

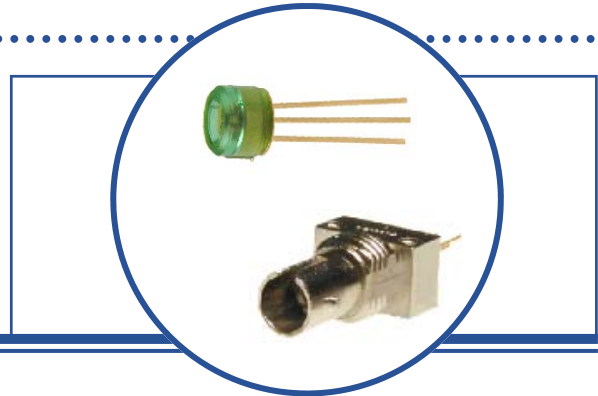
# Fiber Optic Receiver

## OPF520 Series



### OPF520 Series

- Low Cost plastic cap package
- Designed to self align in the bore of standard fiber optic receptacles
- Press fit simplifies installation
- Optimized for fiber optic applications using 50 to 200 micron fiber



The OPF520 series fiber optic receiver is a high performance device packaged for data communications links. As such, it is designed to work with fiber core diameters from 50µm to 200µm and over a broad input power range. The construction contains a monolithic photo-IC comprised of a photodiode, biasing network, DC amplifier and an open collector output transistor. The output circuitry makes this device compatible with TTL and CMOS logic.

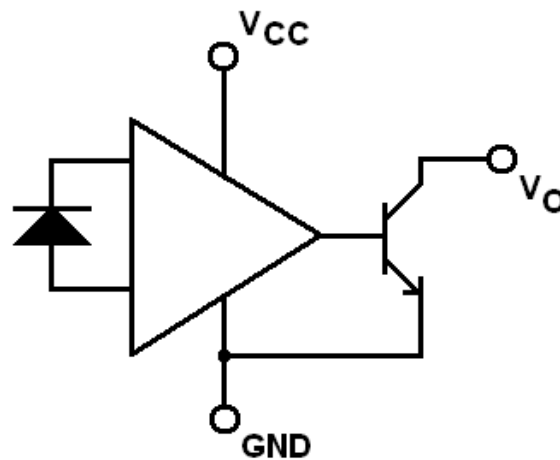
This receiver is designed to operate from a single 5V supply. It is essential that a bypass capacitor be connected from V<sub>CC</sub> to GND in order to ensure the best possible operation.

### Applications

- ◆ Industrial Ethernet equipment
- ◆ Copper-to-fiber media conversion
- ◆ Intra-system fiber optic links
- ◆ Video surveillance systems

### Part Ordering Information

Part Number	Description
OPF520	Plastic Cap Component
OPF522	Metal ST Receptacle



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### Absolute Maximum Ratings

Storage Temperature.....	-55° C to +115° C
Operating Temperature.....	-40° C to +85° C
Lead Soldering Temperature (for 10 seconds) .....	260° C
Supply Voltage .....	-0.5 V to +7.0 V
Output Current .....	25 mA
Output Voltage .....	-0.5 V to +18.0 V
Open Collector Power Distribution .....	40mW
Fan Out (TTL).....	5 <sup>(1)</sup>

### Electrical/Optical Characteristics

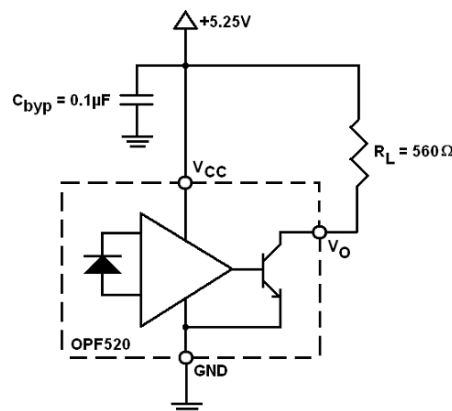
4.75 ≤ V<sub>CC</sub> ≤ 5.25, Fiber Sizes ≤ 200μm, NA ≤ 0.35, T<sub>A</sub> = 25°C unless otherwise specified

