

10Gbps LW PIN + Preamp

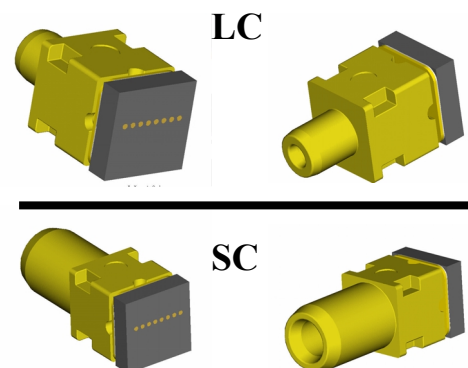
ROSA Package

Preliminary

HFD6x40-2x2

Key Features:

- LC ROSA HFD6140-202
- SC ROSA HFD6340-202
- High performance InGaAs 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 HFD6x40-202 uses a high-performance InGaAs PIN photo-detector packaged with a transimpedance amplifier designed to meet performance requirements for 10Gbps data communication over single-mode optical fiber at both 1310 and 1550nm. Applications include Ethernet, Fibre Channel and ATM protocols.

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 5.5V
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 (Vcc=5V, AC coupled to 100Ω, 0°C<T<70°C unless otherwise specified)

Parameters	Test Condition	Symbol	Min.	Typ.	Max.	Units	Notes
Active Area				30		μm	
Input Optical Wavelength	0°C to 70°C	λ_p	1250		1600	nm	
Differential Output Voltage Swing	$P_R = -12\text{dBm}$, OMA, AC Coupled to $R_L=100\Omega$	$V_{o(pk-pk)}$	30	40		mV	
Supply Voltage			4.75	5	5.25	V	
Supply Current	$P_R = 0\mu\text{W}$ peak, $R_L=50\Omega$	ICC		70	95	mA	1
-3dB Optical/Electrical Bandwidth	$P_R = -12\text{dBm}$ Temp = 25°C	BW	8	9	13.2	GHz	1,2
Low Frequency -3dB Cutoff	$P_R = -12\text{dBm}$	BW_{LF}			100	KHz	1,2
RMS Input Referred Noise Equivalent Power	7500 MHz, 4-pole BT Filter, $P_R=0\mu\text{W}$ (Dark), BER 10^{-12}	NEP			30	μW	3
Power Supply Rejection Ratio	$P_R = 0\mu\text{W}$ (Dark), Freq = 1000MHz	PSRR		30		dB	1,5
Rise/Fall Time	$P_R = -12\text{dBm}$, (20%-80%)	T_R/T_F			50	ps	1,4
RSSI Gain							6

Notes:

1. P_R 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 functionality to be added in the future

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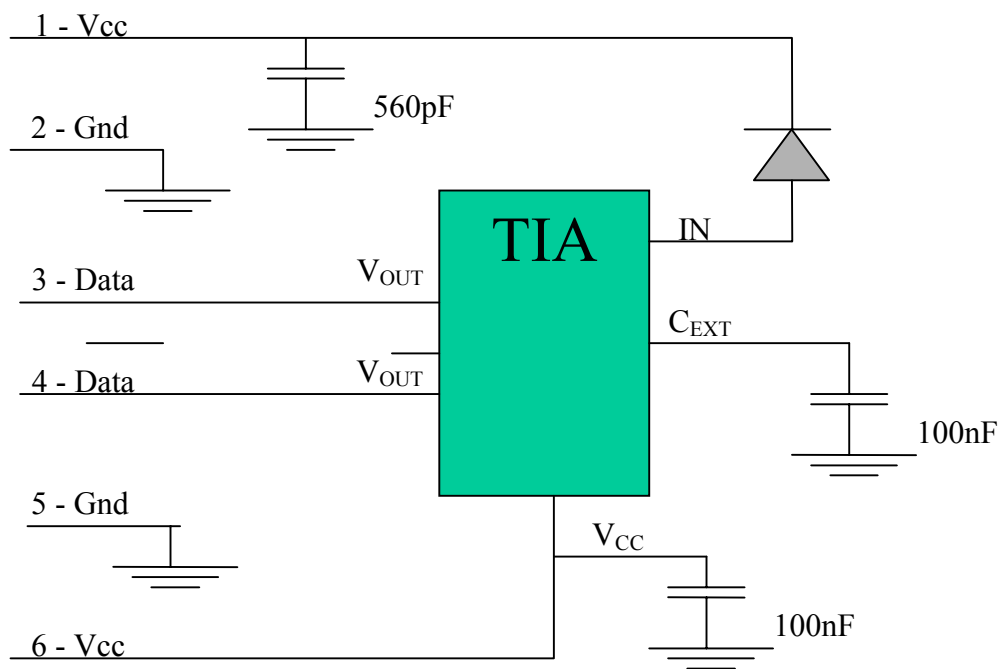
ORDER GUIDE:

