

10Gbps 850nm PIN + Preamp

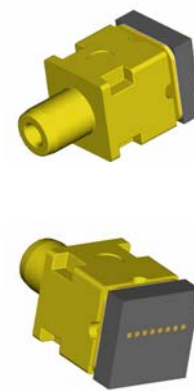
LC ROSA Package

Preliminary

HFD6180-2x2

## Key Features:

- LC ROSA HFD6180-202
- SC ROSA HFD6380-202
- High performance GaAs PIN photodiode with separate transimpedance amplifier
- Low electrical parasitic ceramic package
- Data rates from DC to 12.5Gbps
- Receive signal strength indicator (RSSI) \*
- Low bias currents and voltages
- Can drive SERDES directly



The HFD6180-202 uses a high-performance GaAs PIN photo-detector packaged with a transimpedance amplifier designed to meet performance requirements for 10Gbps data communication over multi-mode optical fiber at 850nm. Applications include Ethernet, Fiber Channel and ATM protocols. The optical assembly is designed to interface either 50µm or 62.5µm multi-mode fiber.

These products are designed to be paired with Honeywell VCSEL 10Gbps TOSA products (see data sheets for HFE619x-321 products)

## ABSOLUTE MAXIMUM RATINGS

Parameter	Rating
Storage Temperature	-40 to +85°C
Case Operating Temperature	0 to +85°C
Lead Solder Temperature	260°C, 10 sec.
Power Supply Voltage	-0.3V to 5V
Incident Optical Power	0 dBm average, +4 dBm peak

## NOTICE

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 operations section for extended periods of time may affect reliability.

## NOTICE

The inherent design of this component causes it to be sensitive to electrostatic discharge (ESD). To prevent ESD-induced damage and/or degradation to equipment, take normal ESD precautions when handling this product

\* Feature to be added in near future

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**ELECTRO-OPTICAL CHARACTERISTICS (V<sub>cc</sub>=5V, AC coupled to 100Ω, 0°C<T<70°C unless otherwise specified)**

Parameters	Test Condition	Symbol	Min.	Typ.	Max.	Units	Notes
Active Area				40		μm	
Input Optical Wavelength	0°C to 70°C	$\lambda_p$	800	850	870	nm	
Differential Output Voltage Swing	P <sub>R</sub> = -12dBm, AC Coupled to R <sub>L</sub> =100Ω	V <sub>o(pk-pk)</sub>	20	25		mV	
Supply Voltage			4.75	5	5.25	V	
Supply Current	P <sub>R</sub> =0μW peak, R <sub>L</sub> =50Ω	ICC		70	95	mA	1
-3dB Optical/Electrical Bandwidth	P <sub>R</sub> =-12dBm Temp = 25°C	BW	8	9	13.2	GHz	1,2
Low Frequency -3dB Cutoff	P <sub>R</sub> =-12dBm	BW <sub>LF</sub>			100	KHz	1,2
RMS Input Referred Noise Equivalent Power	7500 MHz, 4-pole BT Filter, P <sub>R</sub> =0uW (Dark), BER 10 <sup>-12</sup>	NEP			30	μW	3
Power Supply Rejection Ratio	P <sub>R</sub> =0μW (Dark), Freq = 1000MHz	PSRR		30		dB	1,5
Rise/Fall Time	P <sub>R</sub> =-12dBm, (20%-80%)	T <sub>R</sub> /T <sub>F</sub>			50	ps	1,4
RSSI Gain							6

**Notes:**

1. P<sub>R</sub> is the average optical power at the fiber face.
2. Bandwidth is measured with a small signal sinusoidal light source with -12dBm average power
3. RMS input referred optical noise equivalent power is obtained by measuring the RMS output noise into an 7500 MHz, 4-pole Bessel-Thompson filter then dividing by the responsivity.
4. Rise/Fall times are corrected for optical source Rise/Fall times. The corrected value is calculated as the square root of the difference of the squares of the measured differential detector output and the source.
5. Value shown is with no external power supply filtering. Improved performance can be obtained by using external filtering close to the power supply leads.
6. RSSI to be added in near future

