EOLF-1506-40 & EOLF-1506-80 Series

Single Mode 1550nm 622M for SDH/SONET
Duplex SFF Transceiver
RoHS6 Compliant

Features

◆ Duplex LC Single-Mode Transceiver
◆ Operating Data Rate up to 622Mbps
◆ 40km with 9/125µm SMF
  80km with 9/125µm SMF
◆ Single 3.3V Power supply
◆ LVPECL Signal Input/Output
◆ LVTTL Transmitter Disable Input
◆ LVPECL & LVTTL Signal Detect Output Optional
◆ Small Form Factor 2X5 pin Package
◆ Class 1 FDA and IEC60825-1 Laser Safety Compliant
◆ Operating Case Temperature
  Standard: 0℃~+70℃
  Industrial: -40℃~+85℃

Applications

◆ Fast Ethernet
◆ SONET/SDH Equipment Interconnect
◆ Fiber Channel Links
◆ Other Optical Link

Ordering Information

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Input/output</th>
<th>SD</th>
<th>Fiber</th>
<th>Distance</th>
<th>Temp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EOLF-1506-40-R*</td>
<td>DC/DC</td>
<td>TTL</td>
<td>SMF</td>
<td>40km</td>
<td>Standard</td>
</tr>
<tr>
<td>EOLF-1506-40</td>
<td>AC/AC</td>
<td>TTL</td>
<td>SMF</td>
<td>40km</td>
<td>Standard</td>
</tr>
<tr>
<td>EOLF-1506-80-R*</td>
<td>DC/DC</td>
<td>TTL</td>
<td>SMF</td>
<td>80km</td>
<td>Standard</td>
</tr>
<tr>
<td>EOLF-1506-80</td>
<td>AC/AC</td>
<td>TTL</td>
<td>SMF</td>
<td>80km</td>
<td>Standard</td>
</tr>
</tbody>
</table>

Note1: Standard version, other ordering information in detail refers to the denominate rule on next page.
# Nomenclature

## EOL □□□□□□□□□□□□□□□

### A-BCD-E-F-GHIJKLM

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Package</td>
<td>F=SFF</td>
</tr>
<tr>
<td>B</td>
<td>Laser Type</td>
<td>Blank=Duplex BI=BI-Direction</td>
</tr>
<tr>
<td>C</td>
<td>Wavelength</td>
<td>85=850nm; 13=1310; 15=1550; 16=CWDM/DWDM; 13=TX:1310/RX=1550 or same wavelength; 15=TX:1550/RX=1310 or same wavelength</td>
</tr>
<tr>
<td>D</td>
<td>Data Rate</td>
<td>00=0-1M; 01=1-100M; 03=155M; 04=300M; 06=622M; 12=1.25G; 24=2.5G; 26=2.67G; 30=2.97G; 48=4.25G (Asymmetrical: TX: 0=0-1M; 1=1-100M; 3=155M; 4=300M; 6=622M; 2=1.25G; 5=2.5G; 7=2.97G; 8=4.25G RX: 0=0-1M; 1=1-100M; 3=155M; 4=300M; 6=622M; 2=1.25G; 5=2.5G; 7=2.97G; 8=4.25G)</td>
</tr>
<tr>
<td>E</td>
<td>Module Type</td>
<td>Blank=Transceiver, T=Single transmitter, DT=Duplex transmitter, R=Single receiver, DR=Duplex receiver, A= Asymmetrical(for transceiver data rate asymmetrical); BT= Asymmetrical(for Dual transmitter data rate asymmetrical); BR= Asymmetrical(for Dual Receiver data rate asymmetrical); S=Same Wavelength(only for BIDI module)</td>
</tr>
<tr>
<td>F</td>
<td>Distance*</td>
<td>Blank=CWDM/DWDM Link Budget Expression Series, receiver; 850nm MMF ( \leq 2 \text{km} ); 1310nm/1550nm MMF ( \leq 2 \text{km} ); 2M; 1310nm/1550nm MMF ( \leq 1 \text{km} ); 1310nm/1550nm SMF ( \leq 2 \text{km} ); 02; SMF: 10*( X \text{ km} ) (( X=1,2,3, \ldots ))A=100km, B=120km, C=160km, D=200km.</td>
</tr>
<tr>
<td>G</td>
<td>Power budget*</td>
<td>XX, X=1, 2, 3 ...9 and 0, for CWDM/DWDM only.</td>
</tr>
<tr>
<td>H</td>
<td>CWDM or DWDM</td>
<td>CWDM: Refer the following table1, A-R; DWDM(100GHZ): Refer the following table2, 15~61. DWDM(50GHZ): Refer the following table3 C-Band,</td>
</tr>
<tr>
<td>I</td>
<td>DDM</td>
<td>Blank=Without DDM; D=With DDM</td>
</tr>
<tr>
<td>J</td>
<td>Temp.</td>
<td>Blank=0<del>70°C; I=-40</del>+85°C (including the extended temperature)</td>
</tr>
<tr>
<td>K</td>
<td>Connector</td>
<td>Blank=BI SC Receptacle=Duplex LC; P=Pigtail SC Receptacle; L=BI LC Receptacle; PL=Pigtail LC Receptacle;</td>
</tr>
<tr>
<td>L</td>
<td>Coupled Modes/SD</td>
<td>Blank: AC/AC SD-TTL Q: AC/AC SD-PECL R: DC/DC SD-TTL U: DC/DC SD-PECL W: AC/DC SD-TTL</td>
</tr>
</tbody>
</table>
X: AC/DC SD-PECL
Y: DC/AC SD-TTL
Z: DC/AC SD-PECL
0: AC/AC LOS-TTL
1: AC/AC LOS-PECL
2: DC/DC LOS-TTL
3: DC/DC LOS-PECL
4: AC/DC LOS-TTL
5: AC/DC LOS-PECL
8: DC/AC LOS-TTL
9: DC/AC LOS-PECL

