HEWLETT® PACKARD

Logic Interface Laser Transmitter

Technical Data

XMT5350

Features

- **Full Compliance to STM1/OC1-3**
- **SONET/SDH Compliant**
- **-40°C to +85°C Operation**
- **Compact 20 Pin Package**
- **ECL/PECL Logic Interface**
- **Multi-sourced Pinout**

Applications

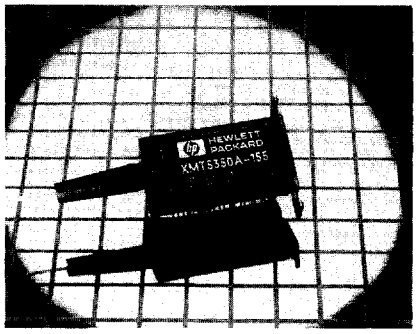
- **SONET/SDH Systems**
- **Fiber to the Home**
- **Data Communications Networks**

Description

The XMT5350 laser transmitter is a high performance uncooled optical transmitter for CCITT SDH and ANSI SONET applications. It is designed with an ECL/PECL logic interface for 51 and 155 Mbaud transmission.

The transmitter incorporates several features which simplify system design. The XMT5350 may be operated with either +5 V or -5 V power supplies. Its standard 10 KH ECL data interface enables direct interface with PECL or ECL logic. The compact transmitter module contains a pigtailed laser, data interface, bias and modulation control circuitry. Thus, no external components or adjustments are necessary. Finally, a laser disable input is provided to shutdown the laser for standby or test purposes.

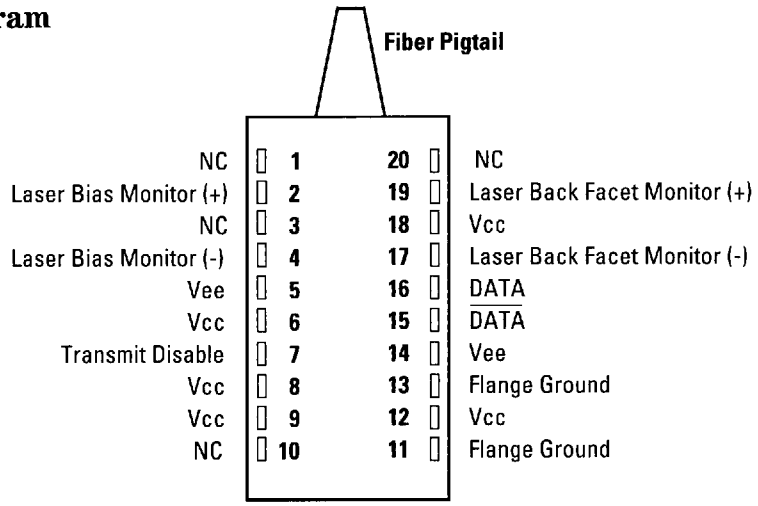
The XMT5350 includes analog outputs which are proportional to laser current and optical power. These may be used with external circuitry to detect end-of-life, or over temperature conditions.



The transmitter is packaged in a 20 pin 0.4" pitch DIP with conventional longhorn style heatsink attachment. An evaluation board is available for this product. Contact your local representative for more details.

Connection Diagram

Top View



Pin Descriptions:

Pin 1, 3, 10, 20, NC:
These pins should not be connected and should be left open circuit on the application PCB.

Pin 2 Laser Bias Monitor (+):
See Figure 1.

Pin 4 Laser Bias Monitor (-):
See Figure 1.

Pin 5, 14, Vee:
This pin is connected to ground in +5 V systems and -5 V in negative supply systems.

Pin 6, 8, 9, 12, 18, Vcc:
Connect to +5 V for positive supply systems and ground for -5.2 V systems.

Pin 7, Transmit Disable:
Pin 7 floats to Vee when open circuited, enabling the transmitter. It must be biased within 3 V of Vcc to disable.