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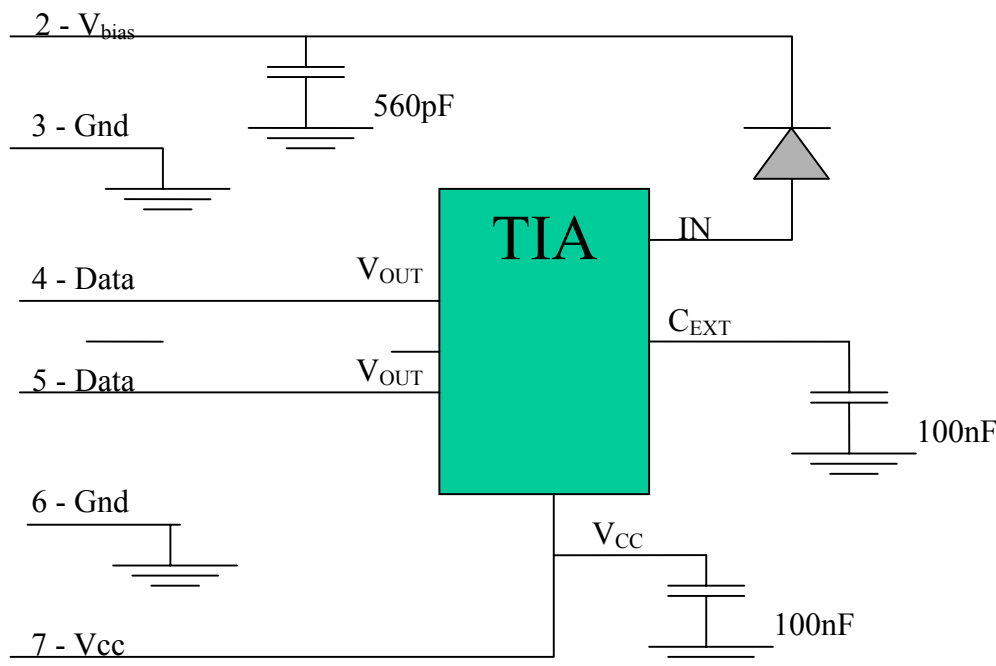
**ORDER GUIDE:**

Catalog Listing	Description
HFD6180-202	LC ROSA
HFD6180-212	LC ROSA, with flex

**PINOUT**

HFD6180-2x2	
Number	Function
1	GND
2	VBIAS
3	GND
4	VOUT
5	-VOUT
6	GND
7	VCC
8	GND

**Schematics / Interface Configurations**



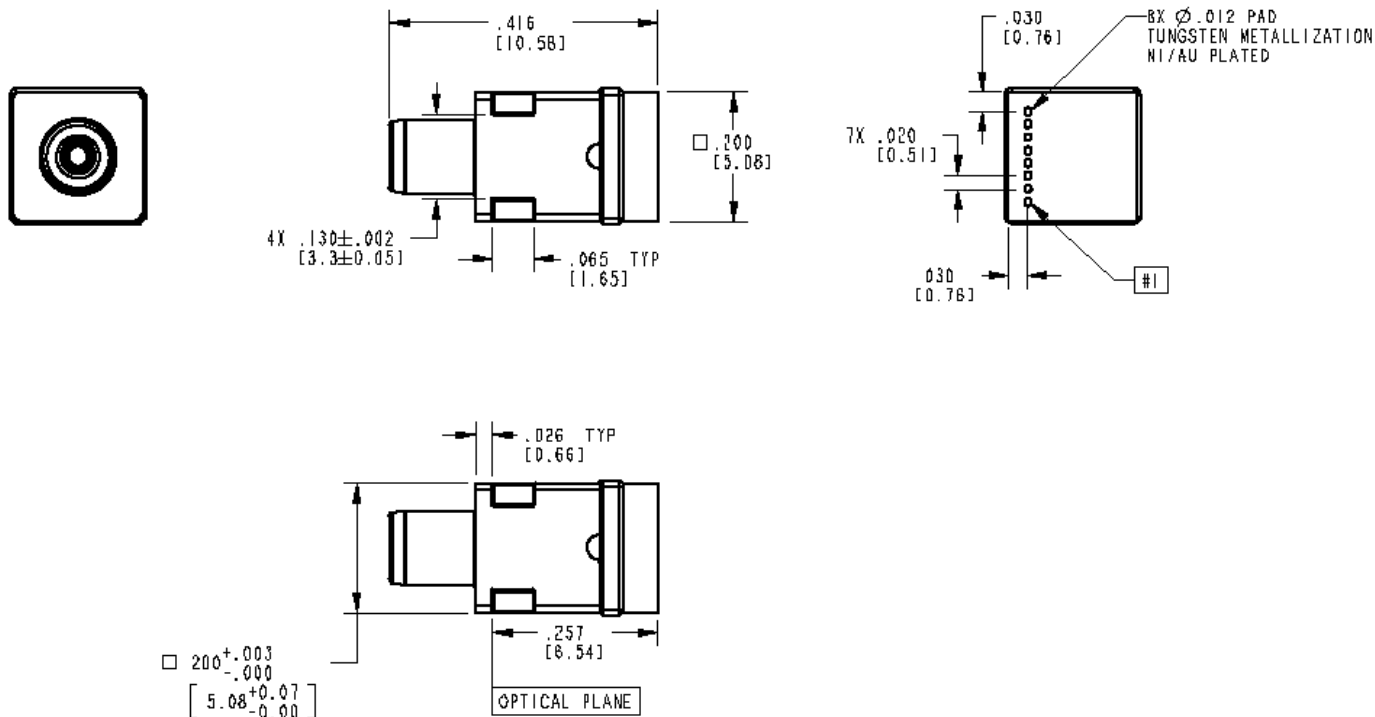
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## Mounting Dimensions