J: DC for single or duplex TX or RX
k: AC for single or duplex TX or RX

M PIN Blank=2x5  7=2x7  A=2x10  6=2x6

*The distance and power budget should not be appeared in PN at the same time. For duplex CWDM/DWDM transceiver, power budget should be applied.

**Regulatory Compliance**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Standard</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrostatic Discharge</td>
<td>MIL-STD-883G, Method 3015.7</td>
<td>Class 1C (&gt;1000 V)</td>
</tr>
<tr>
<td>(ESD) to the Electrical Pins</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrostatic Discharge to the</td>
<td>EN 55024:1998+A1+A2, IEC-61000-4-2, GR-1089-CORE</td>
<td>Compliant with standards</td>
</tr>
<tr>
<td>enclosure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electromagnetic Interference</td>
<td>FCC Part 15 Class B, EN55022:2006, CISPR 22B :2006, VCCI Class B</td>
<td>Compliant with standards. Noise frequency range: 30MHz to 6GHz. Good system EMI design practice required to achieve Class B margins. System margins are dependent on customer host board and chassis design.</td>
</tr>
<tr>
<td>(EMI)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immunity</td>
<td>EN 55024:1998+A1+A2, IEC 61000-4-3</td>
<td>Compliant with standards. 1KHz sine-wave, 80% AM, from 80MHz to 1GHz. No effect on transmitter/receiver performance is detectable between these limits.</td>
</tr>
</tbody>
</table>
SFF Series

<table>
<thead>
<tr>
<th>Component Recognition</th>
<th>UL and CUL</th>
<th>TüV Certificate No. 50135086 (CB scheme)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RoHS6</td>
<td>2002/95/EC 4.1&amp;4.2 2005/747/EC 5&amp;7&amp;13</td>
<td>Compliant with standards*note2</td>
</tr>
</tbody>
</table>

Note2: For update of the equipments and strict control of raw materials, EOPTOLINK has the ability to supply the customized products since Jan 1st, 2007, which meet the requirements of RoHS6 (Restrictions on use of certain Hazardous Substances) of European Union.

In light of item 5 in RoHS exemption list of RoHS Directive 2002/95/EC, Item 5: Lead in glass of cathode ray tubes, electronic components and fluorescent tubes.

In light of item 13 in RoHS exemption list of RoHS Directive 2005/747/EC, Item 13: Lead and cadmium in optical and filter glass. The three exemptions are being concerned for Eoptolink’s transceivers, because Eoptolink’s transceivers use glass, which may contain Pb, for components such as lenses, isolators, and other components.

