



### **FC95700051-OPC**

Fujitsu® FC95700051 Compatible TAA OC-12-IR SFP Transceiver (SMF, 1310nm, 15km, LC)

#### **Features**

- INF-8074 and SFF-8472 Compliance
- Duplex LC Connector
- Single-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free



#### **Applications:**

- OC-12 Transmission
- Access and Enterprise

#### **Product Description**

This Fujitsu® FC95700051 compatible SFP transceiver provides OC-12 (622mbps) transmission rates for up to 15km over single-mode fiber (SMF) using a wavelength of 1310nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Fujitsu® transceiver. This easy to install, hot swappable transceiver has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. It is built to meet or exceed the specifications of Fujitsu®, as well as to comply with MSA (Multi-Source Agreement) standards to ensure seamless network integration. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

OptioConnect's transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S.-made or designated country end products."



### Regulatory Compliance

- ESD to the Electrical PINs: compatible with MIL-STD-883E Method 3015.4
- ESD to the LC Receptacle: compatible with IEC 61000-4-3
- EMI/EMC compatible with FCC Part 15 Subpart B Rules, EN55022:2010
- Laser Eye Safety compatible with FDA 21CFR, EN60950-1& EN (IEC) 60825-1,2
- RoHS compliant with EU RoHS 2.0 directive 2015/863/EU

### Absolute Maximum Ratings

| Parameter                  | Symbol           | Min. | Typ. | Max. | Unit |
|----------------------------|------------------|------|------|------|------|
| Maximum Supply Voltage     | V <sub>CC</sub>  | -0.5 |      | 3.6  | V    |
| Storage Temperature        | T <sub>S</sub>   | -40  |      | +85  | °C   |
| Operating Case Temperature | T <sub>C</sub>   | 0    |      | 70   | °C   |
| Operating Humidity         | RH               | 5    |      | 85   | %    |
| Receiver Power             | R <sub>MAX</sub> |      |      | -8   | dBm  |
| Data Rate                  |                  |      | 622  |      | Mbps |

### Electrical Characteristics (TOP=25°C, V<sub>CC</sub>=3.3Volts)

| Parameter                      | Symbol               | Min. | Typ. | Max. | Unit | Notes |
|--------------------------------|----------------------|------|------|------|------|-------|
| Power Supply Voltage           | V <sub>CC</sub>      | 3.15 | 3.30 | 3.45 | V    |       |
| Power Supply Current           | I <sub>CC</sub>      |      |      | 300  | mA   |       |
| Power Consumption              | P <sub>DISS</sub>    |      |      | 800  | mW   |       |
| Transmitter                    |                      |      |      |      |      |       |
| Single ended data input swing  | V <sub>in,pp</sub>   | 400  |      | 2000 | mVpp | 1     |
| Input differential impedance   | Z <sub>in</sub>      | 85   | 100  | 115  | Ω    | 2     |
| Receiver                       |                      |      |      |      |      |       |
| Single ended data output swing | V <sub>out, pp</sub> | 400  |      | 2000 | mVpp | 1     |
| Output differential impedance  | Z <sub>in</sub>      | 80   | 100  | 120  | Ω    |       |

### Notes:

1. AC coupled.
2. R<sub>in</sub> > 100 kohms @ DC

## Optical Characteristics

| Parameter                 | Symbol           | Min. | Typ. | Max. | Unit | Notes |
|---------------------------|------------------|------|------|------|------|-------|
| 9µm Core Diameter SMF     | L                |      | 10   |      | km   |       |
| Data Rate                 |                  |      | 622  |      | Mbps |       |
| Transmitter               |                  |      |      |      |      |       |
| Average Output Power      | P <sub>out</sub> | -15  |      | -8   | dBm  | 1     |
| Optical Extinction Ratio  | ER               | 10   |      |      | dB   |       |
| Optical Wavelength        | Tλ               | 1260 | 1310 | 1360 | nm   |       |
| Spectral Width (RMS)      | Δλ               |      |      | 4    | nm   |       |
| Total Jitter              | TJ               |      |      | 0.43 | UI   | 2     |
| Rise/Fall Time (20%~80%)  | tr/tf            |      |      | 0.26 | ns   |       |
| Receiver                  |                  |      |      |      |      |       |
| Receiver Sensitivity      | P <sub>min</sub> |      |      | -28  | dBm  | 3     |
| Receiver Overload         | P <sub>max</sub> | -8   |      |      | dBm  |       |
| Optical Center Wavelength | λ <sub>C</sub>   | 1260 |      | 1600 | nm   |       |