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
I <sub>OH</sub>	High Level Output Current		5	250	μA	V <sub>O</sub> = 18V, P <sub>OC</sub> < -40 dBm, See Note 2
V <sub>OL</sub>	Low Level Output Voltage		0.2	0.5	V	I <sub>O</sub> = 8 mA, P <sub>OC</sub> > +24 dBm, See Note 2
I <sub>CCH</sub>	Supply Current, Output High		3.5	6.3	mA	V <sub>CC</sub> = 5.25 V, P <sub>OC</sub> < -40 dBm, See Note 2
I <sub>CCL</sub>	Supply Current, Output Low		6.9	10	mA	V <sub>CC</sub> = 5.25 V, P <sub>OC</sub> < -24 dBm, See Note 2
P <sub>OC(H)</sub>	Peak Input Power Level, Output High (Guaranteed Output High)			-40	dBm	λ <sub>p</sub> = 850 nm
				0.1	μW	
P <sub>OC(L)</sub>	Peak Input Power Level, Output Low (Guaranteed Output Low)	-25.4		-9.2	dBm	λ <sub>p</sub> = 850 nm, I <sub>O</sub> = 8 mA
		2.9		120	μW	
		-24		-10	dBm	λ <sub>p</sub> = 850 nm, I <sub>O</sub> = 8 mA
		4.0		100	μW	
t <sub>r</sub> , t <sub>f</sub>	Rise, Fall Time		30		ns	
t <sub>PDHL</sub>	Propagation Delay, Output High to Low		65		ns	P <sub>OC</sub> = 20 dBm (peak), f = 2.5 MHz, See Note 3
t <sub>PDLH</sub>	Propagation Delay, Output Low to High		100		ns	
PWD	Pulse Width Distortion		±30		%	

#### Notes:

- 8mA load (5 x 1.6 mA), R<sub>L</sub> = 560 Ω
- Use recommended test circuit below, but connect V<sub>O</sub> to an independent voltage source with R<sub>L</sub> = 0.
- Use recommended test circuit below.

