

## HCD25D10I0000-0-DW5333-AO

Fujitsu® HCD25D10I0000-0-DW5333 Compatible TAA 25GBase-DWDM SFP28 Transceiver C-Band 100GHz (SMF, 1553.33nm, 10km, LC, DOM, -40 to 85C)

### Features

- SFF-8432 and SFF-8472 Compliance
- Duplex LC Connector
- Industrial Temperature -40 to 85 Celsius
- Single-mode Fiber
- Hot Pluggable
- Excellent ESD Protection
- Metal with Lower EMI
- RoHS Compliant and Lead Free



### Applications

- 25GBase-LR Ethernet
- Access, Metro and Enterprise

### Product Description

This Fujitsu® HCD25D10I0000-0-DW5333 compatible SFP28 transceiver provides 25GBase-DWDM throughput up to 10km over single-mode fiber (SMF) using a wavelength of 1553.33nm 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. Digital optical monitoring (DOM) support is also present to allow access to real-time operating parameters. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

AddOn'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

## Wavelength Guide (100GHz ITU Channels)

| Channel | Wavelength(nm) | Frequency(THZ) | Channel | Wavelength(nm) | Frequency(THZ) |
|---------|----------------|----------------|---------|----------------|----------------|
| D21     | 1560.61        | 192.1          | D41     | 1544.53        | 194.1          |
| D22     | 1559.79        | 192.2          | D42     | 1543.73        | 194.2          |
| D23     | 1558.98        | 192.3          | D43     | 1542.94        | 194.3          |
| D24     | 1558.17        | 192.4          | D44     | 1542.14        | 194.4          |
| D25     | 1557.36        | 192.5          | D45     | 1541.35        | 194.5          |
| D26     | 1556.55        | 192.6          | D46     | 1540.56        | 194.6          |
| D27     | 1555.75        | 192.7          | D47     | 1539.77        | 194.7          |
| D28     | 1554.94        | 192.8          | D48     | 1538.98        | 194.8          |
| D29     | 1554.13        | 192.9          | D49     | 1538.19        | 194.9          |
| D30     | 1553.33        | 193.0          | D50     | 1537.4         | 195.0          |
| D31     | 1552.52        | 193.1          | D51     | 1536.61        | 195.1          |
| D32     | 1551.72        | 193.2          | D52     | 1535.82        | 195.2          |
| D33     | 1550.92        | 193.3          | D53     | 1535.04        | 195.3          |
| D34     | 1550.12        | 193.4          | D54     | 1534.25        | 195.4          |
| D35     | 1549.32        | 193.5          | D55     | 1533.47        | 195.5          |
| D36     | 1548.51        | 193.6          | D56     | 1532.68        | 195.6          |
| D37     | 1547.72        | 193.7          | D57     | 1531.9         | 195.7          |
| D38     | 1546.92        | 193.8          | D58     | 1531.12        | 195.8          |
| D39     | 1546.12        | 193.9          | D59     | 1530.33        | 195.9          |
| D40     | 1545.32        | 194.0          | D60     | 1529.55        | 196.0          |

## Absolute Maximum Ratings

| Parameter                  | Symbol | Min.  | Typ. | Max.  | Unit | Notes |
|----------------------------|--------|-------|------|-------|------|-------|
| Maximum Supply Voltage     | Vcc    | -0.3  |      | 4.0   | V    |       |
| Storage Temperature        | TS     | -40   |      | 85    | °C   |       |
| Operating Case Temperature | Tc     | -40   |      | 85    | °C   |       |
| Relative Humidity          | RH     | 0     |      | 85    | %    |       |
| Data Rate                  | BR     | 24.33 |      | 25.78 | Gbps |       |

## Electrical Characteristics

| Parameter                          | Symbol                    | Min. | Typ. | Max.                 | Unit  | Notes |
|------------------------------------|---------------------------|------|------|----------------------|-------|-------|
| Supply Voltage                     | V <sub>CC</sub>           | 3.13 |      | 3.47                 |       |       |
| Power Dissipation                  | PD                        |      |      | 2.0                  | W     |       |
| <b>Transmitter</b>                 |                           |      |      |                      |       |       |
| Data Input Swing Differential      | V <sub>IN</sub>           | 190  |      | 1000                 | mV    |       |
| Differential line input Impedance  | R <sub>IN</sub>           | 80   | 100  | 120                  | Ohm   |       |
| Transmitter Fault Output-High      | V <sub>FaultH</sub>       | 2    |      | V <sub>CC</sub> +0.3 | V     |       |
| Transmitter Fault Output-Low       | V <sub>FaultL</sub>       | VEE  |      | VEE +0.8             | V     |       |
| Transmitter Disable Voltage-High   | V <sub>DisH</sub>         | 2    |      | V <sub>CC</sub> +0.3 | V     |       |
| Transmitter Disable Voltage- low   | V <sub>DisL</sub>         | VEE  |      | VEE +0.8             | V     |       |
| <b>Receiver</b>                    |                           |      |      |                      |       |       |
| Differential line Output Impedance | R <sub>OUT</sub>          | 80   | 100  | 120                  | Ohm   |       |
| Differential Data Output Voltage   | V <sub>DR</sub>           | 350  |      | 850                  | mVp-p |       |
| LOS Output Voltage-High            | V <sub>LOSH</sub>         | 2    |      | V <sub>CC</sub> +0.3 | V     |       |
| LOS Output Voltage-Low             | V <sub>LOSL</sub>         | VEE  |      | VEE +0.8             | V     |       |
| <b>Others</b>                      |                           |      |      |                      |       |       |
| Cold-Start time                    | T <sub>start-cooled</sub> |      |      | 35                   | s     |       |

