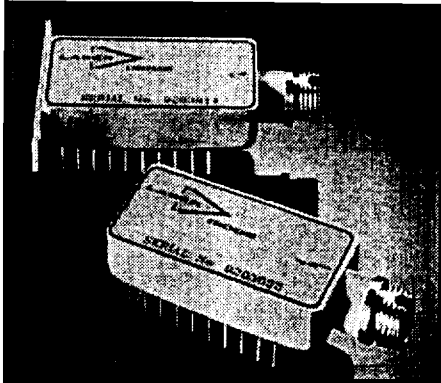


DIGITAL FIBER OPTIC TRANSMITTER



FEATURES:

- ▶ Data Rates to 200 Mb/s
- ▶ 1.3 μ m or 1.55 μ m Laser Diode
- ▶ FC/PC, ST or Pigtail
- ▶ -5.2 or +5 Volt Operation
- ▶ 20 Pin Multisourced Package
- ▶ ECL or PECL Data Compatible
- ▶ SONET & SDH Compatible

DESCRIPTION:

The TL-1160 Series is a line of compact high performance transmitters used in singlemode fiber communications. The units use advanced hybrid circuit technology to integrate a full function optical transmitter which delivers the demanding performance required of telecommunications and high end data communications applications. The laser used is a buried heterostructure fabry perot laser designed for high power and wide temperature range operation. Life tests show a Mean Time Between Failure of than 10⁸ hours. The laser is mounted in a receptacle subassembly using advanced lensing and laser welding technology. Optical feedback is utilized to maintain a constant output power over varying environmental conditions. Circuitry is also included for protection of the laser upon power-up and compensation of the laser due to changes in efficiency over temperature. This further adds to the overall reliability and stability of the transmitter.

The interface to the transmitter is designed for easy board level implementation. The power supply input provides for an option of either single +5 or -5.2 volts. Data inputs are 10KH compatible for simple interface to standard ECL IC's. The user's choice of power supply determines the choice of ECL or PECL data input. For example, in opting for single +5 volt power supply operation with Vcc = +5 and Vee = GND, the data input requires PECL signals. (PECL is positive referenced ECL data, Vbb = +3.7). Two monitors are provided for performance measurements of the transmitter. The laser bias monitor is a voltage output which is proportional to the quiescent drive bias supplied to the laser. The backfacet monitor provides a voltage output proportional to laser light detected by the rear facet monitor built into the laser subassembly. These units undergo an extensive screening and burn-in process based on MIL-STD-883 which guarantees long term life.

TRANSMITTER PERFORMANCE @ T_A = 25°C

PARAMETER	Symbol	Min	Typ	Max	Units
NRZ Data Rate (1)	DR	10		200	Mbps
Optical Wavelength (1)	λ				nm
TL-1163		1280	1308	1330	
TL-1165		1520	1550	1580	
Power Supply -5.2+/-0.25 Volts	I		150	200	mA

Notes: (1) Transmitters with higher data rates are available. Other wavelength tolerances can be specified. Consult the Sales Dept.

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TRANSMITTER PERFORMANCE @ T_A = 25°C...cont'd

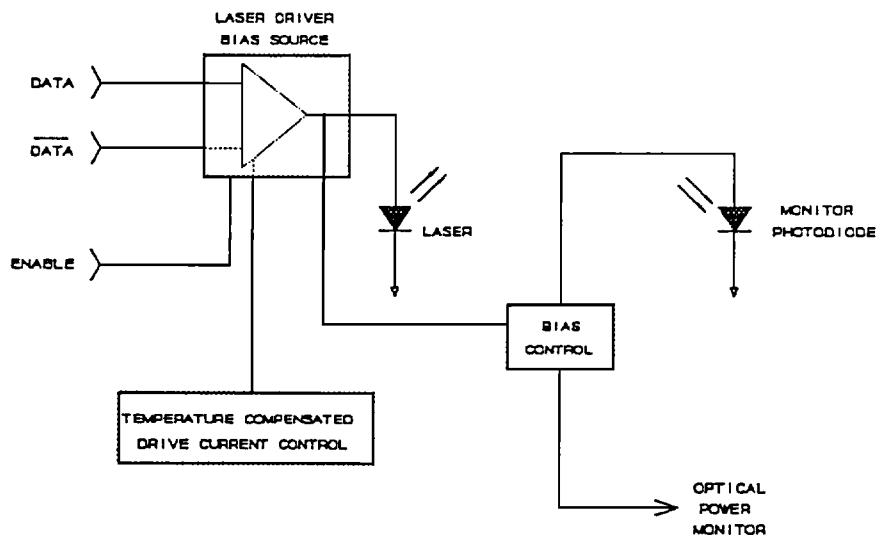
Parameter	Symbol	Min	Typ	Max	Units
Optical Power (Avg) (2,3) TL-1163-013 or TL-1165-013 TL-1163-010 or TL-1165-010	P _o	-13 -10	-12 -9		dBm
Power variation (4)	ΔP _o /T		2		dB
Extinction Ratio	Ex	10			dB
Rise and Fall Time (5)	tr/f			1.5	ns
Spectral Width (6)	Δλ		3	5	nm
Wavelength Shift (7)	λ _p /T		0.5	1.0	nm/°C

- Notes: (2) Average power measurement assumes 50% duty cycle.
 (3) Higher power options available. Consult the Sales Department.
 (4) Maximum variation of the optical power output over the specified temperature from the value specified at 25°C.
 (5) Measured from 10% to 90%
 (6) Measured at full width, half maximum.
 (7) Maximum shift of the peak wavelength per degree Centigrade.

