

Fiber Optical Receiver OPF562

155MBaud, ST connector



DATASHEET

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Features

- Low Cost
- Data Rates up to 155 MBaud
- Wide Temperature Range
- SMA, Metal ST Receptacle
- Wave Solderable

The OPF562 receiver is replacement part featuring low cost solution for high speed fiber optic communication designs. The output of the receiver is an analog, low impedance, emitter follower voltage source capable of driving an amplifier or level translating circuitry. This allows the subsequent circuitry to use the device in either the analog mode or translated to ECL/TTL levels for use in a digital mode at data rates up to 155MBaud.

The receiver is comprised of a high speed, low noise, photodiode coupled to a transimpedance amplifier which produces an output voltage proportional to the input light amplitude. This hybrid approach solves many of the problems of high speed data link designs by placing a pre-amplifier close to the photodiode. The amplification of the transimpedance amplifier makes the output signal much less susceptible to EMI.

An AC coupled receiver application circuit is shown. Both the 10 W resistor and bypass capacitor are critical.

Specifications *

Parameter	Min	Typical	Max	Unit	
Responsivity ($\lambda = 840 \text{ nm}$, $f = 50 \text{ MHz}$)	$T_a = 25^\circ\text{C}$	5.3	7.0	9.6	mV/ μW
	$-40^\circ \leq T_a \leq +85^\circ\text{C}$	4.5		11.5	
RMS Output Noise Voltage	Bandwidth Filtered @ 75 MHz, $P_r = 0 \mu\text{W}$		0.40	0.59	mV
	Unfiltered Bandwidth, $P_r = 0 \mu\text{W}$			0.70	
Equivalent Optical Noise Input Power (RMS) (Bandwidth Filtered @ 75 MHz)		-43.0	-41.4		dBm
			0.050	0.065	
Peak Input Power (P_r)	$T_a = 25^\circ\text{C}$			-7.6	dBm
	$T_a = 25^\circ\text{C}$			175	μW
	$-40^\circ \leq T_a \leq +85^\circ\text{C}$			-8.2	dBm
	$-40^\circ \leq T_a \leq +85^\circ\text{C}$			150	μW
DC Output Voltage ($P_r = 0 \mu\text{W}$)	-4.2	-3.1	-2.4	V	
Power Supply Current		9	15	mA	
Rise Time, Fall Time (10% - 90%) ($P_r = 100 \mu\text{W}$, $R_{\text{load}} = 511 \Omega$, $C_{\text{load}} = 5 \text{ pF}$)		3.3	6.3	ns	
Pulse Width Distortion ($P_r = 150 \mu\text{W}$ peak, $PW = 10 \text{ ns}$, 50% D.C.)		0.4	2.5	ns	
Bandwidth (-3 dB Electrical)		125		MHz	
Power Supply Rejection Ratio ($f = 10 \text{ MHz}$)		20		dB	
Storage Temperature	-55		+85	$^\circ\text{C}$	
Operating Temperature	-40		+85	$^\circ\text{C}$	
Lead Soldering Temperature (for 10 seconds)			260	$^\circ\text{C}$	
Supply Voltage ($V_{\text{cc}} - V_{\text{ee}}$)	-0.5		6.0	V	
Signal Pin Voltage	-0.5		V_{cc}	V	
Output Current		25		mA	

Notes:

* $-5.45 \text{ V} \leq V_{\text{cc}} \leq -4.75 \text{ V}$, $R_{\text{load}} = 511 \Omega$, Fiber Sizes $\leq 100 \mu\text{m}$, N.A. ≤ 0.35 , $T_A = 25^\circ\text{C}$ unless otherwise noted



