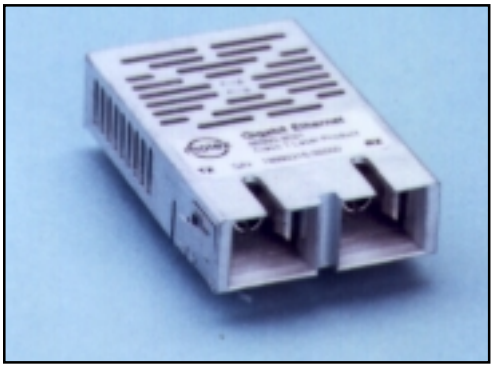
Gigabit Ethernet Transceiver, VCSEL - (AC Coupled)



Features & Benefits

- Compliant with Gigabit Ethernet IEEE 802.3z standard
- Data rates up to 1.25 Gbps
- Industry standard 1 by 9 pin configuration & duplex SC connectors
- Link distances up to 550m
- Single +5.0V power supply
- ECL/PECL compatible
- Size: 25.91mm by 39.62mm by 9.78mm
- AC coupled data input & outputs
- DC coupled version also available
- Metallized & unmetallized casing available

Applications

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

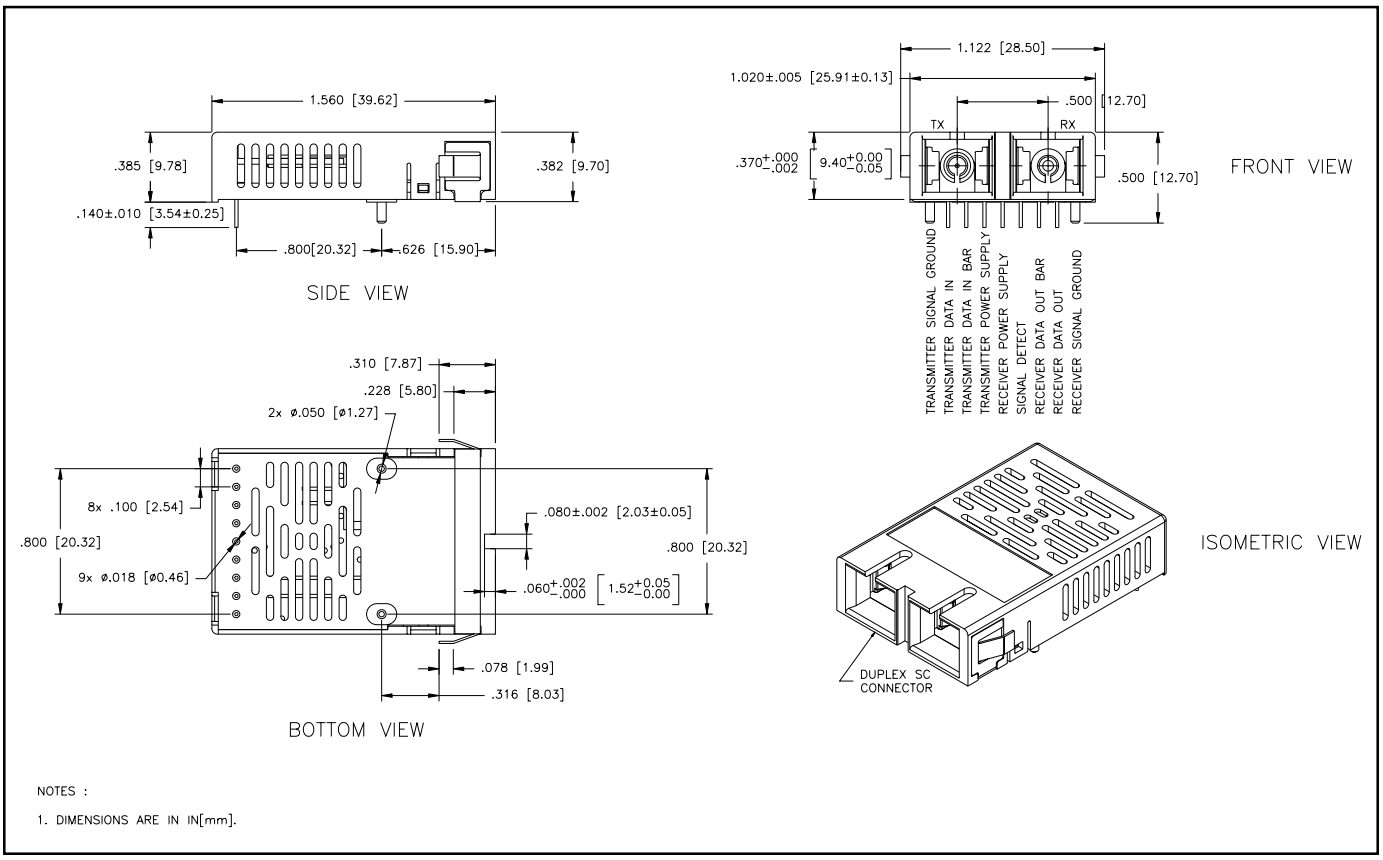
Molex VCSEL Ethernet links are compact optical transceivers capable of serial gigabit transmission over inexpensive multimode fiber for distances up to 550m. Molex's Gigabit Ethernet links transmit data at speeds of 100 Mbps to 1.25 Gbps, enabling use in Gigabit Ethernet, Fibre Channel, ATM and proprietary data interconnect systems. They feature an industry standard 1 by 9 pin configuration and duplex SC connectors. Molex also offers a DC coupled version of this device. Molex's emphasis on safety allows this product to meet all CDRH and IEC 825-1 Class 1 eye safety requirements. Product is certified by TUV (certificate number R9771077).