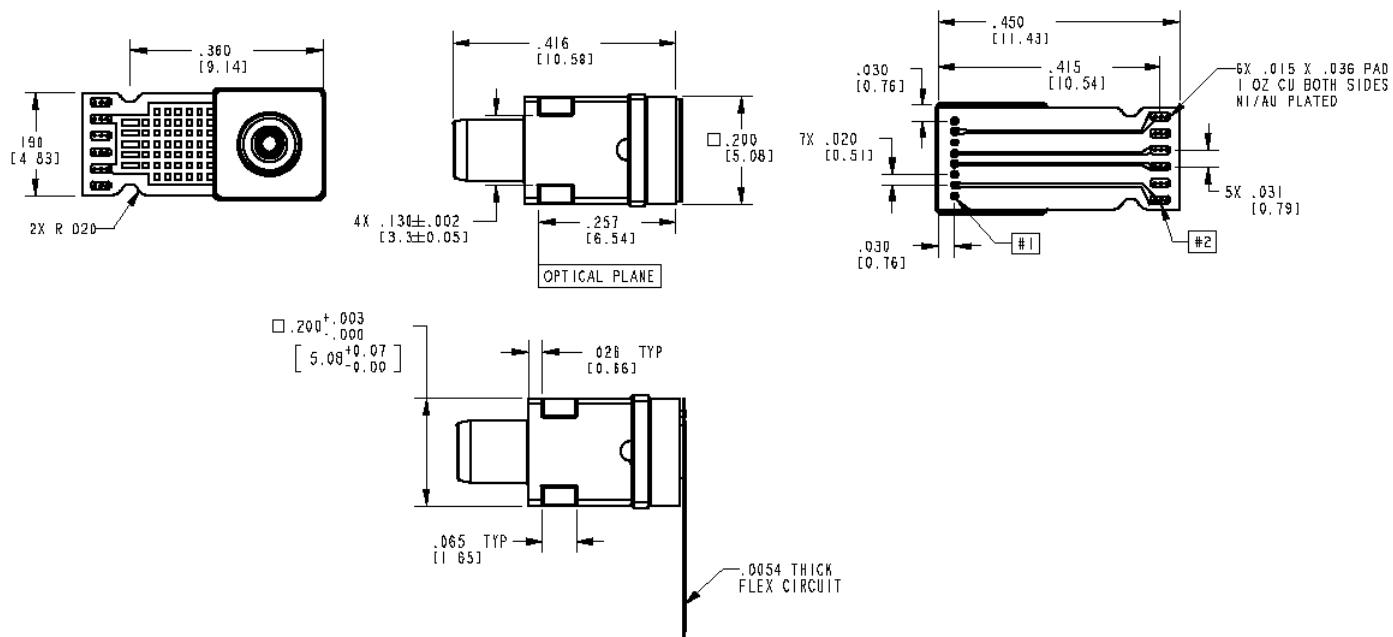
### LC ROSA without flex

Dimensions in Inches



### LC ROSA with flex

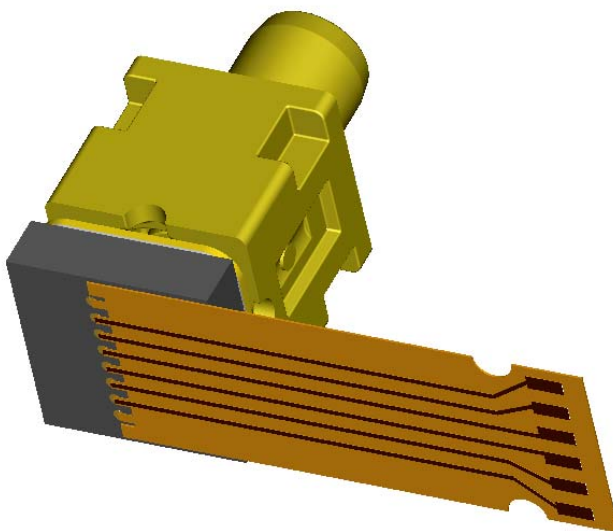
Dimensions in Inches



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**Flex electrical interface**