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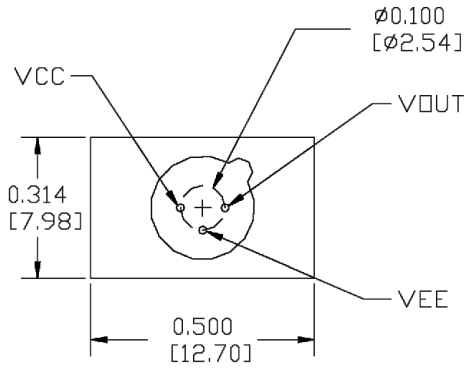
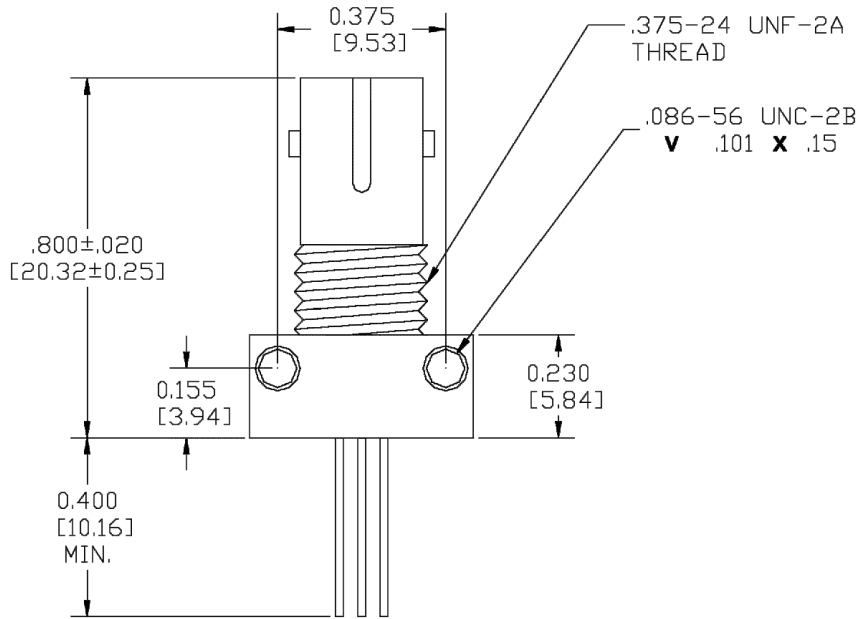
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Mechanical Dimensions (Unit: mm)



*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

Ordering Information (Part Number)

Part Number:

OPF562

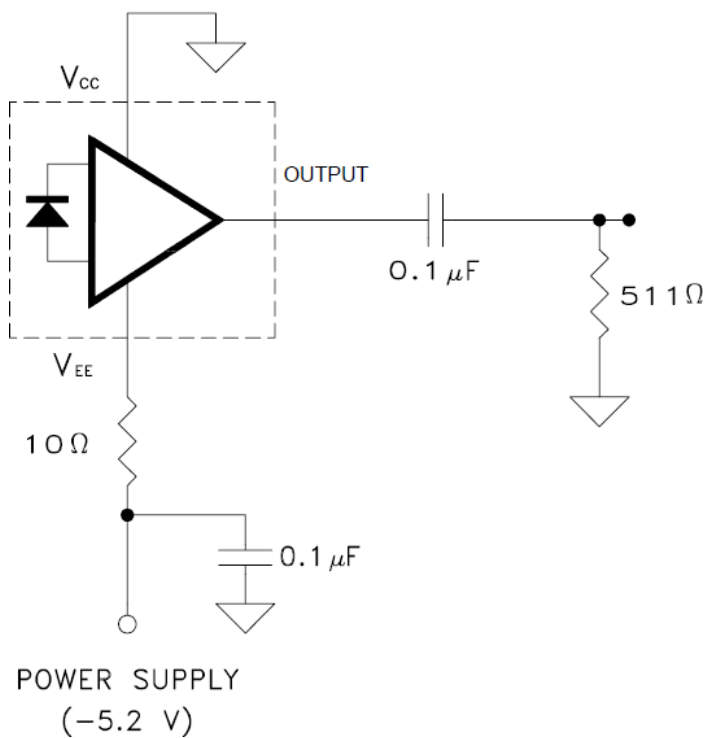
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Recommended AC Coupled Receiver Circuit



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Application Notes

Fiber Core Alignment

Note that the minimum attenuation for these devices depends on excellent core-to-core alignment when the connectors are mated. This is crucial for shorter wavelengths with smaller fiber core diameters that can increase the loss of many decibels above the specification if they are not perfectly aligned. Different vendors' connectors may not mate well with each other, especially for angled APC.

Fiber Cleanliness

Fibers with smaller core diameters (<5 μm) must be kept extremely clean, contamination at fiber-fiber interfaces, combined with the high optical power density, can lead to significant optical damage. This type of damage usually requires re-polishing or replacement of the connector.

Maximum Optical Input Power

Due to their small fiber core diameters for short wavelength and high photon energies, the damage thresholds for device is substantially reduced than the common 1550nm fiber. To avoid damage to the exposed fiber end faces and internal components, the optical input power should never exceed 20 mW for wavelengths shorter 650nm. We produce a special version to increase the handling by expanding the core side at the fiber ends.