

**X2 Single Fiber 60 km transceiver | Cisco Compatible 10G ER Ethernet**  
**Designed for OEM networks such as Cisco, HP, Juniper, Brocade, Alcatel etc.**

### Datasheet

#### X2 Optical Transceiver Product Features

- Exclusive Japanese OSAs for Ultimate Reliability
- 10GBASE-ER/EW Ethernet 21dB X2
- 60 km ER X2 for SMF @ 10Gbps
- 1330Tx - 1270Rx DFB+PIN Laser 60 km X2
- 0°C - 70°C Temperature - Extended/Industrial Available
- 2-Wire Interface Digital Diagnostic Monitoring (SFF-8724)
- Hot-swappable for X2 LC ports
- Extended 2 Years Warranty
- Tested and Certified in Brand Specific Networks and Target Applications
- Assembled Using Highest Quality Raw Components
- X2 MSA / IEEE 802.3ae/q/k & ROHS

#### PX2T-10GB33K060



#### Applications

- 10 Gigabit Ethernet
- 10GBASE-ER @ 10.31Gbps
- 10GBASE-EW @ 9.95Gbps
- Other Optical Links

#### Description

Platinum OEM Series PX2T-10GB33K060 is a Cisco Compatible Single Fiber BiDirectional 10GBASE-ER/EW Ethernet X2 transceiver designed for long distance optical communications up to 60 km with signaling rates up to 10Gbps.

OptoSpan Platinum OEM Series 10Gbps Single Fiber BiDirectional (BiDi) optical transceivers have undergone rigorous qualification and certification testing to provide End-to-End Compatibility using switching equipment from CISCO, BROCADE, JUNIPER, ALCATEL, HP (select models), NORTEL, EMC, QLOGIC and other OEMs.

All OptoSpan Platinum OEM Series long-reach X2 s are ROHS compliant, allow for real-time diagnostic monitoring as per SFF-8472 and designed to meet Multi-Source Agreement (MSA) standards for Single Fiber BiDirectional (BiDi) transceivers with LC interface.

#### Optical Budget Calculation for 60 km Platinum OEM X2 Optical Transceiver

| PX2T- 10GB33K060            | Distance: 60 km |            |            |            | Fiber: 1330Tx - 1270Rx |                 |
|-----------------------------|-----------------|------------|------------|------------|------------------------|-----------------|
|                             | Tx Min dBm      | Tx Max dBm | Rx Min dBm | Rx Max dBm | Link Attenuation dB    | Power Budget dB |
| Product Specifications      | 1               | 6          | -20        | -6         |                        |                 |
| Optical Calculation Results |                 |            | -19.8      | -14.8      | 20.8                   | 21              |

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### General Specifications

| Parameter                              | Unit | Min. | Typ.    | Max  |
|--|------|------|---------|------|
| <b>Absolute Maximum Ratings</b>        |      |      |         |      |
| Maximum Supply Voltage                 | V    | -0.5 |         | 3.6  |
| Storage Temperature                    | °C   | -40  |         | +85  |
| Case Operating Temperature             | °C   | 0    |         | +70  |
| <b>Recommended Operating Condition</b> |      |      |         |      |
| Supply Voltage                         | V    | 3.15 | 3.3     | 3.45 |
| Supply Current                         | mA   |      |         | 430  |
| Data Rate                              | Gbps |      | 10.3125 |      |

### Electrical Characteristics

| Parameter                         | Unit | Min. | Typ. | Max     |
|-----------------------------------|------|------|------|---------|
| <b>Transmitter</b>                |      |      |      |         |
| Differential Input Voltage Swing  | mVpp | 150  |      | 1200    |
| Input Differential Impedance      | ohm  | 85   | 100  | 115     |
| Transmit Disable Voltage - High   | V    | 2    |      | Vcc+0.3 |
| Transmit Disable Voltage - Low    | V    | 0    |      | 0.8     |
| Transmit Fault Voltage - High     | V    | 2    |      | Vcc+0.3 |
| Transmit Fault Voltage - Low      | V    | 0    |      | 0.8     |
| <b>Receiver</b>                   |      |      |      |         |
| Differential Output Voltage Swing | mVpp | 350  |      | 700     |
| Differential Output Impedance     | ohms | 85   | 100  | 115     |
| LOS Output Voltage - High         | V    | 2    |      | Vcc+0.3 |
| LOS Output Voltage - Low          | V    | 0    |      | 0.8     |

