

OC-3 Small Form Factor (SFF) Transceiver CF2 Series



Key Features

- Temperature ranges: 0 to 70 °C, -20 to 85 °C, and -40 to 85 °C
- Single 3.3 V power supply
- LV-PECL data input and receiver output levels
- TTL or PECL signal detect
- Multisource Agreement (MSA)-conforming 2x5 and 2x10 SFF package
- Electromagnetic interference (EMI) meets FCC Class B limit
- Class 1 Laser Safety conformance
- Meets mezzanine height standard of 9.8 mm
- Wave-solderable/aqueous-washable
- Industry-standard duplex-LC optical connector
- Operates with 9/125 μm single-mode optical fibers
- Available in IR1 (15 km)

Applications

- Metro
- Access
- Wide area networks

Compliance

- Compliant with SONET OC-3 and ITU-T G.957 SDH STM-1 specifications (155 Mb/s data rate)

The JDSU CF2 Series OC-3 transceiver is a duplex-LC transceiver designed for use in SONET OC-3 and SDH STM-1 applications. It operates with a single 3.3 V power supply. The unit conforms to the industry-standard 2x5 and 2x10 footprints and meets the mezzanine height requirement of 9.8 mm.

Each transceiver consists of an optical subassembly housing both the transmitter and the receiver, and an electrical subassembly. All are packaged together with a top metal cover and bottom shield.

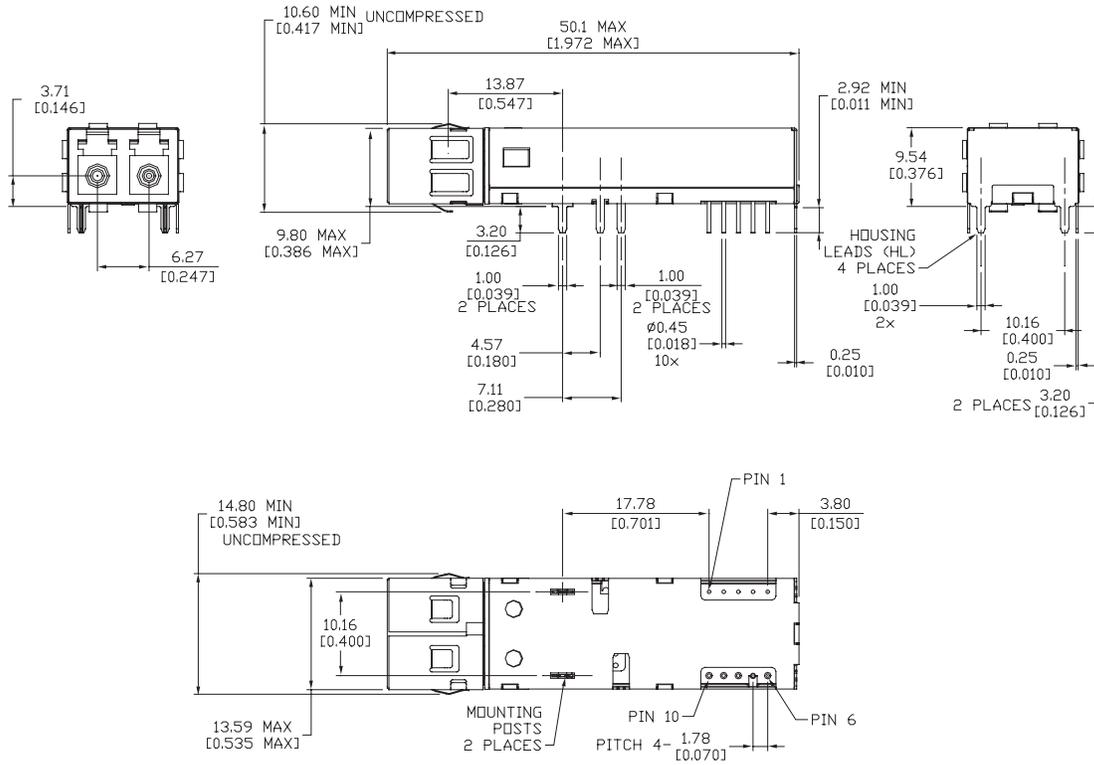
The optical subassembly comprises two parts: the transmitter side has a high-performance 1300 nm Fabry-Perot (FP) or 1550 nm distributed feedback (DFB) laser and back facet monitor. The receiver side has an InGaAs PIN and a preamplifier.

All CF2 Series OC-3 transceivers also include a signal detect circuit, which provides either a Positive Emitter Coupled Logic (PECL) or TTL logic high output when a usable input optical signal level is detected.