## Notes:

1. Coupled into a Single-mode fibre
2. Filtered, measured with a PRBS 2<sup>23</sup>-1 test pattern @622Mbps.
3. Minimum average optical power is measured at BER less than 1E-12, with 2<sup>23</sup>-1 PRBS and ER=9 dB

## Pin Descriptions

| Pin | Symbol     | Name/Descriptions                                                              | Ref. |
|-----|------------|--------------------------------------------------------------------------------|------|
| 1   | VeeT       | Transmitter Ground (Common with Receiver Ground).                              | 1    |
| 2   | TX Fault   | Transmitter Fault. LVTTTL-O                                                    | 2    |
| 3   | TX Disable | Transmitter Disable. Laser output disabled on high or open. LVTT-I.            | 3    |
| 4   | SDA        | 2-Wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i). LVTTTL-I/O. |      |
| 5   | SCL        | 2-Wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i). LVTTTL-I.   |      |
| 6   | MOD_ABS    | Module Absent, Connect to VeeT or VeeR in Module.                              | 4    |
| 7   | RS0        | Rate Select 0. Not used                                                        | 5    |
| 8   | LOS        | Loss of Signal indication. Logic 0 indicates normal operation. LVTTTL-O.       | 2    |
| 9   | RS1        | Rate Select 1. Not used                                                        | 5    |
| 10  | VeeR       | Receiver Ground (Common with Transmitter Ground).                              | 1    |
| 11  | VeeR       | Receiver Ground (Common with Transmitter Ground).                              | 1    |
| 12  | RD-        | Receiver Inverted DATA out. AC Coupled. CML-O.                                 |      |
| 13  | RD+        | Receiver Non-inverted DATA out. AC Coupled. CML-O.                             |      |
| 14  | VeeR       | Receiver Ground (Common with Transmitter Ground).                              | 1    |
| 15  | VccR       | Receiver Power Supply.                                                         |      |
| 16  | VccT       | Transmitter Power Supply.                                                      |      |
| 17  | VeeT       | Transmitter Ground (Common with Receiver Ground).                              | 1    |
| 18  | TD+        | Transmitter Non-Inverted DATA in. AC Coupled. CML-I.                           |      |
| 19  | TD-        | Transmitter Inverted DATA in. AC Coupled. CML-O.                               |      |
| 20  | VeeT       | Transmitter Ground (Common with Receiver Ground).                              | 1    |

### Notes:

1. The module signal ground contacts, VeeR and VeeT, should be isolated from the module case.
2. This contact is an open collector/drain output and should be pulled up to the Vcc\_Host with resistor in the range 4.7K $\Omega$  to 10K $\Omega$ . Pull ups can be connected to one or several power supplies, however the host board design shall ensure that no module contract has voltage exceeding module VccT/R +0.5.V.
3. Tx\_Disable is an input contact with a 4.7K $\Omega$  to 10K $\Omega$  pull-up resistor to VccT inside module.
4. Mod\_ABS is connected to VeeT or VeeR in the SFP+ module. The host may pull the contract up to Vcc\_Host with a resistor in the range from 4.7K $\Omega$  to 10K $\Omega$ . Mod\_ABS is asserted "High" when the SFP+ module is physically absent from a host slot.
5. Internally pulled down per SFF-8431



Pin-out of connector Block on Host board

### Recommended Circuit Schematic



**Mechanical Specifications**

Small Form Factor Pluggable (SFP) transceivers are compatible with the dimensions defined by the SFP Multi-Sourcing Agreement (MSA).



**EEPROM Information**

EEPROM memory map specific data field description is as below:



## **OptioConnect**

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#### **Who We Are**

OptioConnect is reshaping the landscape of communication and high-speed networking through intelligent technology. With a core focus on cutting edge technology, we deliver smarter fiber optic solutions for enterprise networks, data centers, and next-gen telecom infrastructures.

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