	6	2	V _{DD} T	16	2
TX_DISABLE	7	2	TGND	17	1
TGND	8	2	+TX_DAT	18	1
TGND	9	2	-TX_DAT	19	1
TX_FAULT	10	2	TGND	20	1

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

Eye Pattern

Typical Eye Pattern (Optical Eye)

Time Scale : 96 ps/div



1.25 Gbps

Standard Part Numbers

Order Number	Description
86990-9060	Gigabit Ethernet transceiver, 850nm GBIC