Product Description

The EOLF-1506-X series single-mode transceiver is small form factor, low power, high performance module for duplex optical data communications such as Fast Ethernet, 100BASE-FX, SONET OC-3 / SDH STM-1 and OC-12 / STM-4. This module is designed for single-mode fiber and operates at a nominal wavelength of 1550nm.

The transmitter section uses a multiple quantum well laser and is a class 1 laser compliant according to International Safety Standard IEC-60825. The receiver section uses an integrated InGaAs detector preamplifier (IDP) mounted in an optical header and a limiting post-amplifier IC. A LVPECL logic interface simplifies interface to external circuitry.

Interface information

The Signal Detect (SD, active high), normal optical input of receiver represents to a logic “1” level, which means asserted.

The following versions are available:
1. AC/AC Transceiver
   Tx and Rx are AC coupling. Tx has differential 100Ω load.
2. DC/DC Transceiver
   Standard PECL inputs and outputs, Tx and Rx are DC coupling.
3. AC/DC Transceiver
   Tx is AC coupled, Differential 100Ω load, Rx has standard PECL output and is DC coupling.

Absolute Maximum Ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage Temperature</td>
<td>Ts</td>
<td>-40</td>
<td>+85</td>
<td>°C</td>
</tr>
<tr>
<td>Supply Voltage</td>
<td>Vcc</td>
<td>-0.5</td>
<td>3.6</td>
<td>V</td>
</tr>
<tr>
<td>Operating Relative Humidity</td>
<td></td>
<td>-</td>
<td>95</td>
<td>%</td>
</tr>
</tbody>
</table>

*Exceeding any one of these values may destroy the device permanently.
## Recommended Operating Conditions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min.</th>
<th>Typical</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Case Temperature</td>
<td>TA</td>
<td>0</td>
<td>+70</td>
<td></td>
<td>°C</td>
</tr>
<tr>
<td>Power Supply Voltage</td>
<td>Vcc</td>
<td>3.15</td>
<td>3.3</td>
<td>3.45</td>
<td>V</td>
</tr>
<tr>
<td>Power Supply Current</td>
<td>Icc</td>
<td></td>
<td></td>
<td>300</td>
<td>mA</td>
</tr>
<tr>
<td>Date Rate</td>
<td></td>
<td></td>
<td></td>
<td>622</td>
<td>Mbps</td>
</tr>
<tr>
<td></td>
<td>OC-12/STM-4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OC-3/STM-1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>FE</td>
<td></td>
<td></td>
<td>100</td>
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</table>

## Performance Specifications - Electrical

**Transmitter**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>LVPECL Inputs (Differential)</td>
<td>Vin</td>
<td>400</td>
<td>2000</td>
<td>mVpp</td>
<td>AC Coupled Inputs*</td>
<td></td>
</tr>
<tr>
<td>Input Impedance (Differential)</td>
<td>Zin</td>
<td>85</td>
<td>100</td>
<td>115</td>
<td>ohm</td>
<td>Rin &gt; 100 kohm @ DC</td>
</tr>
<tr>
<td>TX_Dis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disable</td>
<td>2</td>
<td></td>
<td>Vcc+0.3</td>
<td>V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enable</td>
<td>0</td>
<td></td>
<td>0.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TX_FAULT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Fault</td>
<td>2</td>
<td></td>
<td>Vcc+0.3</td>
<td>V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>0</td>
<td></td>
<td>0.5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Receiver**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>LVPECL Outputs (Differential)</td>
<td>Vout</td>
<td>400</td>
<td>2000</td>
<td>mVpp</td>
<td>AC Coupled Outputs*</td>
<td></td>
</tr>
<tr>
<td>Output Impedance (Differential)</td>
<td>Zout</td>
<td>85</td>
<td>100</td>
<td>115</td>
<td>ohm</td>
<td></td>
</tr>
<tr>
<td>RX_SD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>-1.1</td>
<td></td>
<td>-0.74</td>
<td>V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>-2.0</td>
<td></td>
<td>-1.58</td>
<td>V</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Optical and Electrical Characteristics

**(EOLF-1506-40 Series, 1550nm DFB & PIN/TIA)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min.</th>
<th>Typical</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>9µm Core Diameter SMF</td>
<td></td>
<td>40</td>
<td></td>
<td></td>
<td>km</td>
</tr>
<tr>
<td>Data Rate</td>
<td></td>
<td>622</td>
<td></td>
<td></td>
<td>Mbps</td>
</tr>
</tbody>
</table>

