



050-301

PRODUCT BRIEF

SIZE 8 ELECTRO-OPTICAL CONTACT TRANSMITTER OR RECEIVER
MULTI-MODE, 1.25MM FERRULE ARINC 801
FRONT INSERT – FRONT RELEASE

REV	DESCRIPTION	DATE	APPROVED
A	Released	09/10/2012	JDO
B	Revised per DCN 44316	09/10/2012	JDO
C	Revised per DCN 50900	06/19/2014	TC
D	Revised per DCN 52285	09/18/2014	NH
E	Revised per DCN 60913	07/08/2016	GC
G	Revised per DCN 61249; Rev up to G. No change done to datasheet.	08/02/2016	GC
H	Revised per DCN 63332; Add bag and tag labeling	01/04/2017	SZ/GC
J	Revised per DCN 63972; Adjust maximum LOS assert level to -20dBm. Remove typical level.	02/21/2017	SZ/GC
K	Revised per DCN 64137; Change typical ER for all data rates	03/03/2017	SZ/GC

BF12U2-2543

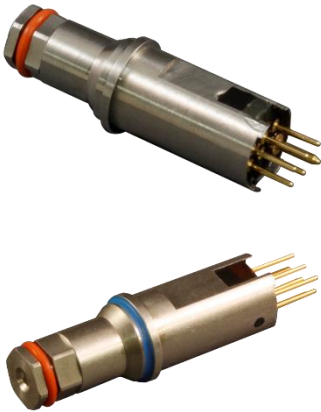
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Size 8 Cavity Opto-Electronic Contacts, 100Mbps to 5Gbps, MMF, 3.3V



Size 8 Cavity Opto-electronic contacts transmit and receive differential CML electrical signals over Multimode fiber optic cable. Transmitters consist of a laser driver with a temperature compensation circuit to maintain optical power over the entire operating temperature range, and an 850nm VCSEL laser. Receivers consist of an 850nm PIN Photo Detector, a Transimpedance Amplifier with automatic gain control circuit, and a Limiting Amplifier. Differential output data signals are CML compatible. The transmitter has a Tx Disable pin to turn off transmitter output and a Tx Fault pin to signal a fault condition. Receiver includes a CMOS compatible Loss of Signal Indicator to prevent invalid data.

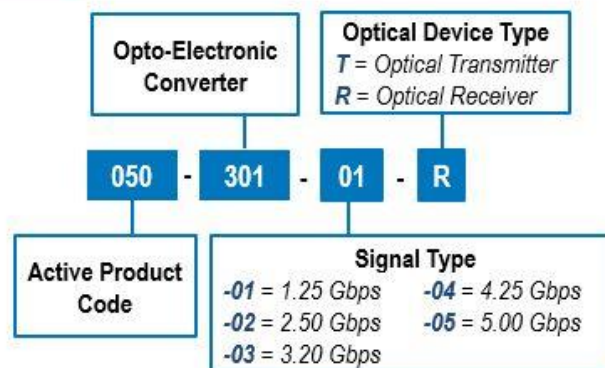
KEY FEATURES/BENEFITS

- Front-release, front-insert, front-removable Size #8 OE converter designed for ARINC 600
- ARINC 664, 801, 803, 804, and 818 Standard Compliant
- Data rates from 100Mbps to 5.00Gbps
- Supports Fast and Gigabit Ethernet, AFDX, 1x/2x Fibre Channel, DVI, DHMI, SFPDP, Serial Rapid I/O (sRIO)
- 100 ohms differential CML inputs with Tx Fault and Tx Disable
- Link distances up to 550 meters with multimode 50/125µm or 62.5/125 µm fiber
- Single 3.3V power supply
- ARINC 801 1.25mm ceramic fiber ferrule
- Solutions available in 38999 style connectors
- -40°C to +85°C Operating Case Temperature
- Evaluation fixtures available

APPLICATIONS

- Harsh Environment such as: Airborne, Tactical, Railway, Industrial, Oil and Gas and Shipboard applications

How To Order



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Ratings and Specifications

TABLE 2 ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Typ	Max	Units	Notes
Storage Temperature	T _s	-55		+100	°C	
Supply Voltage	V _{cc}	-0.4		3.8	V	

