

10 Gb/s TDM/DWDM 300 Pin SFF MSA SR2/IR2/LR2 Transponder PH1 Series



Key Features

- Three configurations supporting SR2/IR2/LR2 applications
- Supports dense wavelength division multiplexing (DWDM) applications (without wavelocker)
- Microprocessor controls to support I2C
- Integrated 16:1/1:16 mux/demux
- Small form factor package (2.2" x 3.0" x 0.53") for high density applications
- Low power consumption: 4.8 W typical, 6.8 W maximum for TDM applications
- 70 °C maximum operating temperature
- High sensitivity PIN or APD receivers
- SONET, FEC, Ethernet and Multirate Capable Versions
- Forward, counter and line timing clocking modes

Applications

- Telecommunications
- Metropolitan Area Networks
- Subscriber loop
- Intra-office SONET/SDH
- High bit-rate data communications

Compliance

- Telcordia GR-253-Core

JDSU 10 Gb/s PH1 Series transponders are intended for 1550 nm system applications with reaches of up to 80 km. The series includes three different transponders for SR2 (25 km), IR2 (40 km), and LR2 (80 km) TDM or DWDM applications. Each transponder accepts 16 bits of parallel digital data and converts it to a 10 Gb/s NRZ modulated optical signal. It also accepts a 10 Gb/s NRZ modulated optical signal and converts it into 16 bit wide parallel digital data.

The PH1 series offers low DC power dissipation and is available in either a small form factor package (2.2 x 3 x 0.53 inches) or in a larger footprint (3.5 x 4.5 x 0.53 inches) package, depending on system thermal performance requirements. The transmit design uses an Electro-Absorptive Modulated Laser (EML) which, depending on the configuration, produces an average output power of between -4 dBm to 2 dBm (EOL). A PIN (-17 dBm typical sensitivity) or APD (-24 dBm typical sensitivity) receiver is available, based on system configurations.

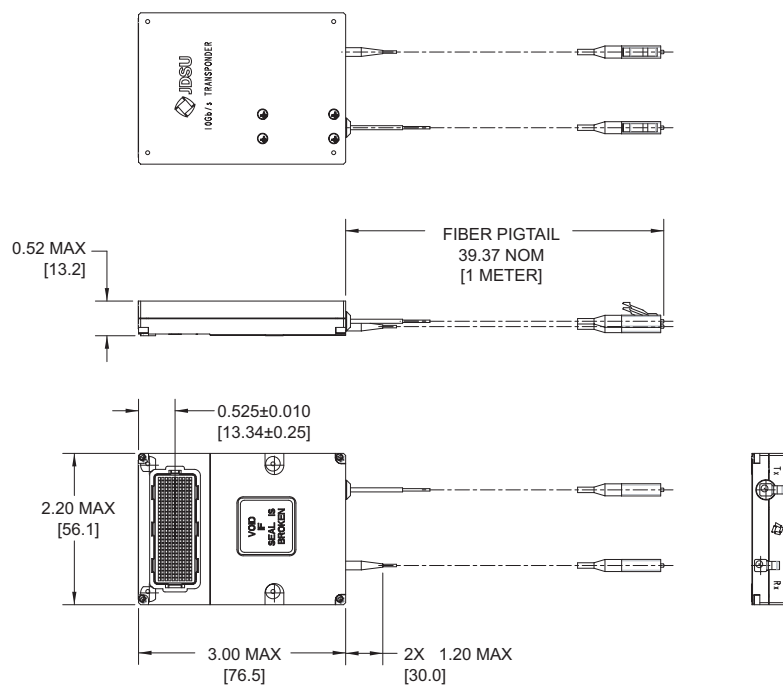
JDSU PH1 Series transponders are designed to support the following data rates: 9.953 Gb/s (SONET), 10.3125 Gb/s (Ethernet), 10.664 Gb/s (FEC Encoded), 10.709 Gb/s FEC, or 11.09 Gb/s EFEC. They meet all applicable SONET/SDH standards.