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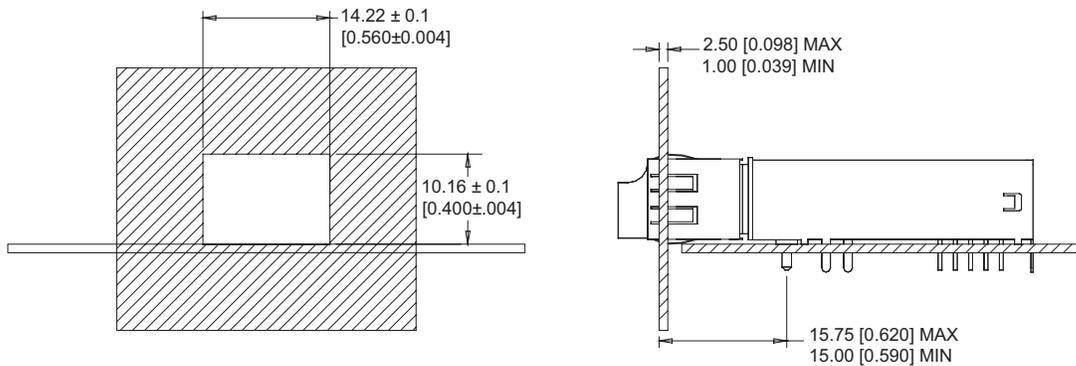
2x5 SFF Transceiver Dimensions Diagram

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



Bezel Opening Dimensions Diagram

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



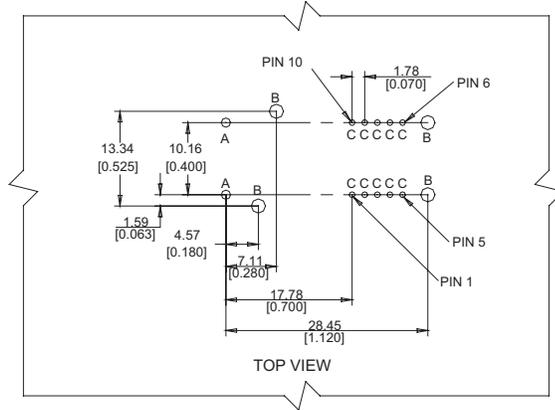
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2x5 PCB Layout

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

Hole Sizes

Symbol	Quantity	Diameter
A	2	1.40±0.1 mm (0.055±0.004 inches)
B	4	1.40±0.1 mm (0.055±0.004 inches)
C	10	0.81±0.1 mm (0.032±0.004 inches)



Transceiver Pin Descriptions (2x5 Configuration)

Pin	Symbol	Description
Mounting posts		The mounting posts are provided for transceiver mechanical attachment to the circuit board. They should not be connected to the circuit ground but can be connected to the chassis ground.
Housing leads		The housing leads should be connected to the circuit ground.
1	VEER	Receiver signal ground
2	VCCR	3.3 V receiver power supply
3	SD	Signal detect is a TTL output. A high level indicates a valid optical signal.
4	RD-	Receiver data inverted differential output
5	RD+	Receiver data non-inverted differential output
6	VCCT	3.3 V transmitter power supply
7	VEET	Transmitter signal ground
8	TXdis	Transmitter disable
9	TD+	Transmitter data non-inverted differential input
10	TD-	Transmitter data inverted differential input

Transceiver Pin Descriptions (2x10 Configuration)

Pin	Symbol	Description	Pin	Symbol	Description
Mounting posts		The mounting posts are provided for transceiver mechanical attachment to the circuit board. They should not be connected to the circuit ground but can be connected to the chassis ground.			
Housing leads		The housing leads should be connected to the circuit ground.			
1	Vpd	Rx photo detector bias	11	VCCT	Tx power
2	VEER	Rx ground	12	VEET	Tx ground
3	VEER	Rx ground	13	TX_DIS	Transmitter disable
4	NA	Not used	14	TD	Tx electrical data
5	NA	Not used	15	TDb	Tx electrical data
6	VEER	Rx ground	16	VEET	Tx ground
7	VCCR	Rx power	17	Bmon-	Tx LD bias monitor
8	SD	Signal detect	18	Bmon+	Tx LD bias monitor
9	RDb	Rx electrical data	19	Pmon-	Tx rear facet monitor
10	RD	Rx electrical data	20	Pmon+	Tx rear facet monitor

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Absolute Maximum Ratings

Parameter	Symbol	Minimum	Maximum
Storage temperature	T _s	-40 °C	85 °C
Soldering temperature (6 sec. on leads)		-	260 °C
Supply voltage	V _{CC}	-	3.6 V

Operating Conditions

Parameter	Symbol	Minimum	Maximum
Case operating temperature	T _{OP}	-40 °C	85 °C
Supply voltage	V _{CC}	3.1 V	3.5 V
Transmitter differential input voltage	V _D	0.6 V	2.0 V
Transmit disable input volt (low)	TD _{Lo}	-	0.3 V
Transmit disable input volt (high)	TD _{Hi}	2.3 V	-