Pin 11, 13, Flange Ground:
These pins connect to the heatsink flange. They should always be connected to circuit ground.

Pin 15, 16, $\overline{\text{DATA}}$, DATA:
These are differential ECL inputs. If open circuited they float to Vbb (Vcc -1.3 V).

Pin 17, Laser Back Facet Monitor (-):
See figure 2.

Pin 19, Laser Back Facet Monitor (+):
See figure 2.

Figure 1.
Laser Bias Monitor Circuitry

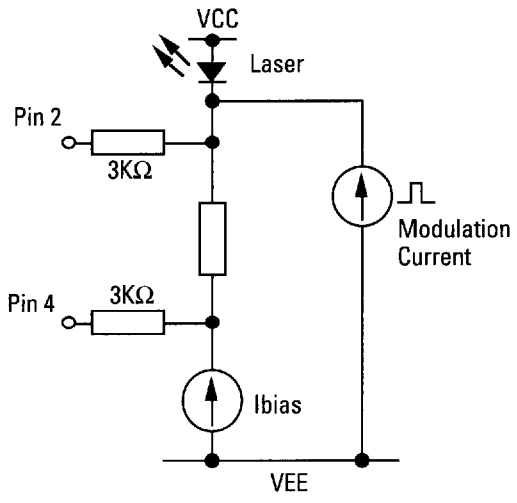
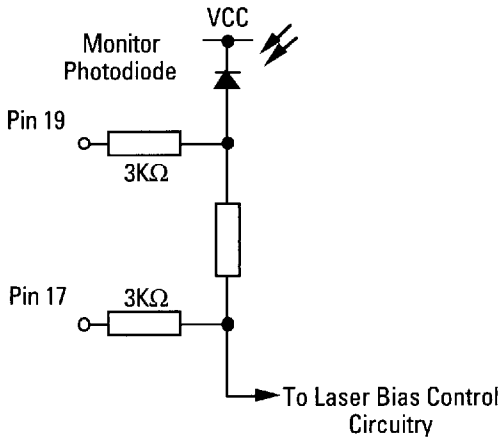
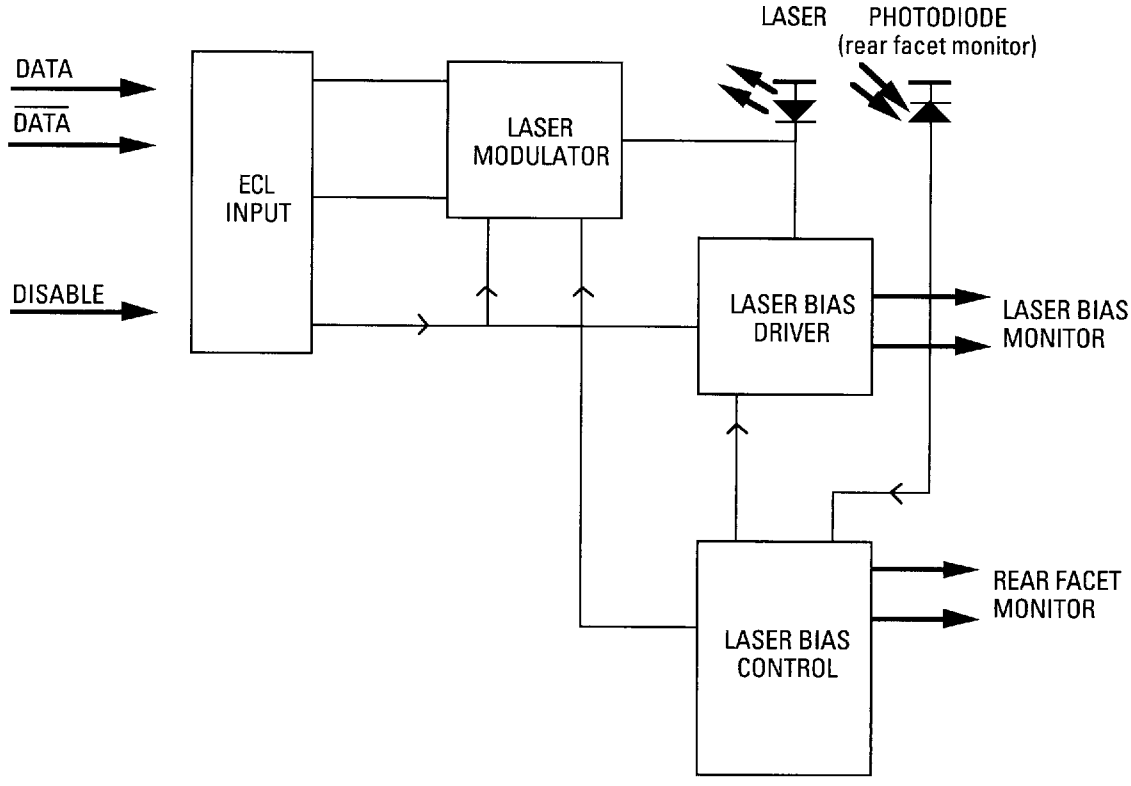


