

**Features:**

* UP to 25.78Gb/s bi-directional data links
* Hot-Pluggable SFP28 footprint
* Single LC for Bi-directional Transmission
* 1271nm DFB laser transmitter for OP5030D-2733, OP5030DI-2733
* 1331nm DFB laser transmitter for OP5030D-3327, OP5030DI-3327
* Up to 30km on 9/125um SMF
* 2-wire interface for management specifications compliant with SFF 8472 digital diagnostic monitoring interface for optical transceivers
* Power Supply :+3.3V
* Operating case temperature Range:

Commercial: 0~ 70°C

Industrial:-40~ 85°C

* RoHS compliant

**Applications:**

* 25GE ER Lite
* eCPRI&CPRI

**Part Number Ordering Information**

|  |  |
| --- | --- |
| OP5030D-2733 | SFP28 30km BIDI optical transceiver with full real-time digital diagnostic monitoring ,1271nm Transmitter&1331nm Receiver,0~70℃, 25GE |
| OP5030D-3327 | SFP28 30km BIDI optical transceiver with full real-time digital diagnostic monitoring , 1331nm Transmitter&1271nm Receiver, 0~70℃, 25GE |
| OP5030DI-2733 | SFP28 30km BIDI optical transceiver with full real-time digital diagnostic monitoring ,1271nm Transmitter&1331nm Receiver,-40~85℃, 25GE |
| OP5030DI-3327 | SFP28 30km BIDI optical transceiver with full real-time digital diagnostic monitoring , 1331nm Transmitter&1271nm Receiver, -40~85℃, 25GE |

**Description:**

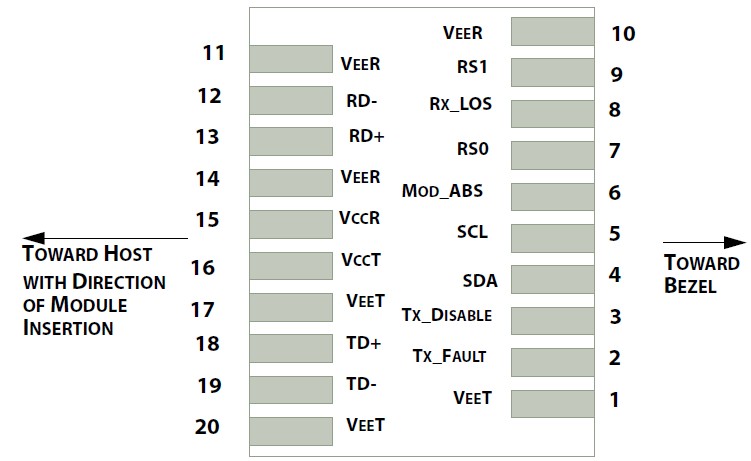
OPWAY's OP5030D-XXXX/OP5030DI-XXXX SFP28 transceivers are designed for use in Ethernet links up to 25.78 Gb/s data rate and up to 30 km link length. They are compliant SFF-8472 , and compatible with SFF-8432 and applicable portions of SFF-8431. The product is RoHS compliant and lead-free per Directive 2011/96/EU.

* + **Pin Function Definitions**

|  |  |  |  |
| --- | --- | --- | --- |
| **PIN #** | **Name** | **Function** | **Notes** |
| 1 | VeeT | Module transmitter ground | 1 |
| 2 | Fault | Module transmitter Fault | 2 |
| 3 | Disable | Transmitter Disable; Turns off transmitter laser output | 3 |
| 4 | SDL | 2 wire serial interface data input/output (SDA) | 4 |
| 5 | SCL | 2 wire serial interface clock input (SCL) | 4 |
| 6 | MOD-ABS | Module Absent, connect to VeeR or VeeT in the module | 2 |
| 7 | RS0 | Rate select0: module inputs and are pulled low to VeeT with > 30 kΩ resistorsin the module. |  |
| 8 | LOS | Receiver Loss of Signal Indication |  |
| 9 | RS1 | Rate select1: module inputs and are pulled low to VeeT with > 30 kΩ resistorsin the module. |  |
| 10 | VeeR | Module receiver ground | 1 |
| 11 | VeeR | Module receiver ground | 1 |
| 12 | RD- | Receiver inverted data out put |  |
| 13 | RD+ | Receiver non-inverted data out put |  |
| 14 | VeeR | Module receiver ground | 1 |
| 15 | VccR | Module receiver 3.3V supply |  |
| 16 | VccT | Module transmitter 3.3V supply |  |
| 17 | VeeT | Module transmitter ground | 1 |
| 18 | TD+ | Transmitter non-inverted data out put |  |
| 19 | TD- | Transmitter inverted data out put |  |
| 20 | VeeT | Module transmitter ground | 1 |

Note:

1. The module ground pins shall be isolated from the module case.
2. This pin is an open collector/drain output pin and shall be pulled up with 4.7K-10Kohms to Host\_Vcc on the host board.
3. This pin shall be pulled up with 4.7K-10Kohms to VccT in the module.
4. This pin is an open collector/drain output pin and shall be pulled up with 4.7K-10Kohms to Host\_Vcc on the host board.