#### Recommended Test Circuit

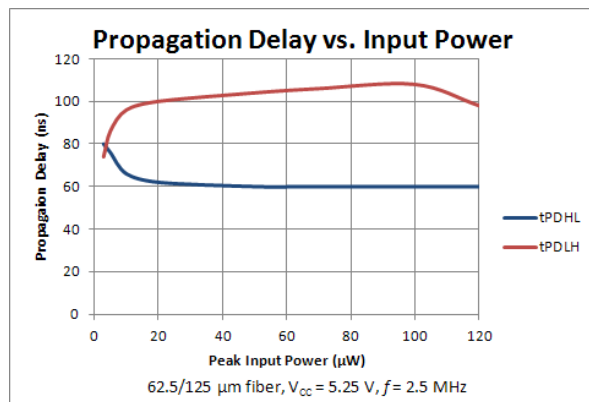
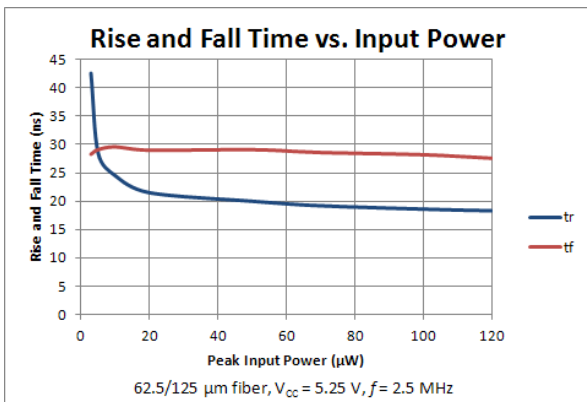
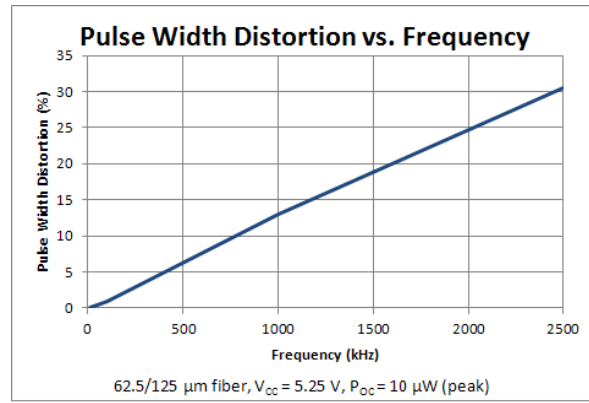
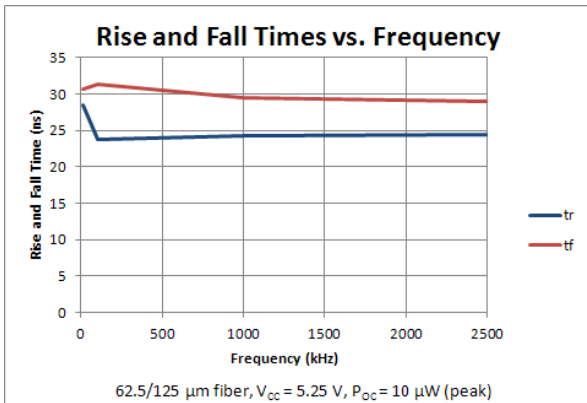
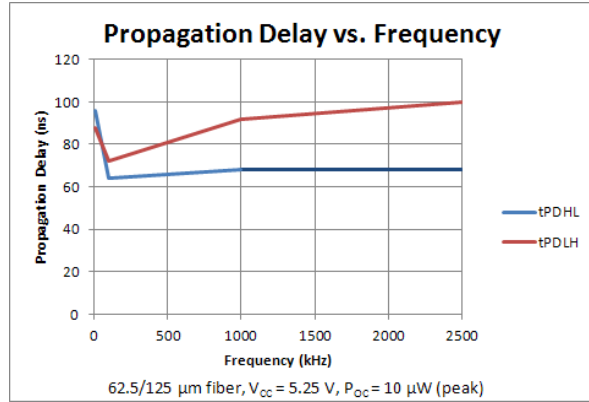
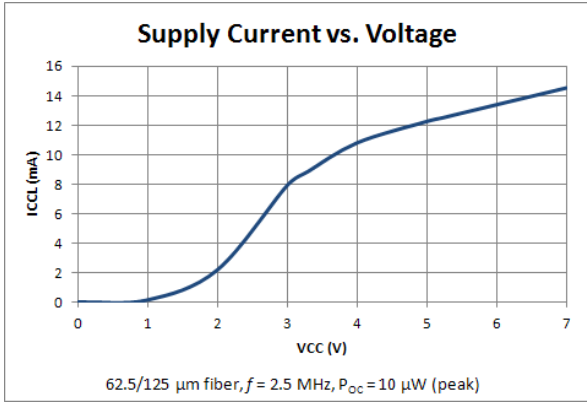


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### Switching Characteristics