Optical Performance Specifications

Parameter	Symbol	Min	Typ	Max	Units	Notes / Conditions
Data Rate	-	0.100	-	1.25	Gbps	-
Maximum Fiber Length	-	2	-	550	m	50μm core/500 MHz•km fiber
Input Voltage	V_{CC}	+4.75	+5.0	+5.25	V	V_{CC} referenced to GND
Supply Current (transmitter)	I_{TX}	-	-	125	mA	5.0V
Supply Current (receiver)	I_{RX}	-	-	75	mA	5.0V
Data Input Voltage	V_{IN}	310	-	980	mV_{pp}	AC Coupled PECL Levels
Data Output Voltage	V_{OUT}	500	725	1140	mV_{pp}	AC Coupled PECL Levels
Transmitter Center Wavelength	λ_{TX}	830	850	860	nm	VCSEL Source
Transmitter Spectral Width (RMS)	$\Delta\lambda$	-	-	0.85	nm	-
Transmitter Optical Output Power	P_O	-9.5	-	-4.5	dBm	Average Launch Power
Transmitter Extinction Ratio	-	9	-	-	dB	-
Transmitter Eye Opening	-	57	-	-	%	-
Duty Cycle	-	-	50	-	%	-
Bit Error Rate	BER	-	-	10^{-12}	-	At received power of -17 dBm
Jitter	-	-	-	-	-	IEEE 802.3z compliant
Optical Input Wavelength	λ_{RX}	770	850	860	nm	-
Optical Input Sensitivity	P_I	-17	-	-	dBm	-
Signal Detect Asserted	P_a	-	-18	-	dBm	Measured on low-to-high transition
Signal Detect Deasserted	P_d	-	-21	-	dBm	Measured on high-to-low transition
Signal Detect Hysteresis	$P_a - P_d$	-	3	-	dB	-
Operating Temp	T_{OP}	0	-	70	°C	-
Storage Temp	T_{STORE}	-40	-	85	°C	-
Relative Intensity Noise	RIN	-	-	-117	dB/Hz	-
Eye Safety	-	-	-	-	-	Class 1 Laser Product
Optical Rise/Fall Time	P_r / P_f	-	-	260	ps	20% - 80%

Gigabit Ethernet Transceiver, VCSEL - (AC Coupled)

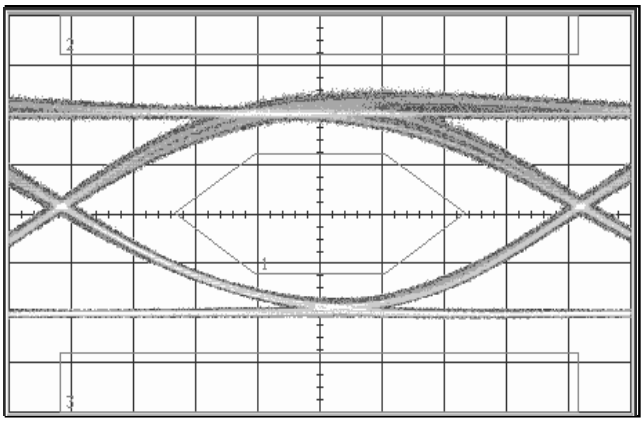
Mechanical Dimensions



Eye Pattern

Typical Eye Pattern (Optical Eye)

Time Scale : 96 ps/div



1.25 Gbps

Standard Part Numbers

Order Number	Description
86990-9054	Gigabit Ethernet transceiver, AC coupled, VCSEL, 5.0V
86990-9058	Gigabit Ethernet transceiver, AC coupled, VCSEL, 5.0V, low EMI with clip
86990-9080	Gigabit Ethernet transceiver, AC coupled, VCSEL, 5.0V, low EMI without clip
86990-9091	Gigabit Ethernet transceiver, AC coupled, VCSEL, 5.0V, with flushmount shield