TABLE 3 OPERATING CONDITIONS

Parameter	Symbol	Min	Typ	Max	Units	Notes
Operating Temperature, Case	T _{op}	-40		+85	°C	
Supply Voltage	V _{cc}	3.135	3.3	3.465	V	
Supply Current	I _{cc}			100	mA	Typical @ +85°C
Power Supply Noise (Peak-Peak)	V _{cc, ripple}			150	mV	

TABLE 4 ELECTRO-OPTICAL CHARACTERISTICS – TRANSMITTER

Parameter	Symbol	Min	Typ	Max	Units	Notes
Optical Output Power	P _{OUT}	-6.5		-1.5	dBm	850nm VCSEL,
Extinction Ratio	E _r	6	10		dB	1.25 Gbps – 2.5 Gbps
Extinction Ratio	E _r	5	8		dB	3.2 Gbps – 5 Gbps
Optical Wavelength	λ _{OUT}	830	850	860	nm	
Spectral Width, rms	Δλ			0.85	nm	
Total Jitter	TJ _{p-p}			60	ps	
Transmitter Differential Input Impedance	Z _{in}		100		Ohms	DC coupled Internally
Differential Input Voltage	V _{in_d}	250		2200	mV _{p-p}	CML, 100 ohm

TABLE 5 ELECTRO-OPTICAL CHARACTERISTICS - RECEIVER

Parameter	Symbol	Min	Typ	Max	Units	Notes
Sensitivity, BER 10 ⁻¹² , PRBS 2 ⁷ -1, E _r 9 dB	P _{IN}			-17	dBm	PIN PD @ .125 Gbps
Sensitivity, BER 10 ⁻¹² , PRBS 2 ⁷ -1, E _r 9 dB	P _{IN}			-17	dBm	PIN PD @ 1.25 Gbps
Sensitivity, BER 10 ⁻¹² , PRBS 2 ⁷ -1, E _r 9 dB	P _{IN}			-15	dBm	PIN PD @ 2.50 Gbps
Sensitivity, BER 10 ⁻¹² , PRBS 2 ⁷ -1, E _r 9 dB	P _{IN}			-15	dBm	PIN PD @ 3.20 Gbps
Sensitivity, BER 10 ⁻¹² , PRBS 2 ⁷ -1, E _r 9 dB	P _{IN}			-14	dBm	PIN PD @ 4.25 Gbps, 5.00 Gbps
Overload, BER 10 ⁻¹² , PRBS 2 ⁷ -1	P _{IN}			0	dBm	
Optical Wavelength	λ _{IN}	830		860	nm	
Receiver Differential Output Impedance	Z _{out}		100		Ohms	DC coupled internally
Differential Output Voltage Swing	V _{out_d}	600		1200	mV _{p-p}	CML, 100 ohm
LOS Assert Level	LOS			-20	dBm	@1.25 Gbps
LOS Hysteresis	LOS _{HYS}	1.5	2.3		dB	@1.25 Gbps

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Ratings and Specifications (continued)

TABLE 6 COMPLIANCE SPECIFICATIONS

CHARACTERISTIC	Standard	Condition	Notes
ESD	MIL-STD-883		1000V HBM
Eye Safety	CDRH and IEC-825	Class 1 Laser Product	

Input/Output Definition

TABLE 7 TRANSMITTER ELECTRICAL PIN ARRANGEMENT

Pin Number	Symbol	Description	Logic
1	TX DISABLE	Transmit Disable (Input), Normally Disabled Logic "1" Input → Disable Transmitter Output	CMOS Internal 5k-10k Ohm Pullup
2	Vcc	Power Supply	
3	GND	Signal Ground	
4	TX FAULT	Transmitter Fault Indicator (Output) Logic "1" Output → Transmitter Fault Condition	CMOS Open Drain
5	TX-	Transmitter Inverted Data (Input)	CML (Current Mode Logic)
6	TX+	Transmitter Non-Inverted Data (Input)	CML (Current Mode Logic)

TABLE 8 RECEIVER ELECTRICAL PIN ARRANGEMENT

Pin Number	Symbol	Description	Logic
1	GND	Signal Ground	
2	Vcc	Power Supply	
3	GND	Signal Ground	
4	LOS	Loss of Signal (Output) Loss of Valid Optical Signal → Logic "1" Output	CMOS Open Drain
5	RX-	Receiver Inverted Data (Output)	CML (Current Mode Logic)
6	RX+	Receiver Non-Inverted Data (Output)	CML (Current Mode Logic)