Figure 2.
Back Facet Monitor Circuitry



XMT5350 Block Diagram



Functional Description

The ECL input allows operation from many logic families and both single-ended or differential signals. For single-ended operation both $\overline{\text{DATA}}$ and DATA are internally tied to a Vbb. The unused input then requires no connection or biasing.

The disable function disables the laser bias and modulator. The switching threshold is Vcc -3.2 V. If this input is not connected the module is enabled. This input may be connected to a CMOS HI or tied to Vcc to disable.

The module provides the necessary bias and modulation control to maintain the extinction ratio at better than 10:1 and the duty cycle distortion at less than 600 ps over the operating temperature range and power supply range.

The laser bias control loop compensates for temperature induced variations in laser performance. The bias current monitor indicates the amount of DC current supplied to the laser. (This is approximately the laser threshold current).

The rear facet monitor is a signal proportional to the laser output power. This can be used as part of a HI/LO light alarm.

In the absence of data the laser will emit a mean optical power within the specified limits. The extinction ratio and duty cycle distortion are specified assuring a 50% duty cycle at the correct data rate.

Performanance Specifications

Absolute Maximum Ratings

Parameter	Minimum	Nominal	Maximum	Units
Supply Voltage	-	-	7	V
Operating Flange Temperature				
A model	-40	-	+85	°C
B model	0	-	+65	°C
Storage Flange Temperature	-40	-	+85	°C
Fiber Tensile Strength [7]	10	-	-	N/10s
Fiber Bend Radius	32	-	-	mm
Lead Soldering (Temp./Time)	-	-	250/10	°C/Sec

Characteristics

Parameter	Minimum	Nominal	Maximum	Units
Center Wavelength [1]	1273	-	1355	nm
Spectral Width (RMS) [1]	-	-	4	nm
Average Output Power [2]	-15	-10	-8	dBm
Rise Time (10% - 90%)	-	-	2	ns
Fall Time (10% - 90%)	-	-	2	ns
Duty Cycle Distortion	-	-	0.6	ns
Extinction Ratio	10	-	-	dB
Bias Monitor [3]	-	0.1	-	mA/mV
Rear Facet Monitor Output [4]	5	-	50	mV
Supply Voltage [5]	4.75	5.0	5.5	V
Supply Current [6]	-	70	130	mA
Tx Disable	Vcc -3.2	-	Vcc	V

