

## 5833P Diplexer, Full-Duplex, Bidirectional, Single-Fiber, Data and Voice Transceivers



### Features

- Single-fiber connection
- Low cost
- 3.3 V PECL interface
- SFF footprint (2 x 5 pinout)

### Applications

- Single-fiber data and voice transport
- FTTx architectures
- Site-to-site optical telemetry
- Customer premise gateways

### Description

The 5833P diplexer is a single-fiber transceiver that enables simultaneous bidirectional, voice and data transport over a single optical fiber in FTTx (access) networks.

The diplexer consists of a Fabry-Perot laser and a PIN photodiode coupled to a PECL interface for easy installation.

These low-cost devices can be used in a variety of locations in the network where single-fiber telemetry is required. The laser emits at 1310 nm and the photodetector receives another 1310 nm signal.

The 5833P diplexer is currently available at OC-3 (155 Mbit/s) and OC-12 (622 Mbits/s) data rates and with several optical connector options.

## Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

| Parameter                                   | Symbol | Min | Typ | Max | Unit |
|---------------------------------------------|--------|-----|-----|-----|------|
| Operating Temperature Range                 | TOP    | −40 | 25  | 85  | °C   |
| Storage Temperature Range                   | Tstg   | −40 | 25  | 85  | °C   |
| Supply Voltage:<br>Vcc (Tx/Rx)              | Vcc    | —   | 3.3 | 3.6 | V    |
| Optical Return Loss (APC Pigtail Connector) | RL     | —   | —   | −45 | dB   |

## Characteristics

**Table 1. Transmitter Specifications**

| Parameter                                   | Condition                     | Min                    | Typ               | Max                    | Units              |
|---------------------------------------------|-------------------------------|------------------------|-------------------|------------------------|--------------------|
| Wavelength                                  | CW                            | 1260                   | 1310              | 1360                   | nm                 |
| Dynamic Extinction Ratio                    | —                             | 8.2                    | —                 | —                      | dB                 |
| Output Power                                | —                             | −15                    | −12.5             | −10                    | dBm                |
| Input Data Voltage:<br>Low<br>High          | —                             | Vcc − 2.1<br>Vcc − 1.2 | —<br>—            | Vcc − 1.4<br>Vcc − 0.5 | V<br>V             |
| Transmit Disable                            | TTL Low                       | —                      | —                 | 0.8                    | V                  |
| Enable Delay Time                           | Open Loop                     | —                      | 250               | —                      | ns                 |
| Bit Rate:<br>5833P-0155<br>5833P-0622       | —                             | —<br>—                 | 155<br>622        | —<br>—                 | Mbits/s<br>Mbits/s |
| Supply Current:<br>−40 °C<br>25 °C<br>85 °C | Exclude Input<br>Bias Network | —<br>—<br>—            | 100<br>105<br>130 | —<br>—<br>—            | mA<br>mA<br>mA     |

## Characteristics (continued)

**Table 2. Receiver Characteristics (Integrated TIA with AGC)**

| Parameter                          | Condition        | Min            | Typ    | Max            | Units |
|------------------------------------|------------------|----------------|--------|----------------|-------|
| Wavelength                         | CW               | 1260           | 1310   | 1360           | nm    |
| Output Data Voltage:               | —                |                |        |                |       |
| Low                                |                  | $V_{CC} - 1.8$ | —      | $V_{CC} - 1.6$ | V     |
| High                               |                  | $V_{CC} - 1.0$ | —      | $V_{CC} - 0.9$ | V     |
| Signal-Detect Output Voltage:      | —                |                |        |                |       |
| Low                                |                  | —              | —      | $V_{CC} - 1.5$ | V     |
| High                               |                  | $V_{CC} - 1.2$ | —      | —              | V     |
| Signal-Detect Switching Threshold: | —                |                |        |                |       |
| Decreasing Light                   |                  | —              | −39    | —              | dBm   |
| Increasing Light                   |                  | —              | −36.75 | —              | dBm   |
| Level-Detect Hysteresis (Optional) | —                | 1.75           | 2.25   | 2.75           | dB    |
| Sensitivity: Full Duplex:          | BER = $10^{-10}$ |                |        |                |       |
| 9833P-0155                         |                  | —              | —      | −30            | dBm   |
| 9833P-0622                         |                  | —              | —      | −26            | dBm   |
| Supply Current                     | No ECL loads     | —              | 40     | 60             | mA    |

