# SFP 10G Copper RJ45 Transceiver



## Description

The BlueOptics© BO08J78S6 SFP+ transceiver is a high performance, cost effective module supporting a data rate up to 10Gbps with 30 Meter link length on twisted pair Cat6A S/FTP cable.

BlueOptics© transceivers are 100% compliant with SFP Multi-Source Agreement (MSA).

The BO08J78S6 SFP+ Copper Transceiver is designed for application where optical connections not possible or Direct Attached Cable Connection are too short.

The BO08J78S6 10Gbase-T SFP+ Copper Transeiver give you significant more bandwith than classical SFP Copper Modules, which just operate at 1Gbps.

Another significant advantage compared to 10GBASE-T fixed port is the very low power consumption.

## Features

- ✓ 10Gb/s electrical RJ45 interface compliant to 802.3an 10GBASE-T

- ✓ Support 10Gbase-T / 5Gbase-T / 2.5Gbase-T / 1000base-T on line port

- ✓ Support 10Gbase-R on host port

- ✓ Complaint to Energy Efficient Ethernet 802.3az

- ✓ Hot-pluggable SFP+ footprint compliant to SFF-8431

- ✓ RJ-45 connector interface

- ✓ Link length up to 30 Meter with Cat6A or 7

- ✓ Auto-negotiates with other 10GBase- T PHYs

- ✓ Auto MDI-X

- ✓ Access to physical layer IC via 2 wire serial bus

- ✓ Metal enclosure, for lower EMI

- ✓ RoHS compliant and lead-free

- ✓ Low power dissipation: maximum 2.5W

- ✓ Single +3.3V power supply

- ✓ Case operating temperature

  - Commercial: 0°C to +70°C
  - Industrial: -40°C to +85°C

## Applications

- ✓ 10GBase-T

- ✓ Ethernet

- ✓ Switch to Server Interface

- ✓ Router to Server Interface

- ✓ Other links

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## Warnings

**Handling Precautions:** This device is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended.

**Laser Safety:** Even small radiation emitted by laser devices can be dangerous to human eyes and lead to permanent eye injuries. Be sure to avoid eye contact with direct or indirect radiation.

## Warranty

Every BlueOptics© transceiver comes with a 5 year replacement warranty and lifetime support.
For a warranty inquiry, please contact your CBO sales representative.
This warranty covers the first user of the equipment only.

## Important Notice

Performance figures, data and any illustrative material provided in this data sheet are typical and must be specifically confirmed in writing by CBO before they become applicable to any particular order or contract. In accordance with the CBO policy of continuous improvement specifications may change without notice.

The publication of information in this data sheet does not imply freedom from patent or other protective rights of CBO or others.

Further details are available from any CBO sales representative.

## Installation

Before installation attach an ESD-preventive wrist to ensure not to damage the transceiver or hardware.

BlueOptics© BO08J78S6 can be installed in any Small Form Factor Pluggable (SFP+) port. You can install the BO08J78S6 regardless if the system is powered on or off, because it is hot-swappable.

Insert the transceiver into the SFP+ port and remove the dust cap.

You can now connect your cable.

## Order Information

| Part No. | Temp. | DDM |
|---|---|---|
| BO08J78S6 | 0°C to +70°C | - |
| BO08J78S6IN | -40°C to +80°C | - |

## Regulatory Compliance

| Feature | Standard | Co. |
|---|---|---|
| Electrostatic Discharge (ESD) | - IEC/EN 61000-4- 2 | ✔ |
| Electromagnetic Interference (EMI) | - FCC Part 15 Class B EN 55022 <br> - Class B (CISPR 22A) | ✔ |
| Component Recognition | - IEC/EN 60950, UL | ✔ |
| RoHS | - 2002/95/EC | ✔ |
| EMC | - EN61000-3 | ✔ |

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## 1. Absolute Maximum Ratings

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Storage Temperature | Ts | -40 | | 85 | ºC |
| Storage Ambient Humidity | HA | 5 | | 95 | % |

## 2. Recommended Operating Conditions

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Note |
|---|---|---|---|---|---|---|
| Case Operating Temperature | Tcase | 0 | | 70 | | BO08J78S6 |
| | | -40 | | 85 | | BO08J78S6IN |
| Ambient Humidity | HA | 5 | | 70 | % | |
| Data Rate | | | 1.25 / 2.5 / 5 / 10 | | Gbps | |
| Transmission Distance | | | | 30 | M | |
| Coupled Copper Cable | | | Twisted Pair | | | Min. Cat6A |

## 3. EEPROM Information

The SFP MSA defines a 256-byte memory map in EEPROM describing the transceivers capabilities, standard interfaces, manufacturer, and other information, which is accessible over a 2 wire serial interface at the 8-bit address 1010000X (A0h).

| Data Address | Field Size (Bytes) | Name of Field | Contents (Hex) | Description |
|---|---|---|---|---|
| 0 | 1 | Identifier | XX | Formfactor |
| 1 | 1 | Ext. Identifier | XX | |
| 2 | 1 | Connector | XX | |
| 3-10 | 8 | Transceiver | XX XX XX XX XX XX XX XX | Transmittter Code |
| 11 | 1 | Encoding | XX | |
| 12 | 1 | BR, Nominal | XX | Transceiver Speed |
| 13 | 1 | Reserved | 00 | |
| 14 | 1 | Length (9µm) km | XX | Max. link length in KM |
| 15 | 1 | Length (9µm) 100m | XX | Max. link length in M |
| 16 | 1 | Length (50µm) 10m | XX | Max. link length in M |
| 17 | 1 | Length(62.5µm)10m | XX | Max. link length in M |
| 18 | 1 | Length (Copper) | XX | Max. link length in M |
| 29 | 1 | Reserved | 00 | |
| 30-35 | 16 | Vendor name | XX XX XX XX XX XX XX XX XX XX XX XX XX XX XX XX | Vendor name - OEM |
| 36 | 1 | Reserved | 00 | |
| 37-39 | 3 | Vendor OUI | XX XX XX | |
| 40-55 | 16 | Vendor PN | XX XX XX XX XX XX XX XX XX XX XX XX XX XX XX XX | Product Number - depending on Part |
| 56-59 | 4 | Vendor rev | XX XX XX XX | Vendor revision |
| 60-61 | 2 | Wavelength | XX XX | Transceiver Wavelength |
| 62 | 1 | Reserved | 00 | |
| 63 | 1 | CC BASE | XX | Checksum of bytes 0-62 |
| 64-65 | 2 | Options | XX XX | |
| 66 | 1 | BR, max | XX | |
| 67 | 1 | BR, min | XX | |
| 68-83 | 16 | Vendor SN | XX XX XX XX XX XX XX XX XX XX XX XX XX XX XX XX | Part serial number |
| 84-91 | 8 | Vendor date code | XX XX XX XX XX XX 20 20 | Year, Month, Day |
| 92 | 1 | Diagnostic type | XX | Diagnostics |

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| 93 | 1 | Enhanced option | XX | Diagnostics |
|---|---|---|---|---|
| 94 | 1 | SFF-8472 | XX | Diagnostics |
| 95 | 1 | CC_EXT | XX | Checksum of bytes 64-94 |
| 96-255 | 160 | Vendor Specific | | |

## 4. Mechanical Specifications (Unit: mm)