**Transmitter**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min.</th>
<th>Typical</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centre Wavelength</td>
<td>λc</td>
<td>1520</td>
<td>1550</td>
<td>1580</td>
<td>nm</td>
</tr>
<tr>
<td>Spectral Width (-20dB)</td>
<td>Δλ</td>
<td></td>
<td></td>
<td>1</td>
<td>nm</td>
</tr>
<tr>
<td>Average Output Power*</td>
<td>Pout</td>
<td>-5</td>
<td></td>
<td>0</td>
<td>dBm</td>
</tr>
<tr>
<td>Extinction Ratio*</td>
<td>ER</td>
<td>9</td>
<td></td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Rise/Fall Time(10% ~ 90%)</td>
<td>tr/tf</td>
<td></td>
<td></td>
<td>1.2</td>
<td>ns</td>
</tr>
<tr>
<td>Parameter</td>
<td>Symbol</td>
<td>Min.</td>
<td>Typical</td>
<td>Max.</td>
<td>Unit</td>
</tr>
<tr>
<td>-----------</td>
<td>--------</td>
<td>------</td>
<td>---------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>9µm Core Diameter SMF</td>
<td></td>
<td>80</td>
<td></td>
<td></td>
<td>km</td>
</tr>
<tr>
<td>Data Rate</td>
<td></td>
<td>622</td>
<td></td>
<td></td>
<td>Mbps</td>
</tr>
</tbody>
</table>

**Transmitter**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min.</th>
<th>Typical</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centre Wavelength</td>
<td>( \lambda_C )</td>
<td>1520</td>
<td>1550</td>
<td>1580</td>
<td>nm</td>
</tr>
<tr>
<td>Spectral Width (-20dB)</td>
<td>( \Delta \lambda )</td>
<td></td>
<td>1</td>
<td></td>
<td>nm</td>
</tr>
<tr>
<td>Average Output Power*(^{\text{note4}})</td>
<td>Pout</td>
<td>-3</td>
<td></td>
<td>2</td>
<td>dBm</td>
</tr>
<tr>
<td>Extinction Ratio*(^{\text{note5}})</td>
<td>ER</td>
<td>10</td>
<td></td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Rise/Fall Time(10% ~ 90%)</td>
<td>tr/tf</td>
<td></td>
<td></td>
<td>1.2</td>
<td>ns</td>
</tr>
<tr>
<td>Total Jitter*(^{\text{note5}})</td>
<td>TJ</td>
<td></td>
<td></td>
<td>1</td>
<td>ns</td>
</tr>
</tbody>
</table>

**Output Optical Eye**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>Telcordia GR-253-CORE and ITU-T G.957 Compliant*(^{\text{note7}})</th>
</tr>
</thead>
<tbody>
<tr>
<td>TX_Disable Assert Time</td>
<td>t_off</td>
<td></td>
<td>10</td>
</tr>
</tbody>
</table>

**Receiver**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min.</th>
<th>Typical</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center Wavelength</td>
<td>( \lambda_C )</td>
<td>1260</td>
<td>1600</td>
<td></td>
<td>nm</td>
</tr>
<tr>
<td>Receiver Sensitivity*(^{\text{note6}})</td>
<td>Pmin</td>
<td></td>
<td>-28</td>
<td></td>
<td>dBm</td>
</tr>
<tr>
<td>Receiver Overload</td>
<td>Pmax</td>
<td></td>
<td>-8</td>
<td></td>
<td>dBm</td>
</tr>
<tr>
<td>Return Loss</td>
<td></td>
<td></td>
<td>14</td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>SD De-Assert</td>
<td>SDD</td>
<td></td>
<td>-30</td>
<td></td>
<td>dBm</td>
</tr>
<tr>
<td>SD Assert</td>
<td>SDA</td>
<td></td>
<td>-45</td>
<td></td>
<td>dBm</td>
</tr>
<tr>
<td>SD Hysteresis*(^{\text{note8}})</td>
<td></td>
<td></td>
<td>0.5</td>
<td></td>
<td>dB</td>
</tr>
</tbody>
</table>