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FIGURE 1 - OUTLINE DRAWING CONTINUED (MARKING)

LABELING:

Each unit will be shipped in an antistatic bag. The label on the antistatic bag shall be at a minimum Arial size 10 black font and contain at a minimum the following information:

ANTISTATIC BAG LABEL:

Glenair

Cage Code: 06324

PN: 050-301-XX-X

Rev: X

QTY: X

J/N: X

D/C:X

S/N*: XXXXXX

*If QTY is more than 1, there is no S/N

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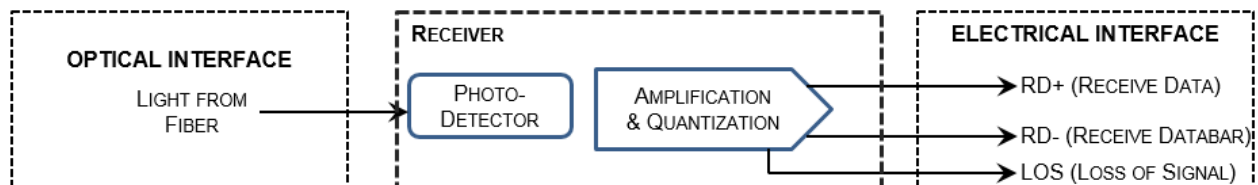
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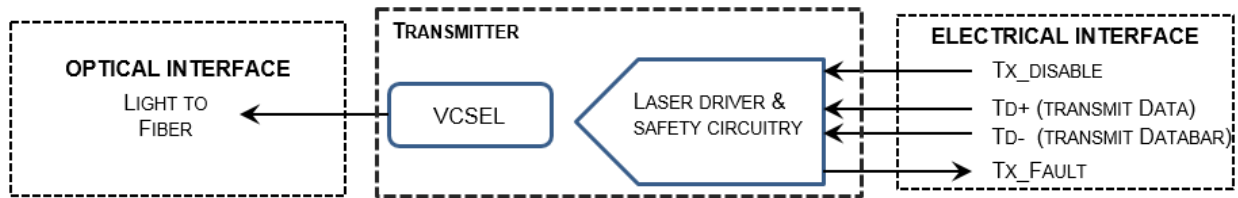
FUNCTIONAL DESCRIPTION

Figure 2

Receiver Functional Block Diagram



Transmitter Functional Block Diagram



FUNCTIONAL I/O

The Size 8 transmitter accepts industry standard CML differential signals within the scope of the SFP MSA. The module is DC-coupled and internally terminated.

Figure 3 illustrates a recommended interface circuit to link the Size 8 transmitter and receiver to the supporting Physical Layer integrated circuits.