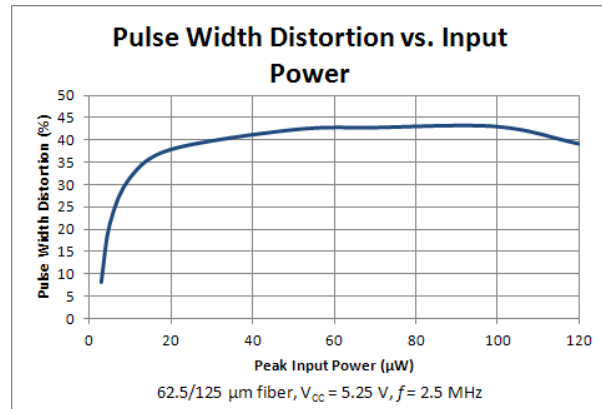
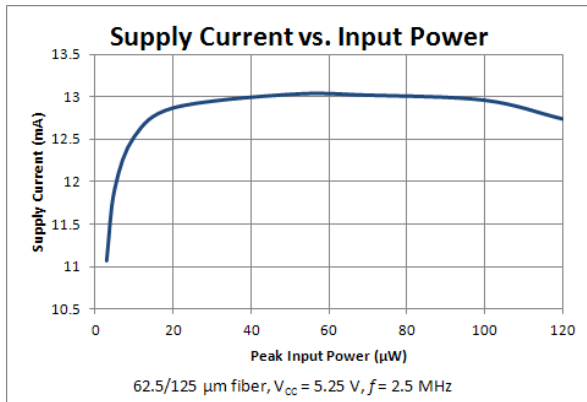
(See Recommended Test Circuit)



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**Switching Characteristics**  
(continued)



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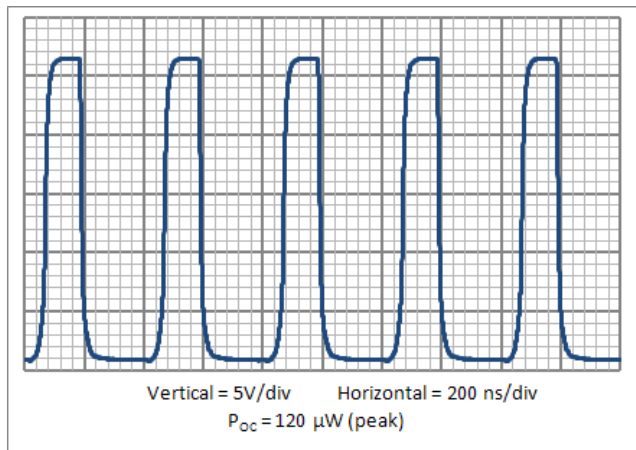
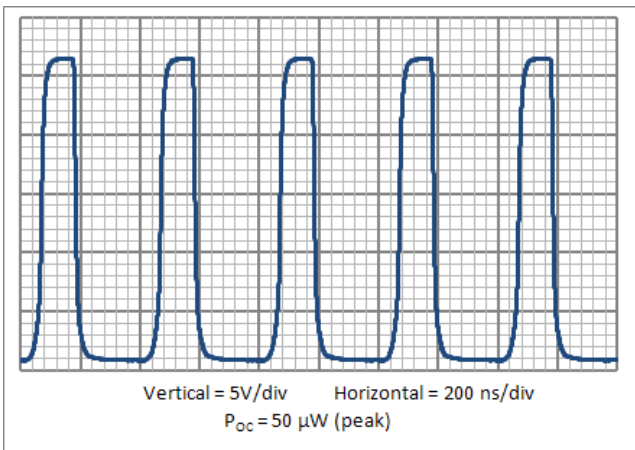
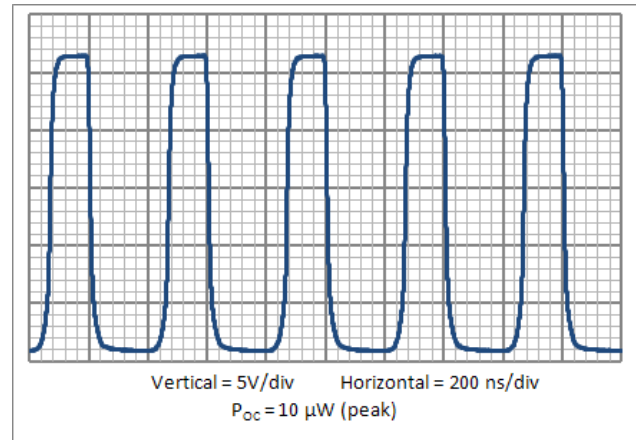
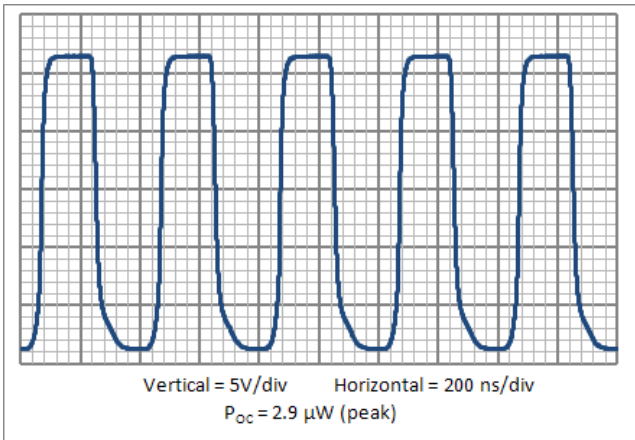


