



## SPDT8040102DF70

ADVA® Compatible 10GBase-DWDM SFP+ Transceiver 100GHz (SMF, 1552.52nm to 1545.32nm, 40km, LC, DOM, -40 to 85C)

### Product Description

This ADVA® SFP+ transceiver provides 10GBase-DWDM throughput up to 40km over single-mode fiber (SMF) using a wavelength of 1552.52nm to 1545.32nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent ADVA® 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. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

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

### Features:

- Supports 9.95 to 11.3Gbps or 1.25Gbps Bit Rates Automatically Adaptive (With CDR)
- 100GHz ITU-Based Channel Spacing (C-Band)
- Up to 40km Link Length @9.95 to 11.3Gbps or Up to 80km Link Length @1.25Gbps
- APD Receiver with Limiting Amplifier
- Duplex LC Connector
- Monolithic EML Tunable TOSA
- Positive Power Supply Lines: 3.3V
- Low Power Consumption: 2.7w
- RoHS Compliant and Lead-Free
- Operating Temperature: -40 to 85 Celsius



### Applications:

- 10x Gigabit Ethernet over DWDM
- Access, Metro and Enterprise
- Gigabit Ethernet over CWDM

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*For your product safety, please read the following information carefully before any manipulation of the transceiver:*



#### ESD

This transceiver is specified as ESD threshold 1kV for SFI pins and 2kV for all others electrical input pins, tested per MIL-STD-883G, Method 3015.4 / JESD22-A114-A (HBM). However, normal ESD precautions are still required during the handling of this module.



#### LASER SAFETY

This is a Class1 Laser Product according to IEC 60825-1:2007. This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated (June 24, 2007).

*The optical ports of the module need to be terminated with an optical connector or with a dust plug in order to avoid contamination.*

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## ITU Channel Wavelength Guide

| ITU Channel | Frequency (THz) | Center Wavelength (nm) | ITU Channel | Frequency (THz) | Center Wavelength (nm) |
|-------------|-----------------|------------------------|-------------|-----------------|------------------------|
| 11          | 191.1           | 1568.11                | 36          | 193.6           | 1548.51                |
| 12          | 191.2           | 1567.95                | 37          | 193.7           | 1547.72                |
| 13          | 191.3           | 1567.13                | 38          | 193.8           | 1546.92                |
| 14          | 191.4           | 1566.31                | 39          | 193.9           | 1546.12                |
| 15          | 191.5           | 1565.50                | 40          | 194.0           | 1545.32                |
| 16          | 191.6           | 1564.68                | 41          | 194.1           | 1544.53                |
| 17          | 191.7           | 1563.86                | 42          | 194.2           | 1543.73                |
| 18          | 191.8           | 1563.05                | 43          | 194.3           | 1542.94                |
| 19          | 191.9           | 1562.23                | 44          | 194.4           | 1542.14                |
| 20          | 192.0           | 1561.42                | 45          | 194.5           | 1541.35                |
| 21          | 192.1           | 1560.61                | 46          | 194.6           | 1540.56                |
| 22          | 192.2           | 1559.79                | 47          | 194.7           | 1539.77                |
| 23          | 192.3           | 1558.98                | 48          | 194.8           | 1538.98                |
| 24          | 192.4           | 1558.17                | 49          | 194.9           | 1538.19                |
| 25          | 192.5           | 1557.36                | 50          | 195.0           | 1537.4                 |
| 26          | 192.6           | 1556.55                | 51          | 195.1           | 1536.61                |
| 27          | 192.7           | 1555.75                | 52          | 195.2           | 1535.82                |
| 28          | 192.8           | 1554.94                | 53          | 195.3           | 1535.04                |
| 29          | 192.9           | 1554.13                | 54          | 195.4           | 1534.25                |
| 30          | 193.0           | 1553.33                | 55          | 195.5           | 1533.47                |
| 31          | 193.1           | 1552.52                | 56          | 195.6           | 1532.68                |
| 32          | 193.2           | 1551.72                | 57          | 195.7           | 1531.9                 |
| 33          | 193.3           | 1550.92                | 58          | 195.8           | 1531.12                |
| 34          | 193.4           | 1550.12                | 59          | 195.9           | 1530.33                |
| 35          | 193.5           | 1549.32                | 60          | 196.0           | 1529.55                |