MECHANICAL/ENVIRONMENTAL

Operating Temperature	-20 to 70°C
Storage Temperature	-40 to +85°C
Optical Interface	1 meter 9/125μm fiber pigtail with FC/PC. or FC/PC connector (package mounted) or ST connector
Nominal Package Dimensions	34.04 (l) x 16.13 (w) x 9.14 (h) millimeters

BLOCK DIAGRAM

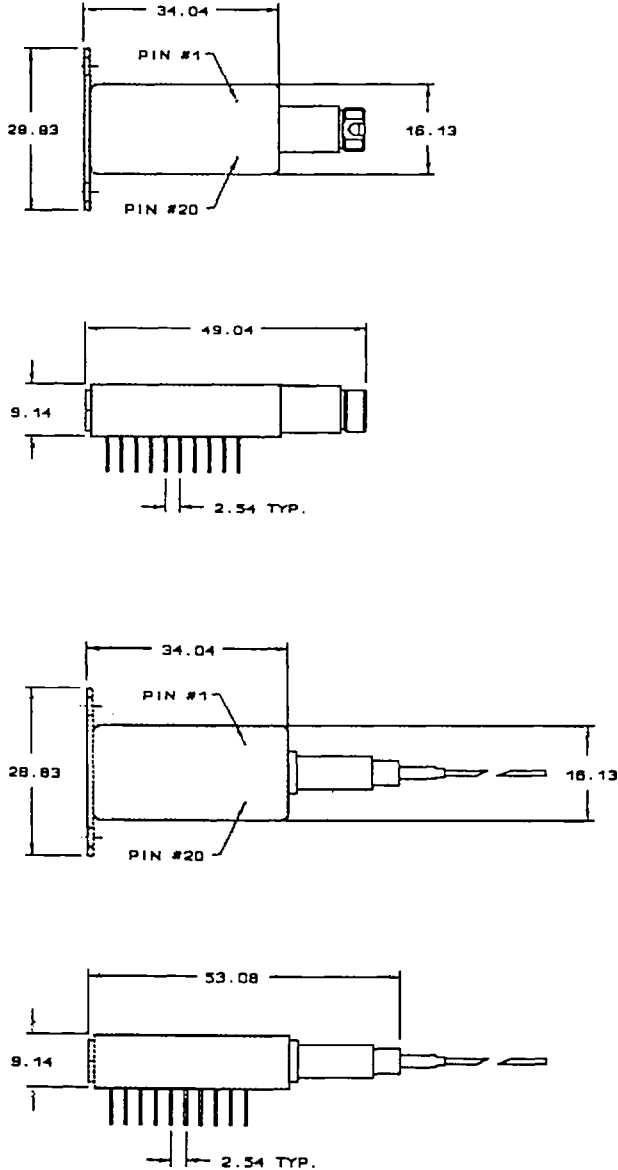


PIN DESCRIPTIONS

- Vee & Vcc -** In a negative ECL application, Vee is -5.2 volts and Vcc is ground. In this case, the data inputs switch around Vbb (pin 19) = -1.3 volts. In a positive ECL application, Vee is ground and Vcc is +5.0volts. In this case the data inputs switch around Vbb +3.7 volts.
- Bias Monitor -** Provides a calibrated voltage proportional to the laser bias current.
- Optical Monitor -** Provides a calibrated output voltage proportional to the average optical output as measured by the rear facet detector. The monitor voltage is referenced to Vee. A calibration value (optical watts/volts) is supplied with each unit.
- TX Disable -** When this pin is either grounded or remains floating, the transmitter will be enabled. When this pin is connected to -5.2 volts, the unit will not transmit optically regardless of the input.
- Data Inputs -** ECL inputs terminated with 50Ω to -2 volts (or equivalent) for ECL applications or 50Ω to +3.7 volts for positive ECL.

TL-1160 Series

PACKAGE SCHEMATIC AND PINOUT



PIN #	DESCRIPTION
1,3,10,20	NO CONNECTION
2	BIAS MONITOR(+)
4	BIAS MONITOR (-)
5,14	Vee
6,8,9,12,18	Vcc
7	DISABLE
11,13	CASE GROUND
15	DATA (bar)
16	DATA
17	OPTICAL MONITOR (-)
19	OPTICAL MONITOR (+)

Dimensions are in millimeters
 FC/PC and pigtailed packages
 Top and side view shown
Class I laser transmitter

ORDERING INFORMATION

TL-1163-013A
 TL-1163-013B
 TL-1163-013C
 TL-1163-010A
 TL-1163-010B
 TL-1163-010C
 TL-1165-013A
 TL-1165-010A

1.3 μm TX, -13 dBm, FC/PC
 1.3 μm TX, -13 dBm, ST/PC
 1.3 μm TX, -13 dBm, Pigtailed with FC/PC
 1.3 μm TX, -10 dBm, FC/PC
 1.3 μm TX, -10 dBm, ST/PC
 1.3 μm TX, -10 dBm, Pigtailed with FC/PC
 1.55 μm TX, -13dBm, FC/PC
 1.55 μm TX, -10dBm, FC/PC

