SFP Optical Transceiver

Product Features

- SONET OC-48 / STM-16 13dB SFP
- 20 km LX SFP for SMF @ 2.67Gbps
- 1310Tx-1490Rx DFB+PIN Laser 20 km SFP
- 0°C - 70°C Temperature - Extended/Industrial Available
- 2-Wire Interface Digital Diagnostic Monitoring (SFF-8724)
- Hot-swappable for SFP LC ports
- OptoSpan 1 year standard warranty
- Use with Finisar, Avago, JDSU & networks not requiring OEM compatibility
- SFP MSA / IEEE Std 802.3
- RoHS compliant

* For OEM Compatibility, use Platinum Series Part# PSFP-MR2B31K020

Description

OptoSpan SFP-MR2-K020B31 is a Single Fiber BiDirectional SONET OC-48 / STM-16 SFP transceiver designed for long distance optical communications up to 20 km with signaling rates up to 2.67Gbps.

OptoSpan 2Gb Single Fiber optical transceivers are compatible with many brands such as Finisar, Avago, JDSU and network environments that do not require any special compatibility. For networks that require special OEM compatibility, such as CISCO, BROCADE, JUNIPER, ALCATEL, HP, NORTEL, EMC, QLOGIC and other OEMs, consider OptoSpan Platinum OEM Series transceiver model# PSFP-MR2B31K020.

All OptoSpan long-reach SFP 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 20 km SFP Optical Transceiver

<table>
<thead>
<tr>
<th>SFP-MR2-K020B31</th>
<th>Distance: 20 km</th>
<th>Fiber: 1310Tx-1490Rx SMF</th>
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<tbody>
<tr>
<td></td>
<td>Tx Min dBm</td>
<td>Tx Max dBm</td>
</tr>
<tr>
<td>Product Specifications</td>
<td>-5</td>
<td>0</td>
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<tr>
<td>Optical Calculation Results</td>
<td>-15</td>
<td>-10</td>
</tr>
</tbody>
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### General Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max</th>
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</thead>
<tbody>
<tr>
<td>Absolute Maximum Ratings</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Maximum Supply Voltage</td>
<td>V</td>
<td>-0.5</td>
<td>3.6</td>
<td></td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>oC</td>
<td>-40</td>
<td>+85</td>
<td></td>
</tr>
<tr>
<td>Case Operating Temperature</td>
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<td>0</td>
<td>+70</td>
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</tr>
<tr>
<td>Recommended Operating Condition</td>
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</tr>
<tr>
<td>Supply Voltage</td>
<td>V</td>
<td>3.15</td>
<td>3.3</td>
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<tr>
<td>Supply Current</td>
<td>mA</td>
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<td>Data Rate</td>
<td>Gbps</td>
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<td>2.15</td>
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### Electrical Characteristics

#### Transmitter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max</th>
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<tbody>
<tr>
<td>Differential Input Voltage Swing</td>
<td>mVpp</td>
<td>400</td>
<td>2000</td>
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<tr>
<td>Input Differential Impedance</td>
<td>ohm</td>
<td>85</td>
<td>115</td>
<td>100</td>
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<tr>
<td>Transmit Disable Voltage - High</td>
<td>V</td>
<td>2.0</td>
<td>Vcc</td>
<td></td>
</tr>
<tr>
<td>Transmit Disable Voltage - Low</td>
<td>V</td>
<td>0</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>Transmit Fault Voltage - High</td>
<td>V</td>
<td>2.0</td>
<td>Vcc+0.3</td>
<td></td>
</tr>
<tr>
<td>Transmit Fault Voltage - Low</td>
<td>V</td>
<td>0</td>
<td>0.5</td>
<td></td>
</tr>
</tbody>
</table>