## Absolute Maximum Ratings

| Parameter                   | Symbol | Min. | Typ. | Max. | Unit | Notes |
|-----------------------------|--------|------|------|------|------|-------|
| Maximum Supply Voltage      | Vcc    | 0    |      | 3.6  | V    |       |
| Storage Temperature         | Tstg   | -40  |      | 85   | °C   |       |
| Operating Case Temperature  | Tc     | -40  |      | 85   | °C   |       |
| Operating Relative Humidity | RH     | 5    |      | 85   | %    |       |
| Storage Relative Humidity   | RH     | 5    |      | 95   | %    |       |
| Power Consumption           |        |      |      | 2.7  | W    |       |

### Electrical Characteristics

| Parameter                      | Symbol | Min.  | Typ. | Max.  | Unit     | Notes |
|--------------------------------|--------|-------|------|-------|----------|-------|
| Power Supply Voltage           | Vcc    | 3.135 | 3.3  | 3.465 | V        |       |
| Transmitter                    |        |       |      |       |          |       |
| Differential Data Input Swing  | VIN    | 170   |      | 700   | mV       |       |
| Input Differential Impedance   | ZIN    |       | 100  |       | $\Omega$ |       |
| Transmitter Disable Voltage    | VDIS   | 2.0   |      | Vcc   | V        |       |
| Transmitter Enable Voltage     | VEN    | 0     |      | 0.8   | V        |       |
| Receiver                       |        |       |      |       |          |       |
| Differential Data Output Swing | VOUT   | 300   |      | 850   | mV       |       |
| Output Differential Impedance  | ZOUT   |       | 100  |       | $\Omega$ |       |
| LOS Assert Voltage             | VLOSA  | 2.0   |      | Vcc   | V        |       |
| LOS De-Assert Voltage          | VLOSD  | 0     |      | 0.8   | V        |       |

### Timing Characteristics

| Parameter                  | Symbol | Min. | Typ. | Max. | Unit | Notes |
|----------------------------|--------|------|------|------|------|-------|
| Module Initialize Time     | Tinit  |      |      | 20   | s    |       |
| Module Channel Switch Time | Tsel   |      |      | 200  | ms   |       |

## Optical Characteristics

| Parameter                        | Symbol      | Min.                               | Typ. | Max.  | Unit  | Notes |
|----------------------------------|-------------|------------------------------------|------|-------|-------|-------|
| Transmitter (10G & 1.25G)        |             |                                    |      |       |       |       |
| Average Output Power             | PAVE        | -2                                 |      | 3     | dBm   | 1     |
| Optical Wavelength               | $\lambda$   | As Per ITU-T 694.1, 100GHz Spacing |      |       | nm    | 2     |
| Center Frequency Spacing         | $\Delta\nu$ | 100                                |      |       | GHz   |       |
| Center Frequency Stability       | -           | -12.5                              |      | +12.5 | GHz   |       |
| Side Mode Suppression Ratio      | SMSR        | 30                                 |      |       | dB    |       |
| Average Output Power (Laser Off) | Poff        |                                    |      | -30   | dBm   |       |
| Extinction Ratio                 | ER          | 8.2                                |      |       | dB    | 3     |
| Dispersion Penalty               | DP          |                                    |      | 2     | dB    |       |
| Relative Intensity Noise         | RIN         |                                    |      | -128  | dB/Hz |       |
| Optical Return Loss Tolerance    | ORLT        | 21                                 |      |       | dB    |       |
| Receiver (10G)                   |             |                                    |      |       |       |       |
| Optical Center Wavelength        |             | 1260                               |      | 1600  | nm    |       |
| Received Sensitivity             | RSENS       |                                    |      | -23   | dBm   | 4     |
| Optical Power Overload           | POL         |                                    |      | -7    | dBm   |       |
| Receiver Reflectance             | RFL         |                                    |      | -27   | dB    |       |
| Rx_LOS of Signal Assert          | LOSA        | -40                                |      |       | dBm   |       |
| Rx_LOS of Signal De-Assert       | LOSD        |                                    |      | -25   | dBm   |       |
| Rx_LOS of Signal Hysteresis      | LOSH        | 0.5                                |      | 6     | dB    |       |
| Receiver (1.25G)                 |             |                                    |      |       |       |       |
| Optical Center Wavelength        |             | 1260                               |      | 1600  | nm    |       |
| Received Sensitivity             | RSENS       |                                    |      | -28   | dBm   | 5     |
| Optical Power Overload           | POL         |                                    |      | -7    | dBm   |       |
| Receiver Reflectance             | RFL         |                                    |      | -27   | dB    |       |
| Rx_LOS of Signal Assert          | LOSA        | -40                                |      |       | dBm   |       |
| Rx_LOS of Signal De-Assert       | LOSD        |                                    |      | -30   | dBm   |       |
| Rx_LOS of Signal Hysteresis      | LOSH        | 0.5                                |      | 6     | dB    |       |