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### Typical Waveforms for Various Input Powers

(62.5/125  $\mu\text{m}$  fiber,  $V_{CC} = 5.25\text{ V}$ ,  $f = 2.5\text{ MHz}$ )  
(See Recommended Test Circuit)

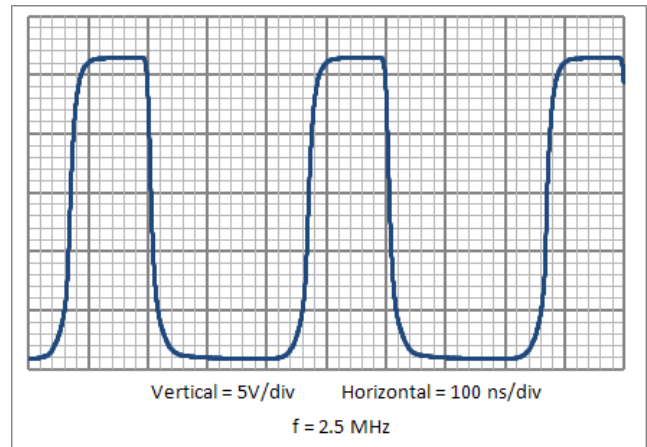
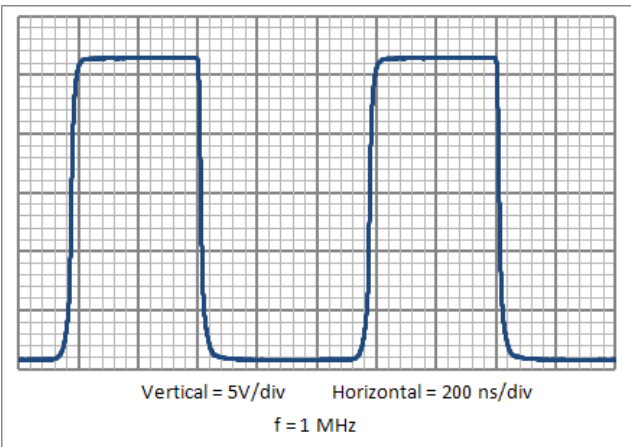
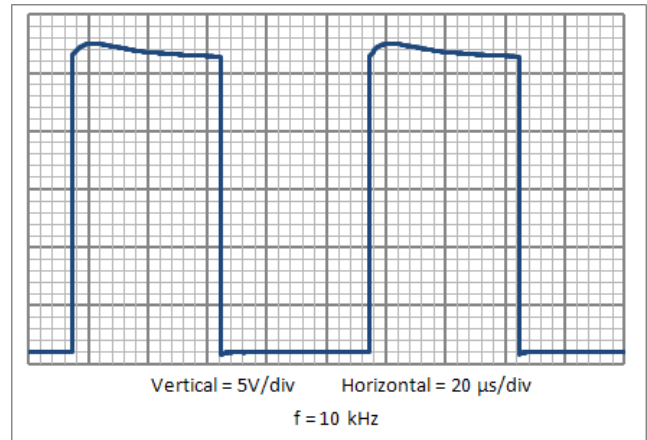
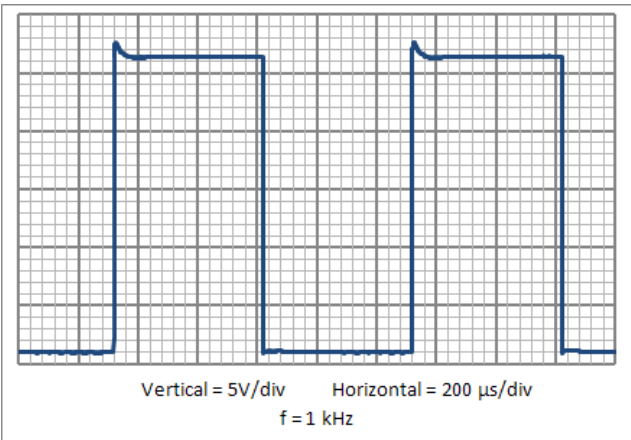