## Optical Characteristics

| Parameter  | Symbol                | Min.    | Typ. | Max.    | Unit  | Notes |
|--|-----------------------|---------|------|---------|-------|-------|
| <b>Transmitter</b>   |                       |         |      |         |       |       |
| Wavelength   | $\lambda$             | 1529.55 |      | 1560.61 | nm    |       |
| Center Wavelength Spacing                                    |                       | 100     |      |         | GHz   |       |
| Average Launched Power                                       | P <sub>O</sub>        | -1      |      | 5       | dBm   |       |
| Extinction Ratio   | ER                    | 6       |      |         | dB    |       |
| Average Launched Power (Laser Off)                           | P <sub>off</sub>      |         |      | -30     | dBm   |       |
| Side-Mode Suppression Ratio                                  | SMSR                  | 30      |      |         | dB    |       |
| Relative Intensity Noise                                     | RIN <sub>20 OMA</sub> |         |      | -130    | dB/Hz |       |
| <b>Receiver</b>  |                       |         |      |         |       |       |
| Center Wavelength  | $\lambda_{IN}$        | 1260    |      | 1620    | nm    |       |
| Receiver Overload  | P <sub>overload</sub> | 2       |      |         | dBm   |       |
| Receiver Sensitivity @5E-5 BOL                               | P <sub>sen BOL</sub>  |         |      | -15     | dBm   |       |
| Receiver Sensitivity @5E-5 EOL                               | P <sub>sen EOL</sub>  |         |      | -14.5   | dBm   | 1     |
| Receiver Sensitivity @5E-5 EOL after 10km fiber transmission | P <sub>sen1 EOL</sub> |         |      | -9.0    | dBm   | 1     |
| Los Of Signal Assert   | PA                    | -30     |      |         | dBm   |       |
| Los Of Signal De-assert                                      | PD                    |         |      | -16     | dBm   |       |
| LOS -Hysteresis  | P <sub>Hys</sub>      | 0.5     |      | 6       | dB    |       |

### Notes:

1. Measured at 5E-5, ER>4dB, PRBS 2<sup>31</sup> -1

## Pin Descriptions

| Pin | Symbol  | Name/Descriptions  | Ref. |
|-----|---------|--|------|
| 1   | VEET    | Transmitter Ground   | 1    |
| 2   | TFAULT  | Transmitter Fault  | 2    |
| 3   | TDIS    | Transmitter Disable. Laser output disabled on high or open.    | 3    |
| 4   | SDA     | 2-wire Serial Interface Data Line                              | 2    |
| 5   | SCL     | 2-wire Serial Interface Clock Line                             | 2    |
| 6   | MOD_ABS | Module Absent. Grounded within the module                      | 2    |
| 7   | NA      | Not Used   |      |
| 8   | RX_LOS  | Loss of Signal indication. Logic 0 indicates normal operation. | 4    |
| 9   | NA      | No Used  |      |
| 10  | VEER    | Receiver Ground  | 1    |
| 11  | VEER    | Receiver Ground  | 1    |
| 12  | RD-     | Receiver Inverted DATA out. AC Coupled.                        |      |
| 13  | RD+     | Receiver Non-inverted DATA out. AC Coupled.                    |      |
| 14  | VEER    | Receiver Ground  | 1    |
| 15  | VCCR    | Receiver Power Supply  | 5    |
| 16  | VCCT    | Transmitter Power Supply                                       | 5    |
| 17  | VEET    | Transmitter Ground   | 1    |
| 18  | TD+     | Transmitter Non-Inverted DATA in. AC Coupled.                  |      |
| 19  | TD-     | Transmitter Inverted DATA in. AC Coupled.                      |      |
| 20  | VEET    | Transmitter Ground   | 1    |

### Notes:

1. Circuit ground is internally isolated from chassis ground.
2. T<sub>FAULT</sub> is an open collector/drain output, which should be pulled up with a 4.7k – 10k Ohms resistor on the host board if intended for use. Pull up voltage should be between 2.0V to V<sub>cc</sub> + 0.3V. A high output indicates a transmitter fault caused by either the TX bias current or the TX output power exceeding the preset alarm thresholds. A low output indicates normal operation. In the low state, the output is pulled to <0.8V.
3. Laser output disabled on T<sub>DIS</sub> >2.0V or open, enabled on T<sub>DIS</sub> <0.8V.
4. LOS is open collector output. Should be pulled up with 4.7k – 10kΩ on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.
5. Internally connected



Pin-out of connector Block on Host board

### Block Diagram of Transceiver



## Recommended Interface Circuit



## Mechanical Specifications



## About AddOn Networks

In 1999, AddOn Networks entered the market with a single product. Our founders fulfilled a severe shortage for compatible, cost-effective optical transceivers that compete at the same performance levels as leading OEM manufacturers. Adhering to the idea of redefining service and product quality not previously had in the fiber optic networking industry, AddOn invested resources in solution design, production, fulfillment, and global support.

Combining one of the most extensive and stringent testing processes in the industry, an exceptional free tech support center, and a consistent roll-out of innovative technologies, AddOn has continually set industry standards of quality and reliability throughout its history.

Reliability is the cornerstone of any optical fiber network and is engrained in AddOn's DNA. It has played a key role in nurturing the long-term relationships developed over the years with customers. AddOn remains committed to exceeding industry standards with certifications from ranging from NEBS Level 3 to ISO 9001:2005 with every new development while maintaining the signature reliability of its products.



## U.S. Headquarters

Email: [sales@addonnetworks.com](mailto:sales@addonnetworks.com)

Telephone: +1 877.292.1701

Fax: 949.266.9273

## Europe Headquarters

Email: [salesupportemea@addonnetworks.com](mailto:salesupportemea@addonnetworks.com)

Telephone: +44 1285 842070