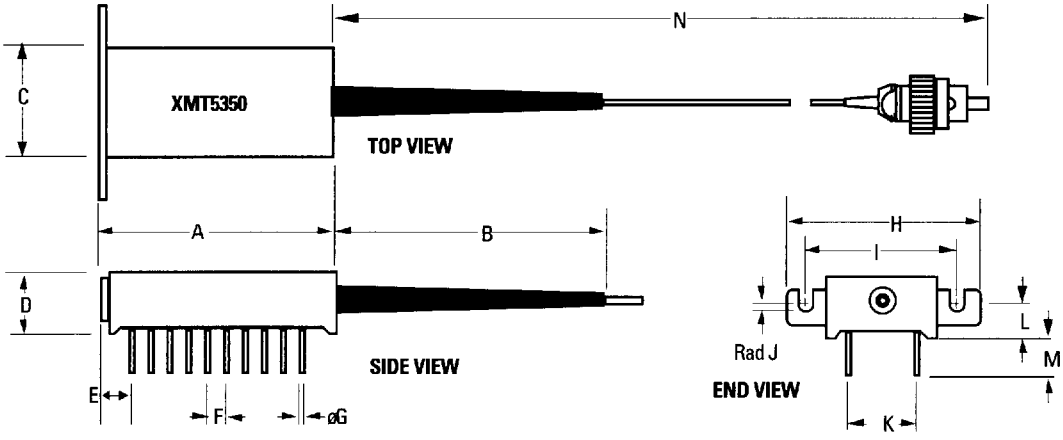
Notes:

1. Over operating temperature range. A narrower operating temperature range will result in a smaller centre wavelength spread. Contact Hewlett-Packard for details.
2. Other output power options are available. Contact Hewlett-Packard for details.
3. Common mode signal 3.5 V nominal.
4. Common mode signal 4.0 V nominal.
5. With Vee connected to -5 V, Vcc must be at 0 V. With Vcc at +5 V, Vee must be at 0 V.
6. End of life at Tmax.
7. In a coaxial direction with fiber feed through.
8. Proven reliability is subject to on-going life testing. Contact Hewlett-Packard for latest information.

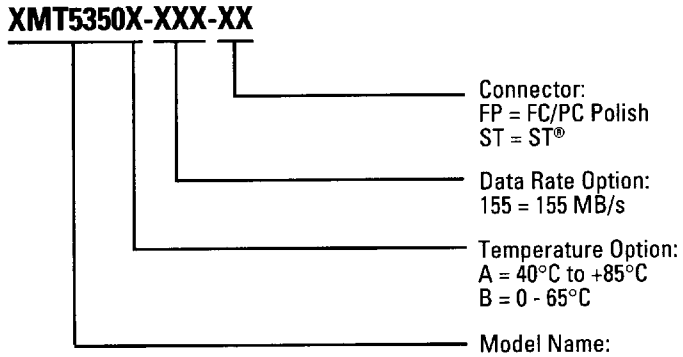
Drawing Dimensions

DIM	MIN	NOM	MAX
A	33.963	-	34.217
B	-	-	40.750
C	16.003	-	16.257
D	9.016	-	9.370
E	3.560	-	4.160
F	-	2.54	-
ØG	-	0.46	0.587
H	28.703	-	28.957
I	22.353	-	22.607
J	1.463	-	1.717
K	10.033	-	10.287
L	6.023	-	6.277
M	6.223	-	7.00
N	400.00	-	1220.00

All dimensions in mm



Ordering Information



Allowable Part Numbers:
XMT5350A-155
XMT5350B-155

Class I Laser Product: This product conforms to the applicable requirements of 21 CFR 1040 at the date of manufacture

Date of Manufacture: _____

Hewlett-Packard Ltd, Whitehouse Rd, Ipswich, England

Handling Precautions

1. Normal handling precautions for electrostatic sensitive devices should be taken.
2. Semiconductor lasers can be damaged by overloading or by current surges. Appropriate transient protection precautions should be taken.

For more Information:

United States: (800) 545-4306

Far East/Australasia: (65) 290-6305

Japan: (81) 3 3331 6111

Europe: (44) 473-742250

Canada: (416) 206-4725

Or contact your local HP sales office listed in your telephone directory and ask for a Components representative.

Data subject to change

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