Catalog Listing	Description
HFD6140-202	LC ROSA
HFD6340-202	SC ROSA
HFD6140-212	LC ROSA, with flex
HFD6340-212	SC ROSA, with flex

PINOUT

HFD6x40-2x2	
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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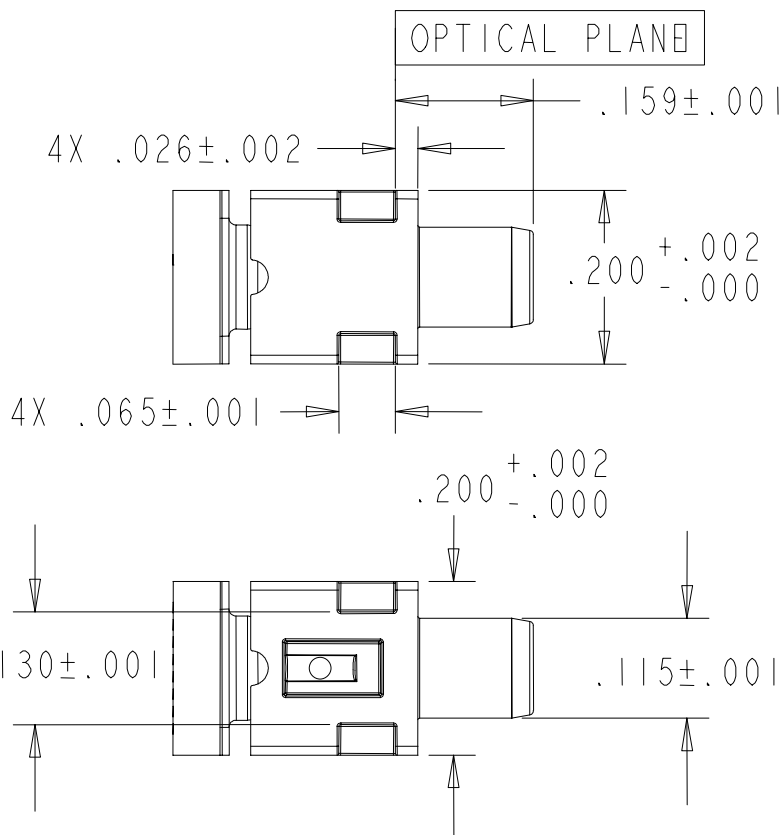
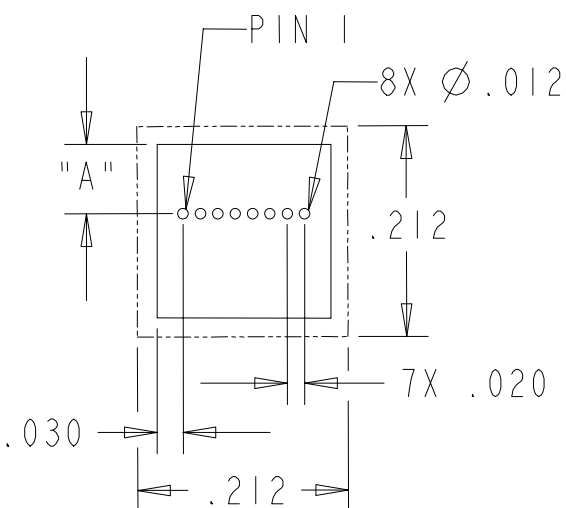
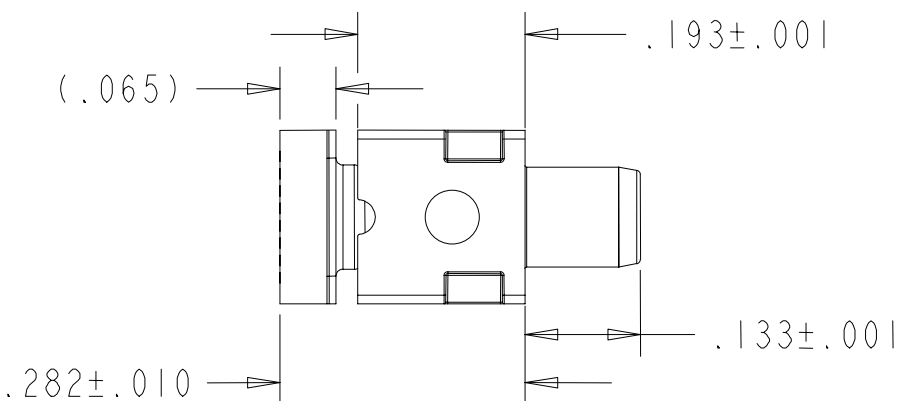
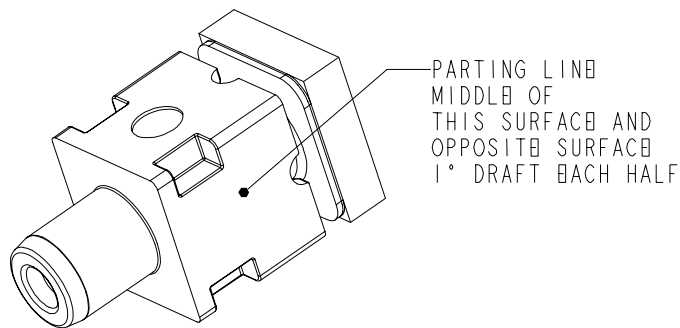
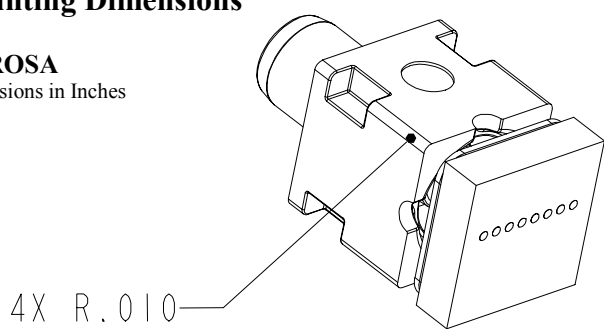
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Mounting Dimensions