#### Receiver

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max</th>
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</thead>
<tbody>
<tr>
<td>Differential Output Voltage Swing</td>
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<tr>
<td>Differential Output Impedance</td>
<td>ohms</td>
<td>85</td>
<td>115</td>
<td>100</td>
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<tr>
<td>LOS Output Voltage - High</td>
<td>V</td>
<td>2.0</td>
<td>Vcc+1.3</td>
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</tr>
<tr>
<td>LOS Output Voltage - Low</td>
<td>V</td>
<td>0</td>
<td>0.8</td>
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</table>
## Optical Characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max</th>
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</thead>
<tbody>
<tr>
<td><strong>Transmitter</strong></td>
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<td></td>
</tr>
<tr>
<td>Output Optical Power</td>
<td>dBm</td>
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<td>0</td>
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<td>Optical Extinction Ratio</td>
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<td>Optical Wavelength</td>
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<td>1360</td>
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<td>Spectral Width</td>
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<td>Side Mode Suppression Ratio</td>
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<tr>
<td><strong>Receiver</strong></td>
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<td>Optical Center Wavelength</td>
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<td>Receiver Sensitivity @ 2.67Gbps</td>
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<tr>
<td>LOS DE-Assert</td>
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<tr>
<td>LOS Assert</td>
<td>dBm</td>
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### Laser Safety

SFP Single Fiber 20 km transceiver | 2G LX SONET OC-48 / STM-16

PIN Layout

<table>
<thead>
<tr>
<th>Top of Board</th>
<th>Bottom of Board (as viewed thru top of board)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>1 VeeT</td>
</tr>
<tr>
<td>19</td>
<td>2 TxFault</td>
</tr>
<tr>
<td>18</td>
<td>3 Tx Disable</td>
</tr>
<tr>
<td>17</td>
<td>4 MOD-DEF(2)</td>
</tr>
<tr>
<td>16</td>
<td>5 MOD-DEF(1)</td>
</tr>
<tr>
<td>15</td>
<td>6 MOD-DEF(0)</td>
</tr>
<tr>
<td>14</td>
<td>7 Rate Select</td>
</tr>
<tr>
<td>13</td>
<td>8 LOS</td>
</tr>
<tr>
<td>12</td>
<td>9 VeeR</td>
</tr>
<tr>
<td>11</td>
<td>10 VeeR</td>
</tr>
<tr>
<td>13</td>
<td>11 RD+</td>
</tr>
<tr>
<td>12</td>
<td>12 RD-</td>
</tr>
<tr>
<td>11</td>
<td>13 VeeR</td>
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</table>

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## PIN Functions

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<thead>
<tr>
<th>Pin #</th>
<th>Name - Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Transmitter Ground</td>
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<tr>
<td>2</td>
<td>Transmitter Fault Indication</td>
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<tr>
<td>3</td>
<td>Transmitter Disable</td>
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<tr>
<td>4</td>
<td>SDA Serial Data Signal</td>
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<td>5</td>
<td>SCL Serial Clock Signal</td>
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<td>6</td>
<td>TTL Low</td>
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<tr>
<td>7</td>
<td>Not Connected</td>
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<tr>
<td>8</td>
<td>Loss of Signal</td>
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<tr>
<td>9</td>
<td>Receiver ground</td>
</tr>
<tr>
<td>10</td>
<td>Receiver ground</td>
</tr>
<tr>
<td>11</td>
<td>Receiver ground</td>
</tr>
<tr>
<td>12</td>
<td>Inv. Received Data Out</td>
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<tr>
<td>13</td>
<td>Received Data Out</td>
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<tr>
<td>14</td>
<td>Receiver ground</td>
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<tr>
<td>15</td>
<td>Receiver Power Supply</td>
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<tr>
<td>16</td>
<td>Transmitter Power Supply</td>
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<tr>
<td>17</td>
<td>Transmitter Ground</td>
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<tr>
<td>18</td>
<td>Transmit Data In</td>
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<tr>
<td>19</td>
<td>Inv. Transmit Data In</td>
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<tr>
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<td>Transmitter Ground</td>
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