**Diagram of Host Board Connector Block Pin Numbers and Names**

* **Absolute Maximum Ratings**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Symbol** | **Min.** | **Typical** | **Max.** | **Unit** | **Note** |
| Storage Temperature | TS | -40 |  | +85 | °C |  |
| Case Operating Temperature | Tc | 0 |  | +70 | °C | Commercial |
| Case Operating Temperature | Tc | -40 |  | +85 | °C | Industrial |
| Maximum Supply Voltage | Vcc | 0 |  | 3.6 | V |  |
| Relative Humidity(Non-condensing) | RH | 0 |  | 85 | % |  |

* **Electrical Characteristics**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Symbol** | **Min.** | **Typical** | **Max.** | **Unit** | **Note** |
| Supply Voltage | Vcc | 3.14 |  | 3.46 | V |  |
| Supply Current | Icc |  |  | 450 | mA | Industrial |
| Power Consumption | P |  |  | 1.5 | W | Industrial |
| Data Rate | R |  | 25.78 |  | Gb/s |  |
| Fiber Length | L |  |  | 30 | KM |  |
| **Transmitter Section:** | | | | | | |
| Input differential impedance | Rin |  | 100 |  | Ω | 1 |
| Differential input voltage swing | Vin,pp | 180 |  | 450 | mV | 2 |
| Transmit Disable Voltage | VD | 2 |  | Vcc | V | 3 |
| Transmit Enable Voltage | VEN | Vee |  | Vee+0.8 | V |  |
| **Receiver Section:** | | | | | | |
| Single Ended Output Voltage Tolerance | V | -0.3 |  | 4 | V |  |
| Rx Output Diff Voltage | Vo | 180 |  | 450 | mV |  |
| LOS Fault | VLOS fault | 2 |  | VccHOST | V | 4 |
| LOS Normal | VLOS norm | Vee |  | Vee+0.8 | V | 4 |

Note:

1. Connected directly to TX data input pins. AC coupling from pins into laser driver IC.
2. Per SFF-8431 Rev 3.0
3. Into 100 ohms differential termination.
4. LOS is an open collector output. Should be pulled up with 4.7k – 10kΩ on the host board. Normal operation is logic 0; loss of signal is logic 1. Maximum pull-up voltage is 5.5V.

* **Optical Characteristics**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Symbol** | **Min.** | **Typical** | **Max.** | **Unit** | **Note** |
| **Transmitter Section:** | | | | | | |
| Center Wavelength | λt | 1260 | 1271 | 1280 | nm | 1271 Tx |
| 1320 | 1331 | 1340 | nm | 1331 Tx |
| spectral width (-20dB) | △λ |  |  | 1 | nm |  |
| Average Optical Power | Pavg | 0 |  | +6.0 | dBm |  |
| Laser Off Power | Poff |  |  | -30 | dBm |  |
| Side Mode Suppression Ratio |  | 30 |  |  |  |  |
| Extinction Ratio | ER | 3.5 |  |  | dB |  |
| Optical Return Loss Tolerance |  |  |  | -20 | dB |  |
| **Receiver Section:** | | | | | | |
| Center Wavelength | λr | 1260 |  | 1370 | nm |  |
| Average Receiver Power | Sen | -19 |  | -7 | dBm |  |
| OMA Receiver Sensitivity | OMA |  |  | -19 |  | 1 |
| Los Assert | LOSA | -30 |  | - | dBm |  |
| Los Dessert | LOSD |  |  | -20 | dBm |  |
| Los Hysteresis | LOSH | 0.5 |  |  | dB |  |
| Overload |  | 2 |  |  | dBm |  |

Note:

1. Measured with a PRBS 2^31-1 test pattern, @25.78Gb/s, BER<5E-5.

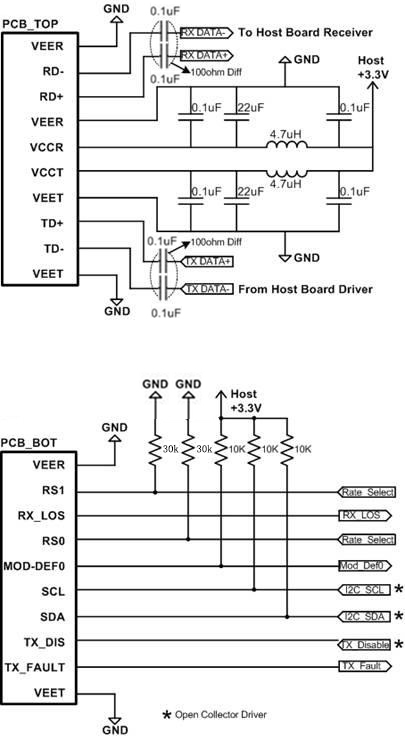
* + **Timing Characteristics**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameter** | **Symbol** | **Min.** | **Typical** | **Max.** | **Unit** |
| TX\_Disable Assert Time | t\_off |  |  | 100 | us |
| TX\_Disable Negate Time | t\_on |  |  | 2 | ms |
| Time to Initialize 2-wire interface | t\_2w\_start\_up |  |  | 300 | ms |
| Time to Initialize | t\_start\_up |  |  | 300 | ms |
| Time to Initialize cooled module and time to power up a cooled module to Power level II | t\_start\_up\_cooled |  |  | 90 | s |
| Time to Power Up to Level II | t\_power\_level2 |  |  | 300 | ms |
| Time to Power Down from Level II | t\_power\_down |  |  | 300 | ms |
| Tx\_Fault assert | Tx\_Fault\_on |  |  | 1 | ms |
| Tx\_Fault assert for cooled module | Tx\_Fault\_on\_cooled |  |  | 50 | ms |
| TX\_FAULT Reset | t\_reset | 10 |  |  | us |
| Rx\_LOS assert delay | t\_los\_on |  |  | 100 | us |
| Rx\_LOS negate delay | t\_los\_off |  |  | 100 | us |

* + **Digital Diagnostic Specifications**

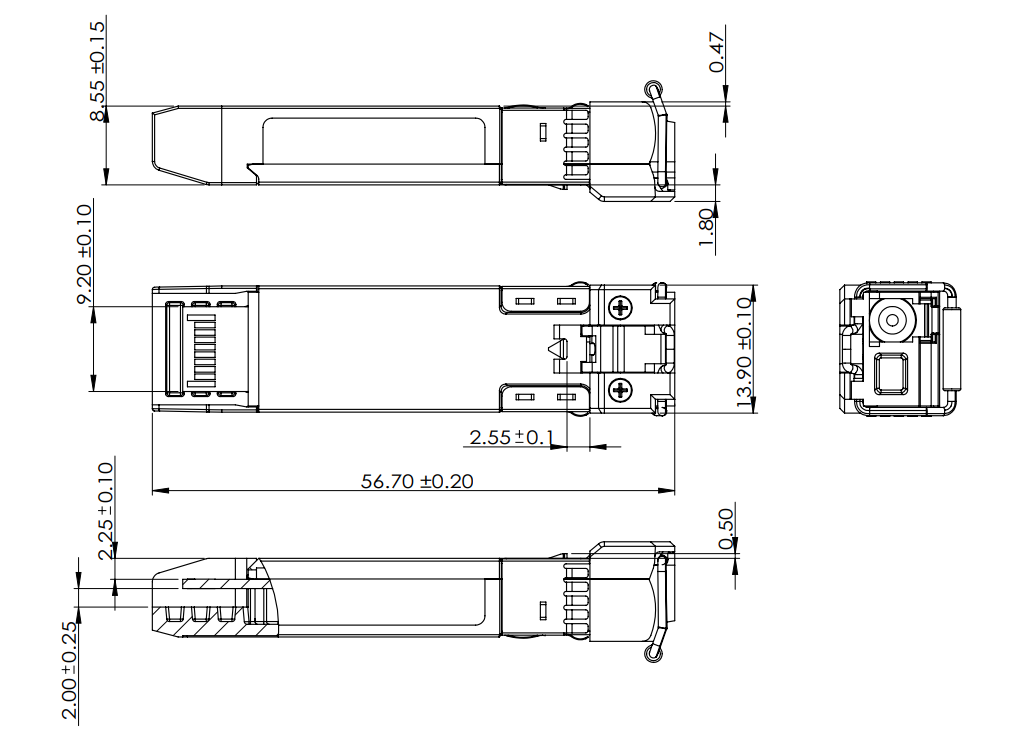
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Symbol** | **Units** | **Min** | **Max** | **Accuracy** | **Note** |
| Transceiver Temperature | Temp | ºC | -40 | +85 | ±5ºC | Industrial |
| 0 | +70 | ±5 ºC | Commercial |
| Transceiver Supply Voltage | Voltage | V | 3.15 | 3.45 | ±3% |  |
| Transmitter Bias Current | Bias | mA | 0 | 35 | ±10% |  |
| Transmitter Output Power | Tx-Power | dBm | -5 | +2 | ±3dB |  |
| Receiver Average Optical Input Power | Rx-Power | dBm | -12 | -2 | ±3dB |  |

* + **Recommended Circuit:**



**Recommended High-speed Interface Circuit**

* + **Mechanical Dimensions:**



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