LC ROSA
Dimensions in Inches



THE .212 DIMENSIONS SHOW THE MAXIMUM CERAMIC PACKAGE ENVELOPE (INCLUDING ALIGNMENT TOLERANCES) RELATIVE TO OSA.

DIM "A" MAY BE CHANGED, SUBJECT TO HIGH SPEED PERFORMANCE OF PRODUCT.

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ROSA Package

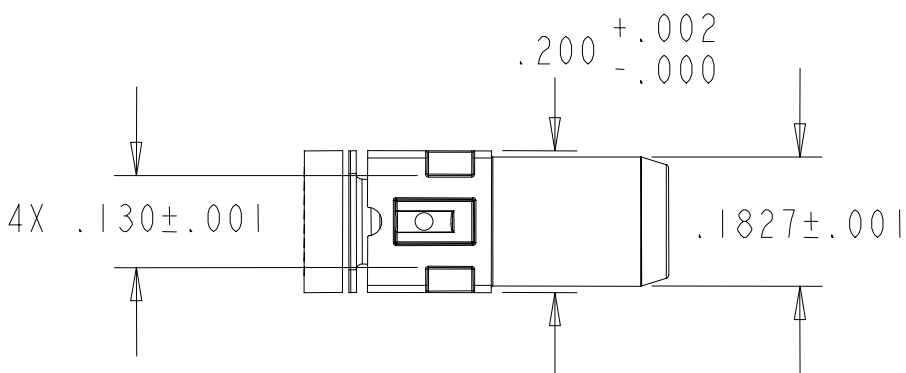
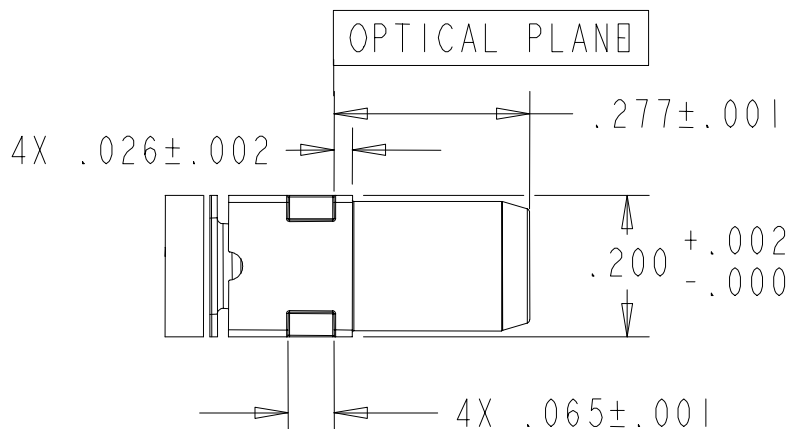
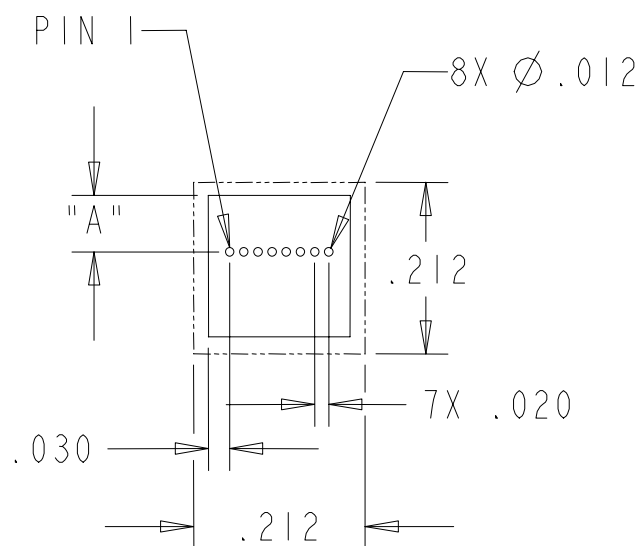
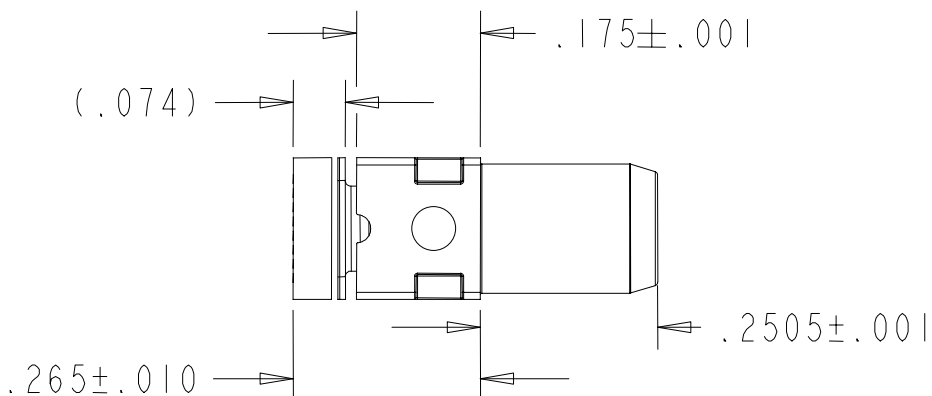
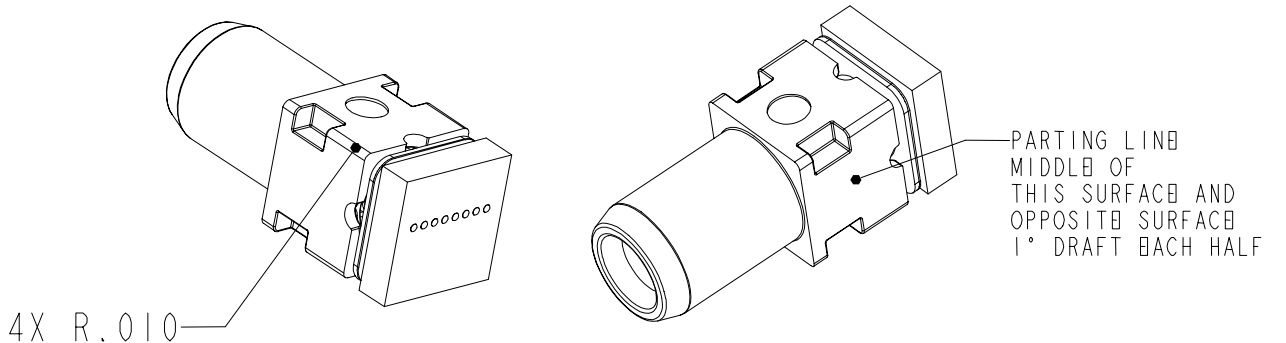
Preliminary