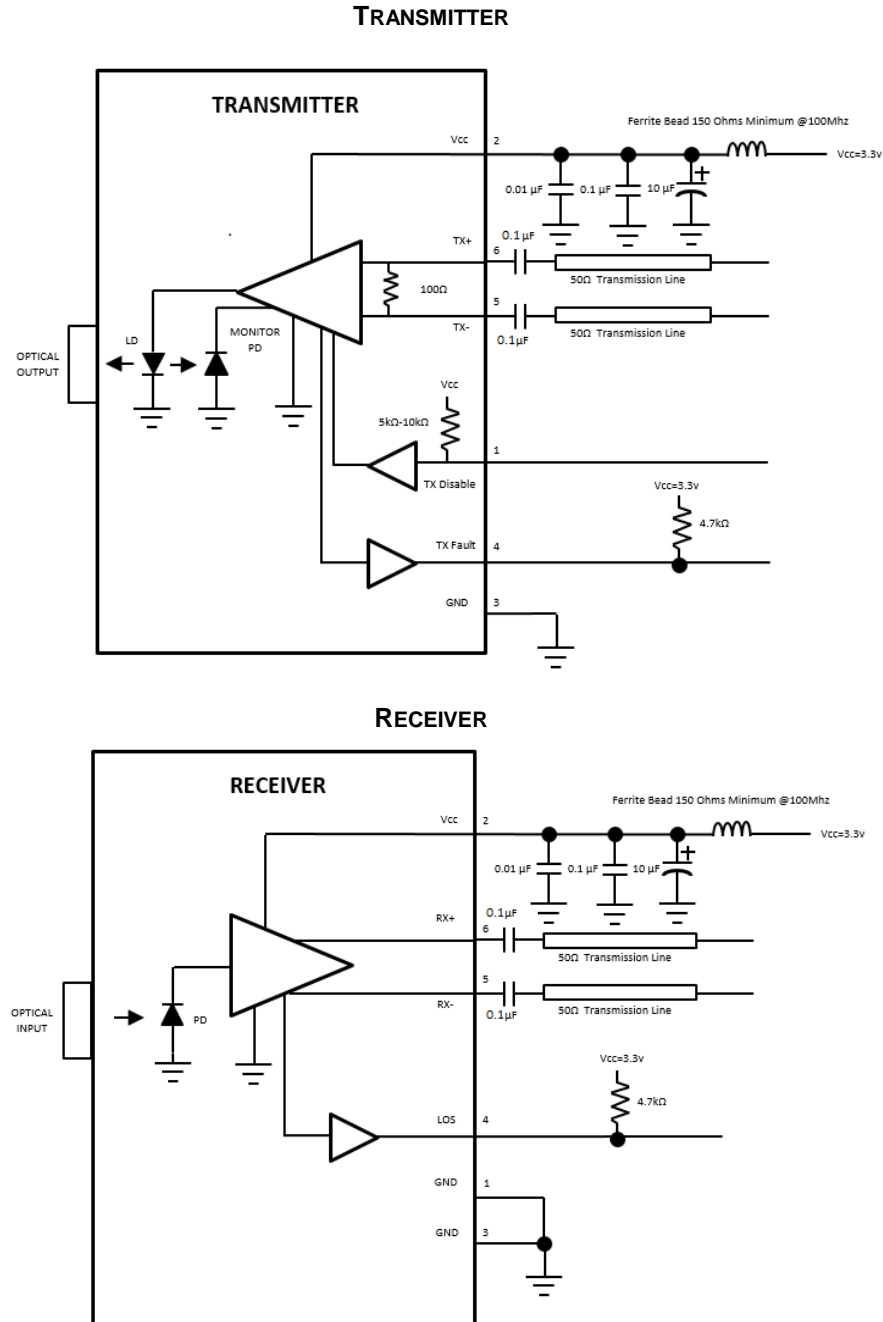
The Size 8 transmitter or receiver interfaces with the host circuit board through six I/O pins identified by function in Table 7. The transmitter high speed transmit and the receiver high speed receive interfaces require SFP MSA compliant signal lines on the host board. The TX_DISABLE and TX_FAULT require TTL lines on the host board (per SFF-8074i) if used. If an application chooses not to take advantage of the functionality of these pins TX_Disable needs to be tied to GND, and TX_Fault does not need to be connected.

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FIGURE 3 RECOMMENDED BOARD HOST BOARD SCHEMATIC



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Required Host Board Components

A power supply noise rejection filter as described in Figure 3 is required on the host PCB to meet data sheet performance. The required filter is illustrated in Figure 3. Also, the host PCB for the Size 8 transmitter requires 4.7 K to 10 K Ω pull-up resistors for TX_FAULT and LOS Lines for the receiver.

Fiber Compatibility

The link is capable of error free signal detection for 2 to 500 meters with OM2 50/125 μ m fiber and at 2 to 275 meters with OM1 62.5/ 125 μ m fiber, for 1.25 Gbps data rate.

Electrostatic Discharge (ESD)

The size 8 contacts are compatible with ESD levels found in typical manufacturing and operating environments as described JEDEC EIA JESD22-A114-A, Class 1C (<2000Volts) HBM. Glenair recommends that devices are handled with ESD precautions to limit exposure to below 500V HBM.

There are two design cases in which immunity to ESD damage is important. The first case is during handling of the components prior to insertion to the host board. It is important to use standard industry ESD handling precautions such as using grounded wrist straps, work benches, and floor mats in ESD controlled areas. The ESD sensitivity of the Glenair device is compatible with typical industry production environments.

The second case to consider is static discharges to the exterior of the host equipment after installation, in which case the electro-optical component may be subject to system-level ESD requirements.

Application Support

To assist in the dual-transmitter design and evaluation process, Glenair offers the following aids:

- Evaluation board & Product Manual
- 3D Step file to support modeling of mechanical fit and routing

Mouser Electronics

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[050-301-01-T](#) [050-301-01-R](#)