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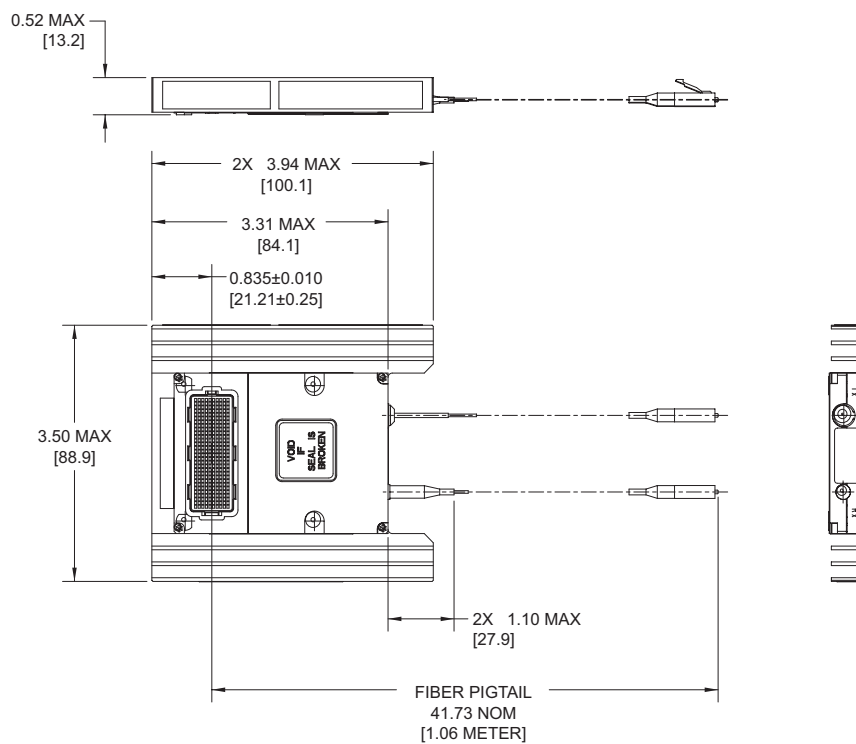
Dimensions Diagram

(Specifications in inches [mm] unless otherwise noted.)

Configuration A

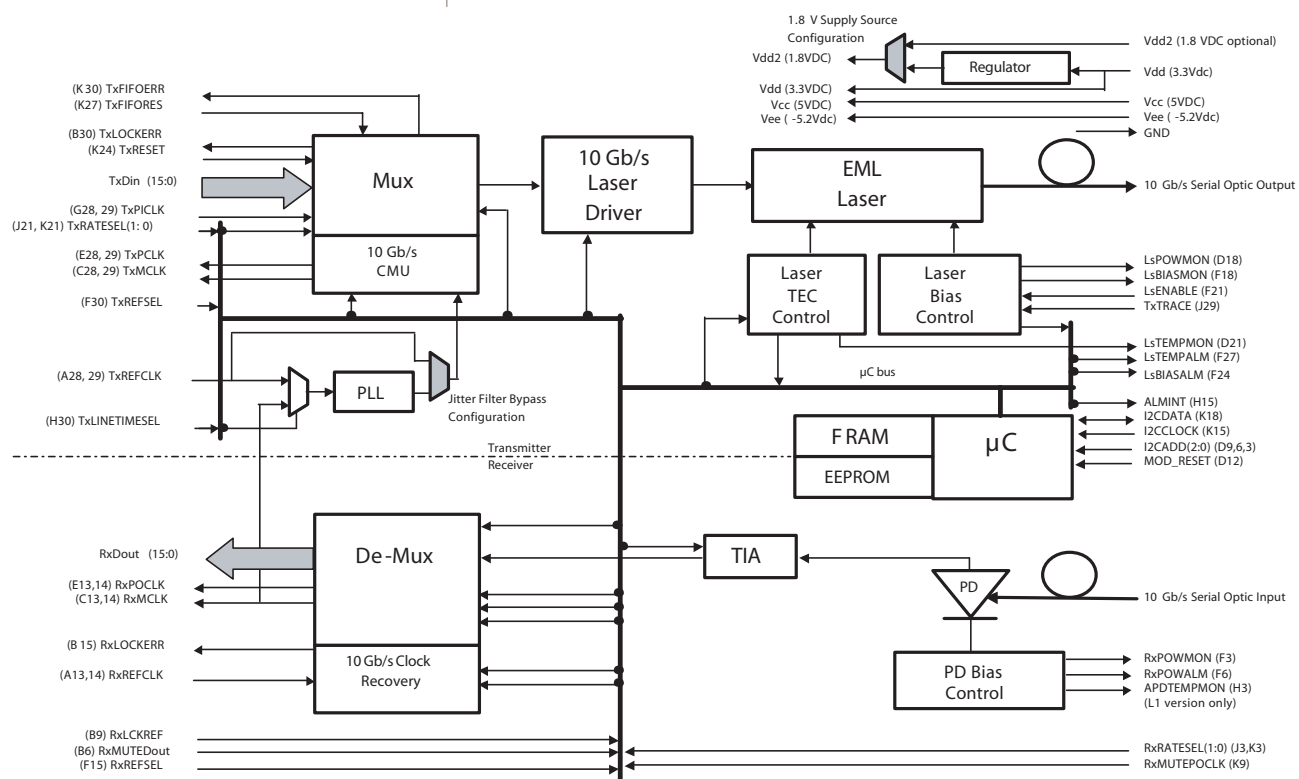


Configuration C



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Module Functional Block Diagram