Electrical Specifications(Over specified T_{OP} range, V_{CC} = 3.1 to 3.5 V)

Parameter	Symbol	Minimum	Maximum
Transmitter			
Supply current	I _{CC_T}	-	150 mA
Receiver			
Supply current	I _{CC_R}	-	130 mA
Data output voltage swing (differential)	V _{diff}	0.5 V	1.9 V
Data output rise and fall times (10 to 90%)	t _r ,t _f	-	2.2 ns
Total signal detect output (high)	V _{oh,TTL}	2.0 V	V _{CC}
Total signal detect output (low)	V _{ol,TTL}	0.0 V	0.8 V

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Optical Specifications(Over specified T_{OP} range, $V_{CC} = 3.1$ to 3.5 V)

Parameter	Symbol	Minimum	Maximum
Transmitter			
Output optical power 9/125 μm , $n_a = 0.10$ fiber	P_{OUT}	-15 dBm avg.	-8 dBm avg.
Optical extinction ratio		8.2 dB	-
Center wavelength	λ_c	1274 nm	1356 nm
Spectral width (rms)	σ	-	4 nm
Optical rise/fall time (10 to 90%)	t_r/t_f	-	2.2 ns
Output optical eye		Conforms to eye mask Bellcore TR-NWT-000253	
Receiver			
Minimum optical input power (sensitivity)	P_{IN}	-	-28 dBm avg.
Maximum optical input power (saturation)	P_{IN}	-8 dBm avg.	-
Operating center wavelength	λ_c	1280 nm	1580 nm
Signal detect (deasserted)	P_A	-	-28 dBm avg.
Signal detect (asserted)	P_D	-42 dBm avg.	-
Signal detect (hysteresis)	P_A-P_D	1.0 dB	5.0 dB

Electromagnetic Interference (EMI)

Most equipment designs utilizing high-speed transceivers will be required to meet the requirements of the FCC in the United States, CENELEC EN55022 (CISPR 22) in Europe, and VCCI in Japan.

The CF2 OC-3 transceivers, with their shielded design, perform to the specified limits to assist the designer in the management of overall equipment EMI performance. They meet the FCC Class B limits.

Immunity

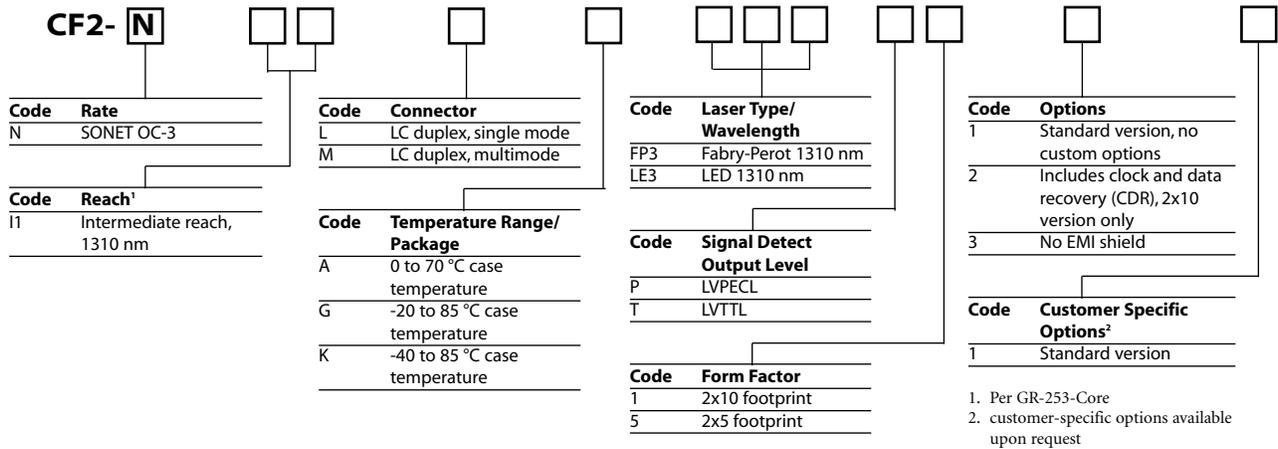
The CF2 OC-3 transceiver has been designed to provide good immunity to radio-frequency electromagnetic fields. The metal cover, chassis, and internal and bottom shields constitute the key components to achieving good electromagnetic performance (EMC).

Eye Safety

The CF2 OC-3 1300 nm and 1550 nm laser-based transceivers have been designed to meet Class 1 eye safety. They conform to FDA 21CFR1040.10 and 1040.11 and IEC 60825-1.

Ordering Information

For more information on this or other products and their availability, please contact your local JDSU account manager or JDSU directly at 1-800-498-JDSU (5378) in North America and +800-5378-JDSU worldwide or via e-mail at customer.service@jdsu.com.

Sample: CF2-NI1LAFP3T511


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