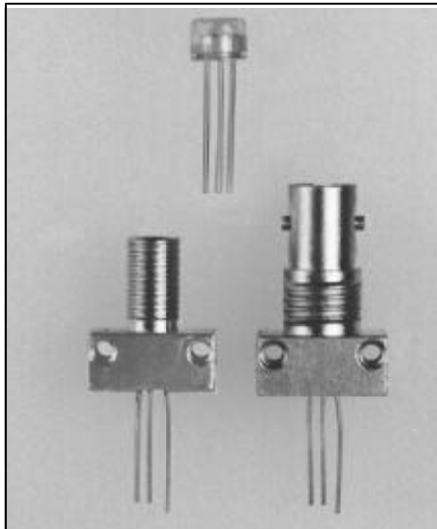


# 125 MHz Fiber Optic Receiver

## Types OPF560, OPF561, OPF562



### Features

- Low Cost
- Data Rates up to 155 MBd
- Wide Temperature Range
- SMA, ST\*, or plastic cap style
- Wave Solderable

### Description

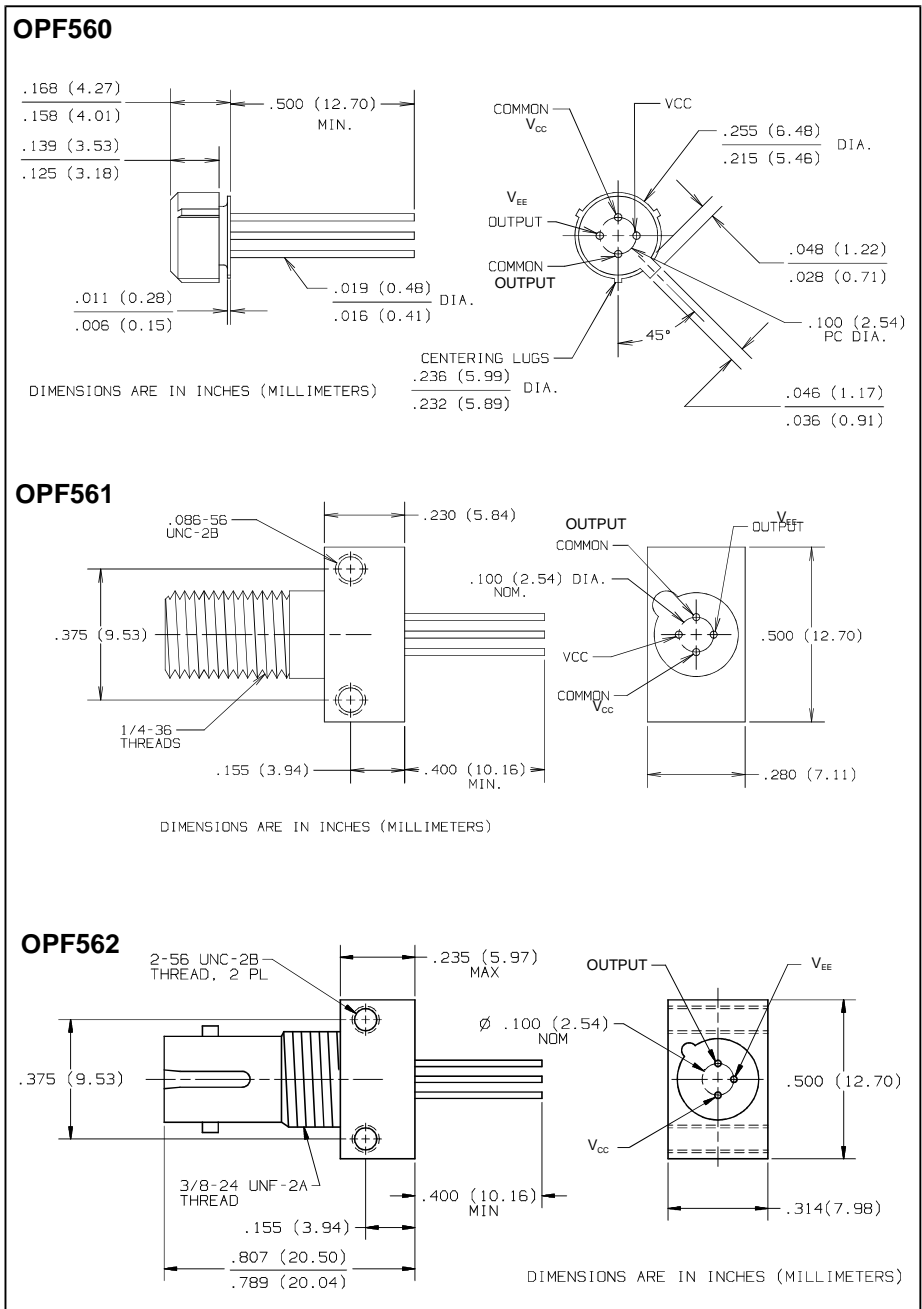
The OPF560 series receiver is a low cost solution for high speed fiber optic communication designs.