**Note3:** LVPECL logic, internally AC coupled.

**Note4:** Output is measured by coupling into a 9/125µm single-mode fiber.

**Note5:** Filtered, measured with a PRBS 2\(^{23}.1\) test pattern @622Mbps.

**Note6:** Minimum average optical power measured at BER less than 1E-12, with a 2\(^{23}.1\) NRZ PRBS and ER=9 dB.

Note7: Telcordia GR-253-CORE and ITU-T G.957 Compliant.
Note 7: Eye Pattern Mask

Note 8: SD Hysteresis

Functional Description of Transceiver
### SFF Transceiver Electrical Pad Layout

**Pin Function Definitions**

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS</td>
<td>Mounting Studs, Case isolated from circuit ground</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>VeeR</td>
<td>Receiver Signal Ground</td>
</tr>
<tr>
<td>2</td>
<td>VccR</td>
<td>3.3V DC power for receiver section</td>
</tr>
<tr>
<td>3</td>
<td>SD</td>
<td>Signal Detect Output (LVPECL) “1” - “Signal valid”, “0” – “Lose of signal”</td>
</tr>
<tr>
<td>4</td>
<td>RD-</td>
<td>Received Data Out Bar (LVPECL), without termination inside</td>
</tr>
<tr>
<td>5</td>
<td>RD+</td>
<td>Received Data Out (LVPECL), without termination inside</td>
</tr>
<tr>
<td>6</td>
<td>VccT</td>
<td>3.3V DC power for transmitter section</td>
</tr>
<tr>
<td>7</td>
<td>VeeT</td>
<td>Transmitter Signal Ground</td>
</tr>
<tr>
<td>8</td>
<td>TXDIS</td>
<td>Transmitter Disable (LVTTL), “1” – Disable, “0” – Enable</td>
</tr>
<tr>
<td>9</td>
<td>TD+</td>
<td>Transmitter Data In (LVPECL), without termination inside</td>
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<tr>
<td>10</td>
<td>TD-</td>
<td>Transmitter Data In Bar (LVPECL), without termination inside</td>
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*Case isolated from circuit ground.*
**SFF Series**

**Eoptolink Technology Inc., Ltd.**

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**Recommend Circuit Schematic**

![Circuit Diagram]

- **L1, L2:** 1...4.7 µH
- **C1, C2, C3:** 4.7...10 µF
- **R1, R2:** biasing of outputs depending on Serializer
- **R3, R4:** 127 Ohms
- **R5, R6:** 80 Ohms
- **R7:** 510 Ohms for PECL signal detect, open for TTL

Place R1/2/3/4/5/6 as close to SerDes chip as possible.
DC/DC coupling

L1, L2: 1...4.7 µH
C1, C2, C3: 4.7...10 µF
C4, C5, C6, C7: 100 nF
R1: 100 Ohms
R2, R3: 150 Ohms
R4, R5: biasing of outputs depending on Serializer
R6, R7: 127 Ohms
R8, R9: 80 Ohms
R10: 510 Ohms for PECL signal detect, open for TTL
Place R1/4/5 as close to SerDes as possible
Place R2/3 as close to transceiver as possible
Mechanical Specifications

Class 1 Labels

Laser Emission Data

<p>| | |</p>
<table>
<thead>
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<tbody>
<tr>
<td>Wavelength</td>
<td>1550nm</td>
</tr>
<tr>
<td>Total output power (as defined by FDA: 7mm aperture at 20cm distance)</td>
<td>&lt;0.195mW</td>
</tr>
<tr>
<td>Total output power (as defined by IEC: 7mm aperture at 10cm distance)</td>
<td>&lt;15.6mW</td>
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<tr>
<td>Beam divergence</td>
<td>12.5°</td>
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Laser Emission
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http://www.eoptolink.com

Or contact Eoptolink Technology Inc., Ltd. listed at the end of the documentation to get the latest document.

Revision History

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<th>Reviewed</th>
<th>Approved</th>
<th>DCN</th>
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<tr>
<td>V3.a</td>
<td>Cathy</td>
<td>Kelly</td>
<td></td>
<td>Released.</td>
<td>Mar 24, 2010</td>
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<td>V4.a</td>
<td>Hunter</td>
<td>David, Kelly</td>
<td></td>
<td>Update LOGO, nomenclature.</td>
<td>Sep 26, 2011</td>
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