Pin Information

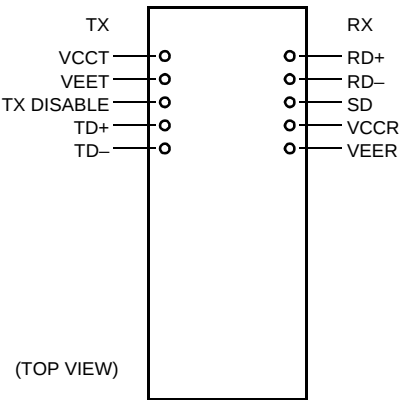
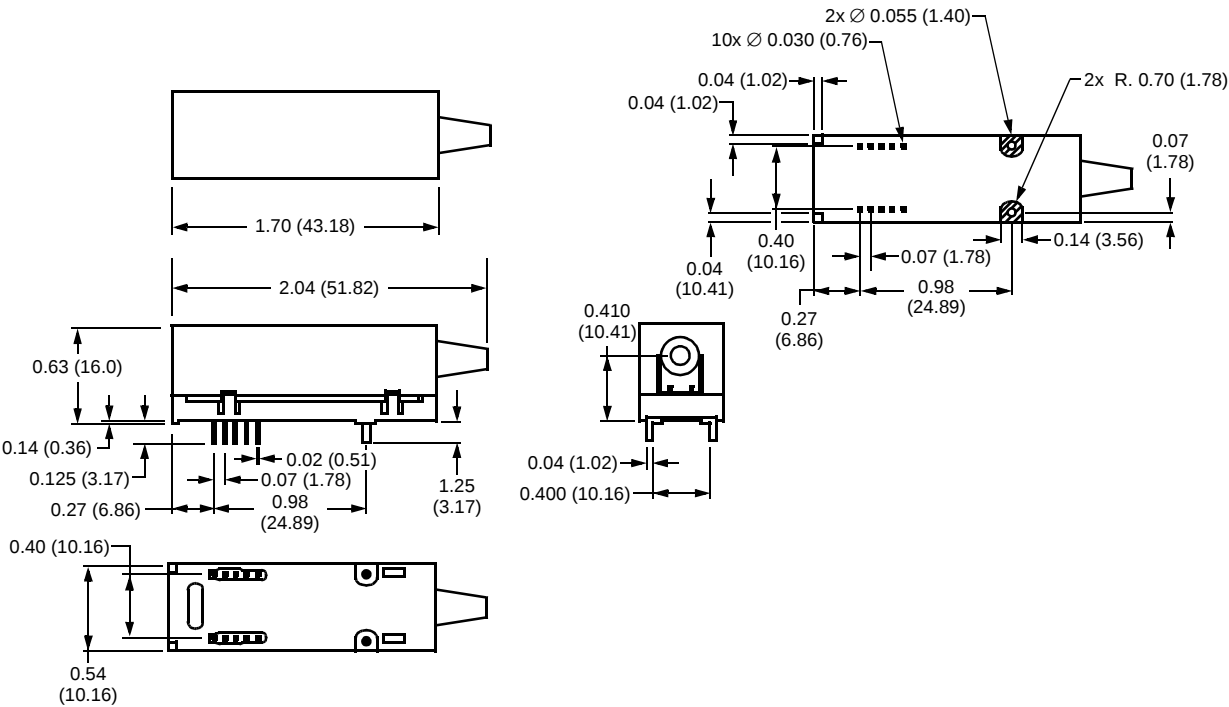


Figure 1. 5833-Type Transceiver Pinout 1-1259(F)

Outline Diagram

Dimensions are in inches and (millimeters)



Note: Single-fiber transceivers provided by Agere Systems Inc. are pigtailed with *SMF-28\** and connector options.

1-1260 (F)

\* *SMF-28* is a trademark of Corning, Inc.

## Laser Safety Information

### Class I Laser Product

All versions of the 5833P-type transceivers are classified as Class I laser products per FDA/CDRH, 21 CFR 1040 Laser Safety requirements. The transceivers are classified with the FDA under accession number to be determined. All versions are Class I laser products per *IEC*\* 60825-1:1993.

**CAUTION: Use of controls, adjustments, and procedures other than those specified herein may result in hazardous laser radiation exposure.**

This product complies with 21 CFR 1040.10 and 1040.11.

*SMF-28* 900  $\mu\text{m}$  fiber pigtail with connector options.

Wavelength = 1.3  $\mu\text{m}$

Maximum power = 0.1 mW

Product is not shipped with power supply.

Because of size constraints, laser safety labeling is not affixed to the module but is attached to the outside of the shipping carton.

#### NOTICE

**Unterminated optical connectors can emit laser radiation.**

**Do not view with optical instruments.**

\* *IEC* is a registered trademark of The International Electrotechnical Commission.

## Ordering Information

For ordering information, please contact an account manager at OPTO West, Agere Systems INC., 1-800-362-3891 (for sales staff, please press option 2).

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