HFD6x40-2x2

Mounting Dimensions

SC ROSA

Dimensions in Inches



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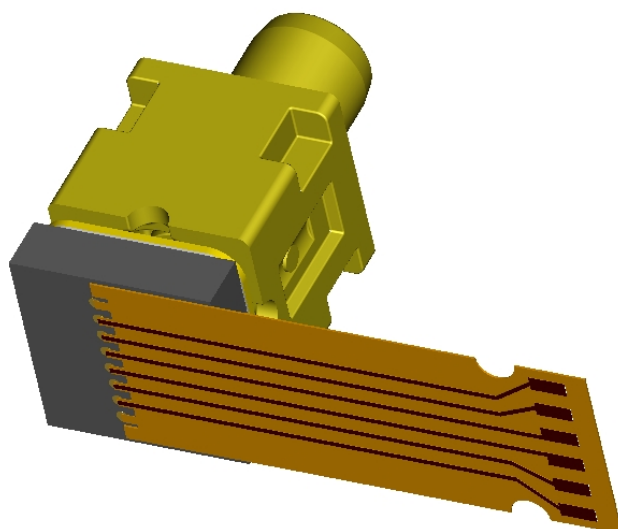
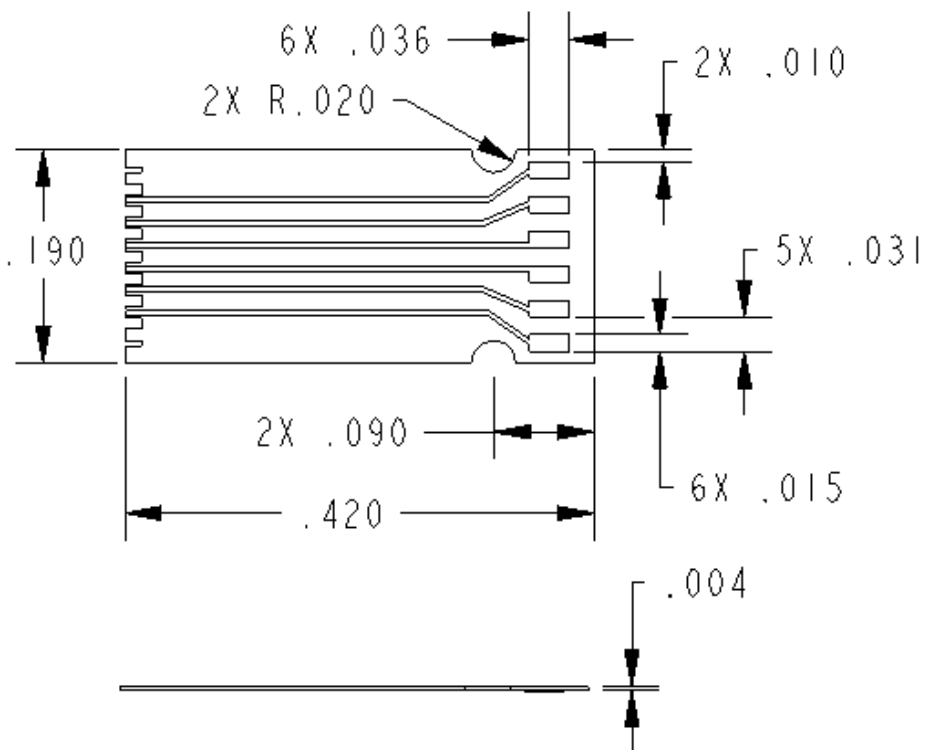
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Flex electrical interface