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PH1 (SR2) Specifications

Parameter	Minimum	Typical	Maximum
Transmitter			
Output power (EOL)	-4 dBm	-2.5 dBm	-1 dBm
Extinction ratio (EOL)	8.2 dB	-	-
Tx spectral range	1530 nm	-	1570 nm
Sidemode suppression ratio	30 dB	-	-
Spectral power density	-	-	0.1 mW/MHz
Jitter generation	GR-253 compliant		
Receiver			
PIN input power {BER = 10 ⁻¹² } (EOL)	-15.0 dBm	-16.0 dBm	-
Maximum overload: PIN receiver {BER = 10 ⁻¹² } (EOL)	-1 dBm	-	-
Rx spectral range	1280 nm	-	1600 nm
Jitter tolerance and jitter transfer	GR-253 compliant		
System optical return loss	-27 dB	-	-
Optical Path			
Optical path penalty at 1550 nm and with 1600 ps/nm dispersion	-	-	2 dB
Electrical			
Operating case temperature	-5 °C	-	70 °C
TDM power dissipation with jitter filter	-	5.0 W	7.0 W
TDM power dissipation without jitter filter	-	4.8 W	6.8 W

PH1 (IR2) Specifications

Parameter	Minimum	Typical	Maximum
Transmitter			
Output power (EOL)	-1 dBm	0.5 dBm	2 dBm
Extinction ratio (EOL)	8.2 dB	-	-
Tx spectral range	1530 nm	-	1570 nm
Wavelength stability over operating temperature (BOL setup, 100 GHz option)	-25 pm	-	25 pm
Wavelength stability over operating temperature (EOL setup, 100 GHz option)	-100 pm	-	100 pm
Sidemode suppression ratio	30 dB	-	-
Spectral power density	-	-	0.1 mW/MHz
Jitter generation	GR-253 compliant		
Receiver			
PIN input power {BER = 10 ⁻¹² } (EOL)	-15.0 dBm	-16.0 dBm	-
Maximum overload: PIN receiver {BER = 10 ⁻¹² } (EOL)	-1 dBm	-	-
Rx spectral range	1280 nm	-	1600 nm
Jitter tolerance and jitter transfer	GR-253 compliant		
System optical return loss	-27 dB	-	-
Optical Path			
Optical path penalty at 1550 nm and with 1600 ps/nm dispersion	-	-	2 dB
Electrical			
Operating case temperature	-5 °C	-	70 °C
TDM power dissipation with jitter filter	-	5.0 W	7.0 W
TDM power dissipation without jitter filter	-	4.8 W	6.8 W
DWDM power dissipation with jitter filter	-	5.8 W	7.8 W
DWDM power dissipation without jitter filter	-	5.6 W	7.6 W

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PH1 (LR2) Specifications

Parameter	Minimum	Typical	Maximum
Transmitter			
Output power (EOL)			
LP and LA options	0 dBm	2 dBm	4 dBm
LH option	2 dBm	4 dBm	6 dBm
Extinction ratio (EOL)	9.5 dB	-	-
Tx spectral range	1530 nm	-	1570 nm
Wavelength stability over operating temperature (BOL setup, 100 GHz option)	-25 pm	-	25 pm
Wavelength stability over operating temperature (EOL setup, 100 GHz option)	-100 pm	-	100 pm
Sidemode suppression ratio	30 dB	-	-
Spectral power density	-	-	0.1 mW/MHz
Jitter generation		GR-253 compliant	
Receiver			
APD input power {BER = 10 ⁻¹² } (EOL)	-24 dBm	-17 dBm	-
Maximum overload: APD receiver {BER = 10 ⁻¹² } (EOL)	-5 dBm	-	-
Rx spectral range	1280 nm	-	1600 nm
Jitter tolerance and jitter transfer		GR-253 compliant	
System optical return loss	-27 dB	-	-
Optical Path			
Optical path penalty at 1550 nm and with 1600 ps/nm dispersion	-	-	2 dB
Electrical			
Operating case temperature	-5 °C	-	70 °C
TDM power dissipation with jitter filter	-	8.5 W	7.9 W
TDM power dissipation without jitter filter	-	8.7 W	7.7 W
DWDM power dissipation with jitter filter	-	6.7 W	8.7 W
DWDM power dissipation without jitter filter	-	6.5 W	8.5 W