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### Typical Waveforms for Various Frequencies

(62.5/125  $\mu\text{m}$  fiber,  $V_{CC} = 5.25\text{ V}$ ,  $P_{OC} = 10\mu\text{W}$  (peak)  
(See Recommended Test Circuit)

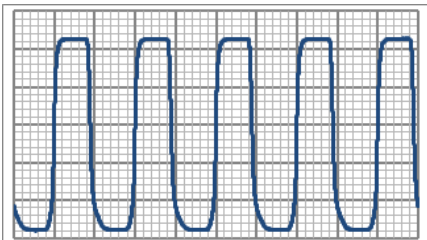


**RoHS**

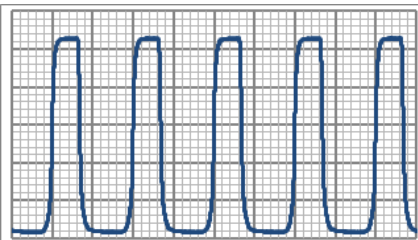
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**Typical Waveforms for  
Various Fiber Cables and  
Input Powers**

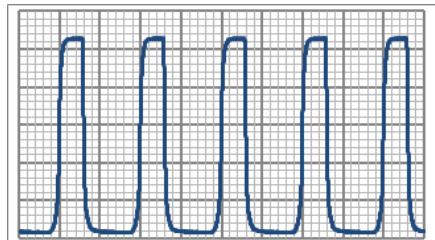
( $V_{CC} = 5.25\text{ V}$ ,  $f = 2.5\text{ MHz}$ )  
(See Recommended Test Circuit)



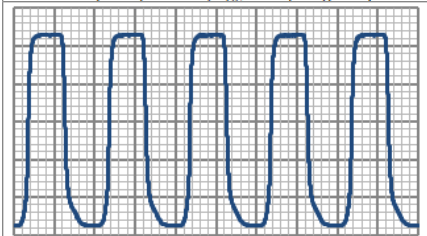
Vertical = 5V/div Horizontal = 200 ns/div  
50/125  $\mu\text{m}$  fiber,  $P_{OC} = 2.9\ \mu\text{W}$  (peak)



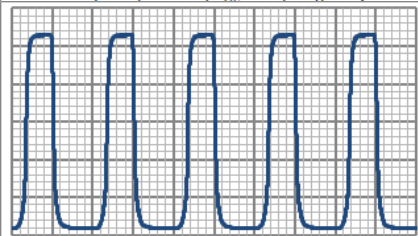
Vertical = 5V/div Horizontal = 200 ns/div  
50/125  $\mu\text{m}$  fiber,  $P_{OC} = 10\ \mu\text{W}$  (peak)