Minimum bend radius = 0.010 inches



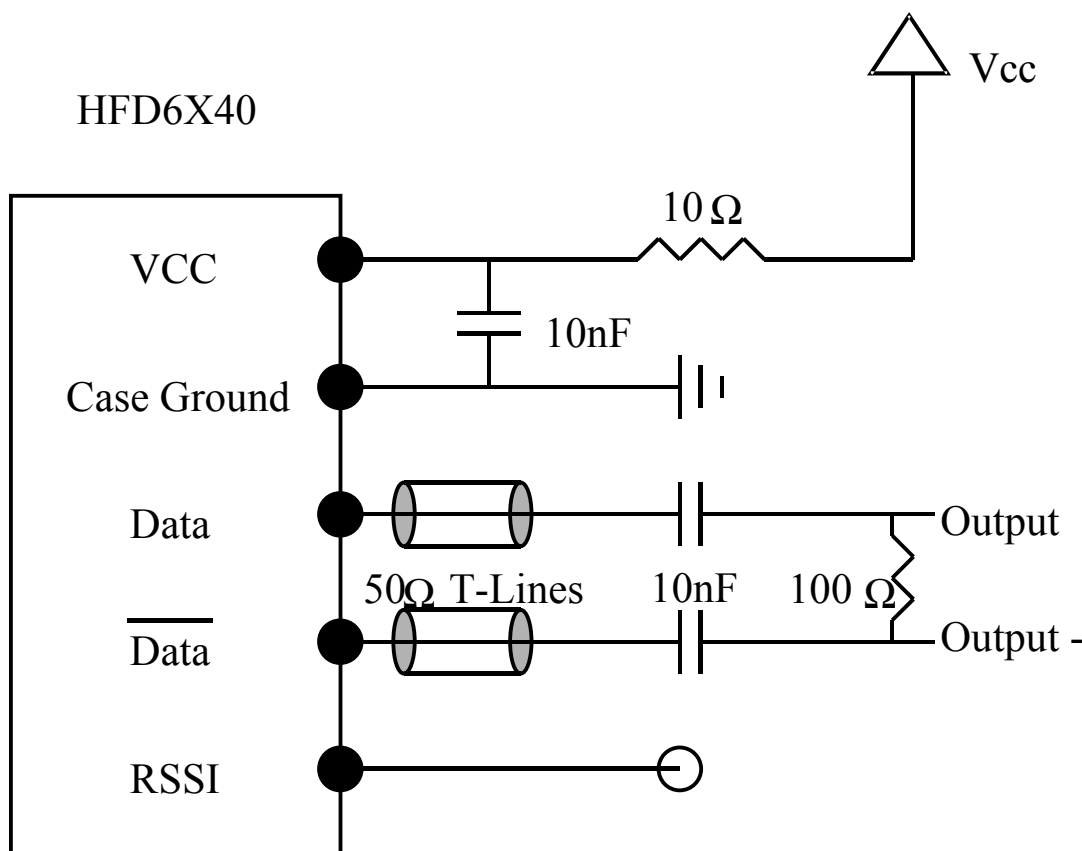
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RECOMMENDED INTERFACE CIRCUIT FOR THE HFD6X40-202



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.

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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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