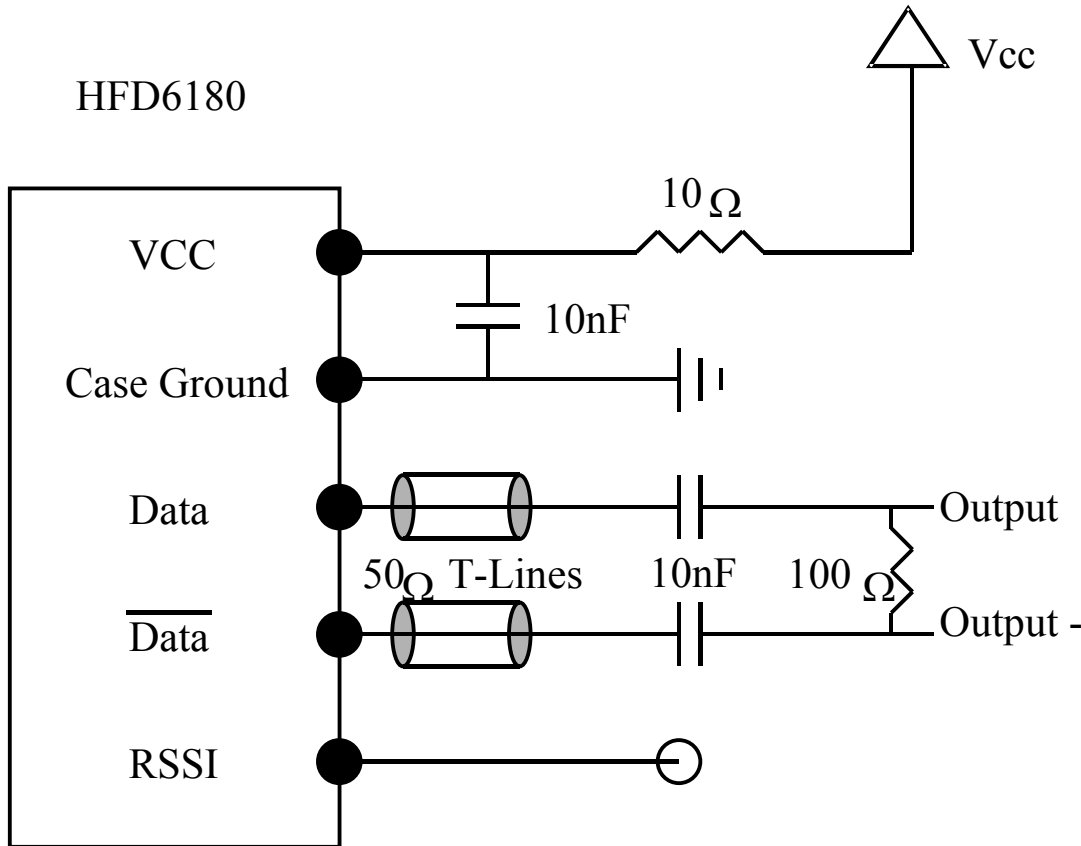
Minimum bend radius = 0.010 inches



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**RECOMMENDED INTERFACE CIRCUIT FOR THE HFD6180-202**



The 100Ω resistor prior to the limiting amplifier is needed only when the input impedance of the amplifier is not 50Ω  
 DC blocking capacitors must also be present at the TIA outputs to avoid a large DC current which may damage the chip.

Note: RSSI functionality to be added in the future

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## WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Commencing with the date of shipment, Honeywell's warranty runs for 18 months. If warranted goods are returned to Honeywell during that period of coverage, Honeywell will repair or replace without charge those items it finds defective. The foregoing is Buyer's sole remedy and is **in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose.**

While we provide application assistance, personally and through our literature, it is up to the customer to determine the suitability of the product in the application.

Specifications may change at any time without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

## HONEYWELL CAPABILITIES

Honeywell VCSEL Optical Products has led the industry in high volume VCSEL technology since 1996. VCSELs (Vertical Cavity Surface Emitting Lasers) are semiconductor lasers which are impacting advances in optical communication, and sensor applications. VCSELs' superior reliability, low drive current, high coupled power, narrow and circularly symmetric beam and versatile packaging options (including arrays) are enabling solutions not possible with other optical technologies. Honeywell's advanced capabilities include

- 10Gbps serial VCSEL solutions
- Proton-implanted and oxide VCSELs
- 850nm is currently available. 780nm, 670nm and additional wavelengths are in development
- Packaging: surface mount, TO, SC, LC, MU, arrays, plastic packaging
- Assemblies: chip on board, chip on chip, plastic components and optical subassemblies
- All configurations (polarities and attenuation) are available
- VCSEL and detector arrays
- Long wavelength detectors
- Custom packaging options

## LOCATIONS

Richardson, TX

- Business unit headquarters, wafer growth, wafer fabrication and TO package assembly

Juarez, Mexico

- SC, LC, MU, SMD, PSMD, PE

Minneapolis, MN

- Materials research

## SALES AND SERVICE

Honeywell VCSEL Optical Products serves its customers through a worldwide network of sales offices and distributors. For application assistance, current specifications, pricing or name of the nearest Authorized Distributor, contact a nearby sales office or call:

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