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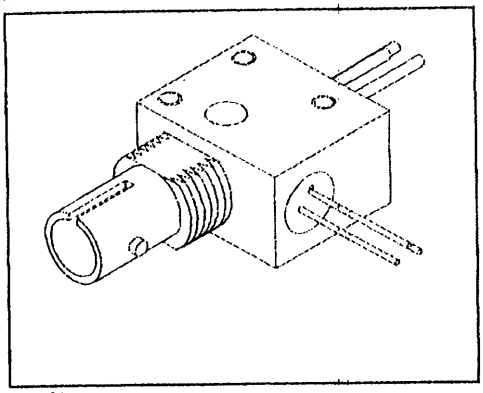
02 October 1997

HOD4013-132/BBA

Single Fiber Duplex Modules

FEATURES

- Full duplex over single fiber
- DC to 85 MHz link bandwidth
- 2 km+ link budget
- 40 dB isolation
- Low profile ST housing
- Other options available



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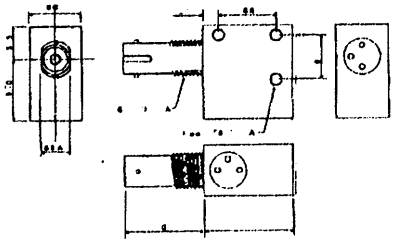
OUTLINE DIMENSIONS In inches (mm)



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Pinout

1. Anode
2. Cathode
3. Not connected

DESCRIPTION

The Honeywell HODxxxx series of dual wavelength 'Fiber Duplexers' allow communication over a single optical fiber. Applications include full duplex data transmission, multiplexing two signals to a single fiber, LED coupled power measurements and reflected power measurements, depending upon the configuration of the duplexer.

The HOD4013-132/BBA comprises an 850 nm LED and a 850 nm PIN diode and it's corresponding part, HOD3021-212/BBA, comprises a 1300 nm LED and a 850 nm PIN diode. The pair facilitate full duplex communication over a single fiber and are designed to be used where a dual fiber solution is not possible or economical. Alternatively the duplexer can be used to double the capacity of an existing system.

Each part consists of an on-axis port and an off-axis port loaded with the appropriate components, these are then coupled to the single fiber via integral lenses and a 3 dB wavelength differentiating mirror within the duplexer body. In this configuration the two pairs of components can communicate in opposing directions simultaneously and independently of each other. Links of 2 km+ are possible with this duplexer pair depending upon the receiver circuitry used. The duplexer housing is low profile, being the same height as a standard ST, the component ports are positioned to the rear and side of the housing.

Other standard options are available on request. These include two LEDs in one duplexer for single fiber multiplexing, PIN + Preamp receivers, VCSEL emitters or any other preferred components. Housing options include SMA or FC/PC optical ports or a high profile housing for mounting duplexers closely side by side.

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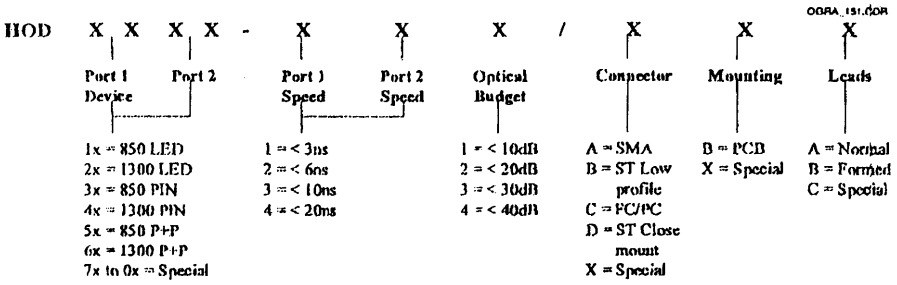
Fig. 1 Ordering Information - Duplexer Part Numbering Scheme



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ELECTRO-OPTICAL SPECIFICATIONS 1300nm PIN Diode

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Flux Responsivity	R	0.45	0.50		A/W	λ = 1300 nm
Dark Current	I_η		2.0	5.0	nA	V_R = 5 V, f = 1 MHz
Response Time						
10-90%	t_R			.1	ns	λ = 1300 nm
90-10%	t_F			.1		
Cut Off Frequency	F_C		1500		MHz	V_R = 5 V, R_L = 50 Ω
Capacitance	C		1.5	1.7	pF	V_R = 5 V, f = 1 MHz
Max. Reverse Voltage	V_{RMAX}			20	V	
Isolation	I_{CX}				dB	I_F (LED) = 100 mA DC
			40			

ELECTRO-OPTICAL SPECIFICATIONS 850nm LED

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Fiber Coupled Power	P_{OC}	20	30		μW	I_F = 100 mA
		-17.0	-15.0		dBm	50/125 μm fiber
Forward Voltage	V_F		1.70	2.00	V	I_F = 100 mA
Reverse Voltage	B_{VR}	1.0	5.0		V	I_R = 10 μA
Peak Wavelength	λ_P		850		nm	I_F = 100 mA DC
Spectral Bandwidth	Δλ		50		nm	I_F = 100 mA DC
Response Time						
-40 < T < +100°C, 10-90%	t_r		6	9	ns	1 V prebias, 100 mA
-40 < T < +100°C, 90-10%	t_f		8	11	ns	I peak
Analog Bandwidth	BWE		85		MHz	I_F = 100 mA
Po Temperature Coefficient	$\Delta P_O/\Delta T$		-0.019		dB/°C	I_F = 100 mA
Capacitance	C		70		pF	V_F = 0 V, f = 1 MHz
Thermal Resistance			250		°C/W	Heat sinked

ABSOLUTE MAXIMUM RATINGS

Storage temperature	-45 to +100°C
Operating temperature	-40 to +85°C
Lead solder temperature	260°C, 10 s
Continuous forward current	100 mA (LED)
Reverse voltage	1 V (LED) = 100 mA DC

Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational section of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods of time may affect reliability.

Honeywell reserves the right to make changes in order to improve design and supply the best products possible.

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Honeywell Control Systems Limited
Zodiac House, Calleva Park
Aldermaston
Berkshire
RG7 8HW
Tel: 0118 981 9511
Fax: 0118 981 7513