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## Optical Characteristics

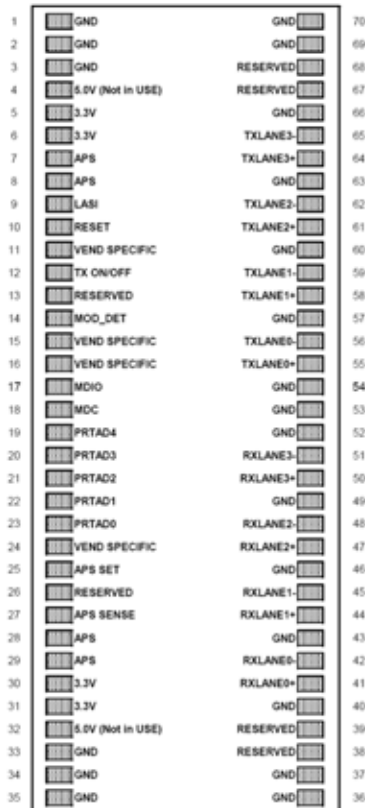
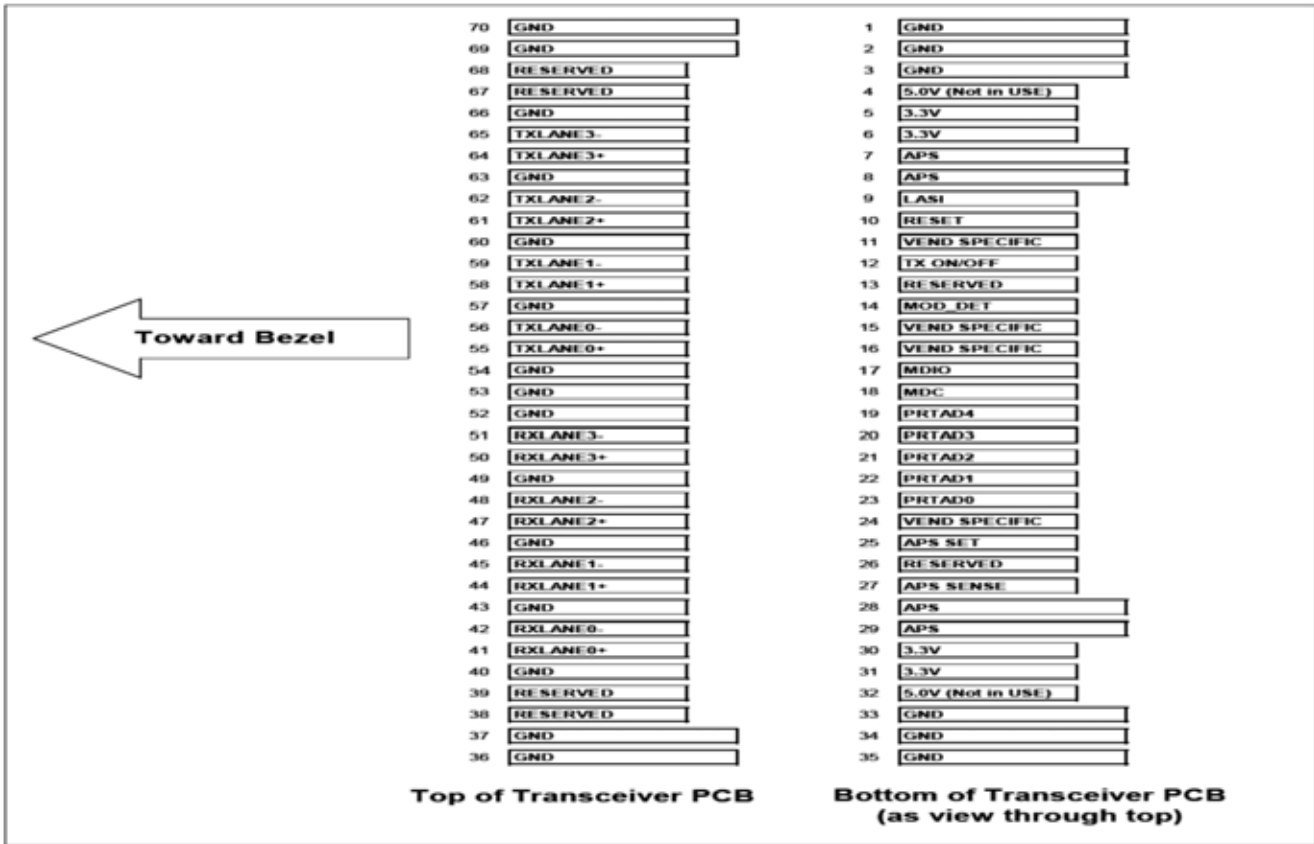
| Parameter                   | Unit | Min. | Typ. | Max  |
|-----------------------------|------|------|------|------|
| <b>Transmitter</b>          |      |      |      |      |
| Output Optical Power        | dBm  | 1    |      | 6    |
| Optical Extinction Ratio    | dB   | 3.5  |      |      |
| Optical Wavelength          | nm   | 1320 | 1330 | 1340 |
| Spectral Width              | nm   |      |      | 1    |
| Side Mode Suppression Ratio | dB   | 30   |      |      |
| <b>Receiver</b>             |      |      |      |      |
| Optical Center Wavelength   | nm   | 1260 |      | 1280 |
| Receiver Sensitivity @ 10G  | dBm  | -20  |      | -6   |
| LOS DE-Assert               | dBm  |      |      | -21  |
| LOS Assert                  | dBm  | -30  |      |      |