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 ohm resistor and by-pass capacitor are critical.

\*ST is a registered trademark of AT&T.



### Absolute Maximum Ratings (TA = 25° C unless otherwise noted)

Storage Temperature	-55° C to +85° C
Operating Temperature	-40° C to +85° C
Lead Soldering Temperature (for 10 sec.)	260° C
Signal Pin Voltage	-0.5 to V <sub>CC</sub>
Supply Voltage (V <sub>CC</sub> - V <sub>EE</sub> )	-0.5 to 6.0 V
Output Current	25 mA

This component is susceptible to damage from electrostatic discharge (ESD). Normal static precautions should be taken in handling and assembly of this component to prevent ESD damage or degradation.

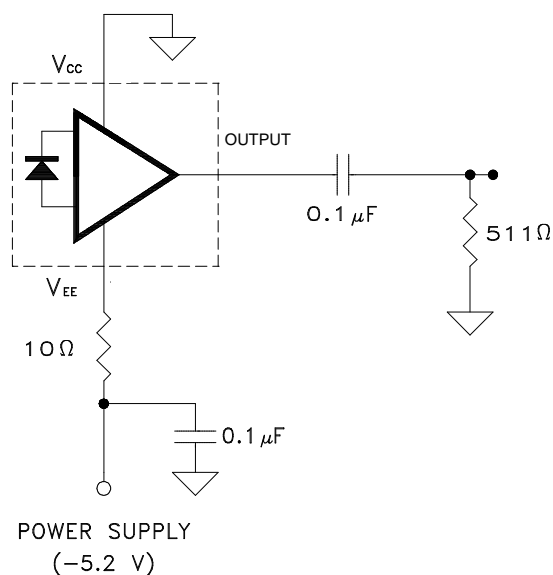
# Types OPF560, OPF561, OPF562

Electrical Characteristics ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

$-5.45 \leq \text{Supply Voltage} \leq -4.75$ ,  $R_{\text{LOAD}} = 511\ \Omega$ , Fiber Sizes  $\leq 100$  Microns,  $\text{N.A.} \leq 0.35$

SYMBOL	PARAMETER	MIN	TYP	MAX	UNIT	TEST CONDITION
$R_P$	Responsivity	5.3	7	9.6	mV/ $\mu\text{W}$	at 840 nm, 50 MHz
		4.5		11.5	mV/ $\mu\text{W}$	at 840 nm, 50 MHz $-40^\circ\text{C} \leq T_A \leq +85^\circ\text{C}$
$V_{\text{NO}}$	RMS Output Noise Voltage		0.40	0.59	mV	Bandwidth Filtered @ 75 MHz, $P_R = 0\ \mu\text{W}$
				0.7	mV	Unfiltered Bandwidth $P_R = 0\ \mu\text{W}$
$P_N$	Equivalent Optical Noise Input Power (RMS)		-43.0	-41.4	dBm	Bandwidth Filtered @ 75 MHz
			0.050	0.065	$\mu\text{W}$	
$P_R$	Peak Input Power			-7.6	dBm	$T_A = 25^\circ\text{C}$
				175	$\mu\text{W}$	$T_A = 25^\circ\text{C}$
				-8.2	dBm	$-40^\circ\text{C} \leq T_A \leq +85^\circ\text{C}$
				150	$\mu\text{W}$	$-40^\circ\text{C} \leq T_A \leq +85^\circ\text{C}$
$V_{\text{odc}}$	DC Output Voltage	-4.2	-3.1	-2.4	V	$P_R = 0\ \mu\text{W}$
$I_{\text{EE}}$	Power Supply Current		9	15	mA	$R_{\text{LOAD}} = \infty$
$t_r, t_f$	Rise Time, Fall Time (10% to 90%)		3.3	6.3	ns	$P_R = 100\ \mu\text{W}$ , $R_{\text{LOAD}} = 511\ \Omega$ , $C_{\text{LOAD}} = 5\ \text{pF}$
PWD	Pulse Width Distortion		0.4	2.5	ns	$P_R = 150\ \mu\text{W}$ Peak, Pwidth = 10 ns, 50% Duty Cycle
BW	Bandwidth		125		MHz	-3 dB Electrical
PSRR	Power Supply Rejection Ratio		20		dB	@ 10 MHz

## Recommended AC Coupled Receiver Circuit





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