## Notes:

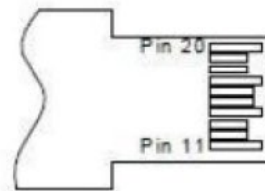
1. The optical power is launched into SMF.
2. See details in ITU Channel Wavelength Guide.
3. Measured with PRBS 2<sup>31</sup>-1 test pattern @10.3125Gbps or 2<sup>7</sup>-1 test pattern @1.25Gbps.
4. Measured with worst ER=8.2dB, BER less than 1E<sup>-12</sup>, and PRBS 2<sup>31</sup>-1 @10.3125Gbps.
5. Measured with worst ER=8.2dB, BER less than 1E<sup>-12</sup>, and PRBS 2<sup>7</sup>-1 @1.25Gbps.

## Pin Descriptions

| Pin | Symbol     | Name/Description                                                 | Notes |
|-----|------------|------------------------------------------------------------------|-------|
| 1   | VeeT       | Transmitter Ground. Common with Receiver Ground.                 |       |
| 2   | Tx_Fault   | Transmitter Fault.                                               |       |
| 3   | Tx_Disable | Transmitter Disable. Laser output disabled on “high” or “open.”  |       |
| 4   | SDA        | 2-Wire Serial Interface Data.                                    |       |
| 5   | SCL        | 2-Wire Serial Interface Clock.                                   |       |
| 6   | MOD_ABS    | Module Absent. Grounded within the Module.                       |       |
| 7   | RS0        | Rate Select 0.                                                   |       |
| 8   | LOS        | Loss of Signal Indication. “Logic 0” indicates normal operation. |       |
| 9   | RS1        | No Connection Required.                                          |       |
| 10  | VeeR       | Receiver Ground. Common with Transmitter Ground.                 |       |
| 11  | VeeR       | Receiver Ground. Common with Transmitter Ground.                 |       |
| 12  | RD-        | Receiver Inverted Data Out. AC Coupled.                          |       |
| 13  | RD+        | Receiver Non-Inverted Data Out. AC Coupled.                      |       |
| 14  | VeeR       | Receiver Ground. Common with Transmitter Ground.                 |       |
| 15  | VccR       | Receiver Power Supply.                                           |       |
| 16  | VccT       | Transmitter Power Supply.                                        |       |
| 17  | VeeT       | Transmitter Ground. Common with Receiver Ground.                 |       |
| 18  | TD+        | Transmitter Non-Inverted Data In. AC Coupled.                    |       |
| 19  | TD-        | Transmitter Inverted Data In. AC Coupled.                        |       |
| 20  | VeeT       | Transmitter Ground. Common with Receiver Ground.                 |       |

## Electrical Pin-Out Details

TOP VIEW  
OF BOARD



BOTTOM VIEW  
OF BOARD



Recommended Interface Circuit



Mechanical Specifications



# About Skylane Optics

Skylane is a leading provider of transceivers for optical communication.

We offer an extensive portfolio for the enterprise, access, datacenter and metropolitan fiber optical market as well as for smart home applications and home networks.

We cover the European, South American and North American market with a strong partner network and have offices in Belgium, Brazil, Sweden and USA.

Our offerings are characterized by high quality and performance. In combination with our strong technical support, we enable our customers to build cost optimized network solutions.

We offer an extensive range of high-quality products including transceivers (Optical and copper), Active Optical Cable (AOC), Direct Attach Cable (DAC), Mux/Demux, Coding Box.