## Laser Safety

This is a class 1 Laser Product according to IEC 60825-1:1993:+A1:1997+A2:2001. This product complies with 21 CFR 1040.10 and 1040 except for deviations pursuant to Laser Notice No. 50, dated July 26, 2001.

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## PIN Layout



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### PIN Functions

| Pin # | Name - Description   |
|-------|--|
| 1     | Electrical Ground  |
| 2     | Electrical Ground  |
| 3     | Electrical Ground  |
| 4     | Power Supply of Optical Receiver Frontend  |
| 5     | Power Supply of Optical Receiver and Transmitter and Control Circuits              |
| 6     | Power Supply of Optical Receiver and Transmitter and Control Circuits              |
| 7     | Adaptive Power Supply, Supply of PHY XS and PCS Layer Devices                      |
| 8     | Adaptive Power Supply, Supply of PHY XS and PCS Layer Devices                      |
| 9     | Link Alarm Status Interrupt, low active, Open Drain Output Supposed to operate     |
| 10    | Low active Reset Input   |
| 11    | Vendor Specific Pin,. for proper operation leave unconnected                       |
| 12    | High active Transmitter Enable Input 10kilohms pull-up on Transceiver Logic high = |
| 13    | Reserved by MSA, internally not connected  |
| 14    | 1kilohms to Ground for APS Circuit Environment                                     |
| 15    | Vendor Specific Pin,. for proper operation leave unconnected                       |
| 16    | Vendor Specific Pin,. for proper operation leave unconnected                       |
| 17    | Management Data IO   |
| 18    | Management Clock Input   |
| 19    | Port Address Bit 4 (Low = 0), internally pulled up by 18kilohms                    |
| 20    | Port Address Bit 3(Low = 0), internally pulled up by 18kilohms                     |
| 21    | Port Address Bit 2 (Low = 0), internally pulled up by 18kilohms                    |
| 22    | Port Address Bit 1 (Low = 0), internally pulled up by 18kilohms                    |
| 23    | Port Address Bit 0 (Low = 0), internally pulled up by 18kilohms                    |
| 24    | Vendor Specific Pin,. for proper operation leave unconnected                       |
| 25    | Feedback Input for APS, Input of APS Setting Resistor                              |
| 26    | Reserved for Avalanche Photodiode use, internally not connected                    |
| 27    | APS Sense Output for APS Control Circuit   |
| 28    | Adaptive Power Supply, Supply of PHY XS and PCS Layer Devices                      |
| 29    | Adaptive Power Supply, Supply of PHY XS and PCS Layer Devices                      |
| 30    | Power Supply of Optical Receiver and Transmitter and Control Circuits              |