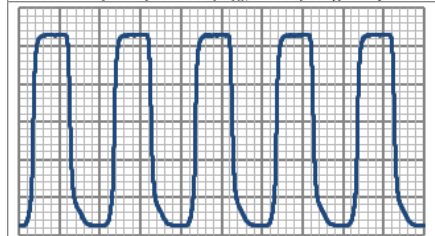
Vertical = 5V/div Horizontal = 200 ns/div  
50/125  $\mu\text{m}$  fiber,  $P_{OC} = 120\ \mu\text{W}$  (peak)



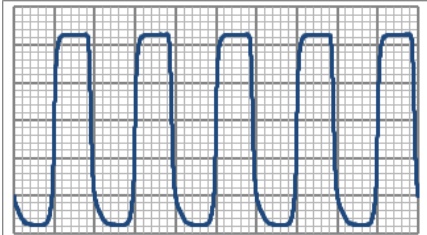
Vertical = 5V/div Horizontal = 200 ns/div  
62.5/125  $\mu\text{m}$  fiber,  $P_{OC} = 2.9\ \mu\text{W}$  (peak)



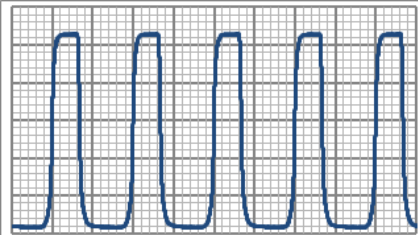
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62.5/125  $\mu\text{m}$  fiber,  $P_{OC} = 10\ \mu\text{W}$  (peak)



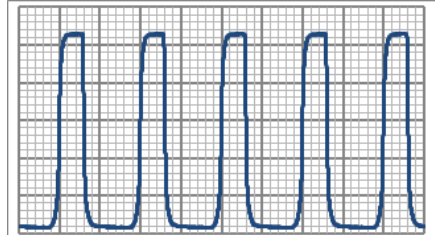
Vertical = 5V/div Horizontal = 200 ns/div  
62.5/125  $\mu\text{m}$  fiber,  $P_{OC} = 2.9\ \mu\text{W}$  (peak)



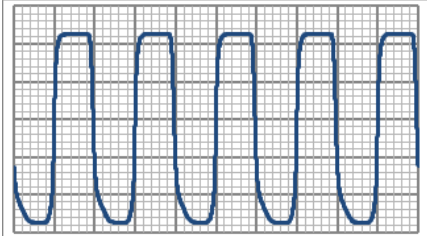
Vertical = 5V/div Horizontal = 200 ns/div  
100/140  $\mu\text{m}$  fiber,  $P_{OC} = 2.9\ \mu\text{W}$  (peak)



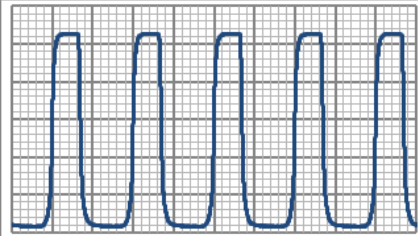
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100/140  $\mu\text{m}$  fiber,  $P_{OC} = 10\ \mu\text{W}$  (peak)



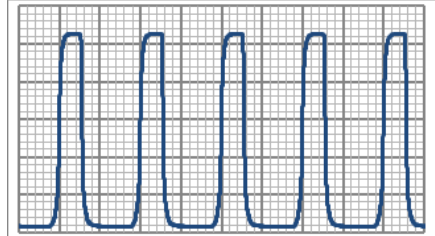
Vertical = 5V/div Horizontal = 200 ns/div  
100/140  $\mu\text{m}$  fiber,  $P_{OC} = 120\ \mu\text{W}$  (peak)



Vertical = 5V/div Horizontal = 200 ns/div  
200/230  $\mu\text{m}$  fiber,  $P_{OC} = 2.9\ \mu\text{W}$  (peak)



Vertical = 5V/div Horizontal = 200 ns/div  
200/230  $\mu\text{m}$  fiber,  $P_{OC} = 10\ \mu\text{W}$  (peak)



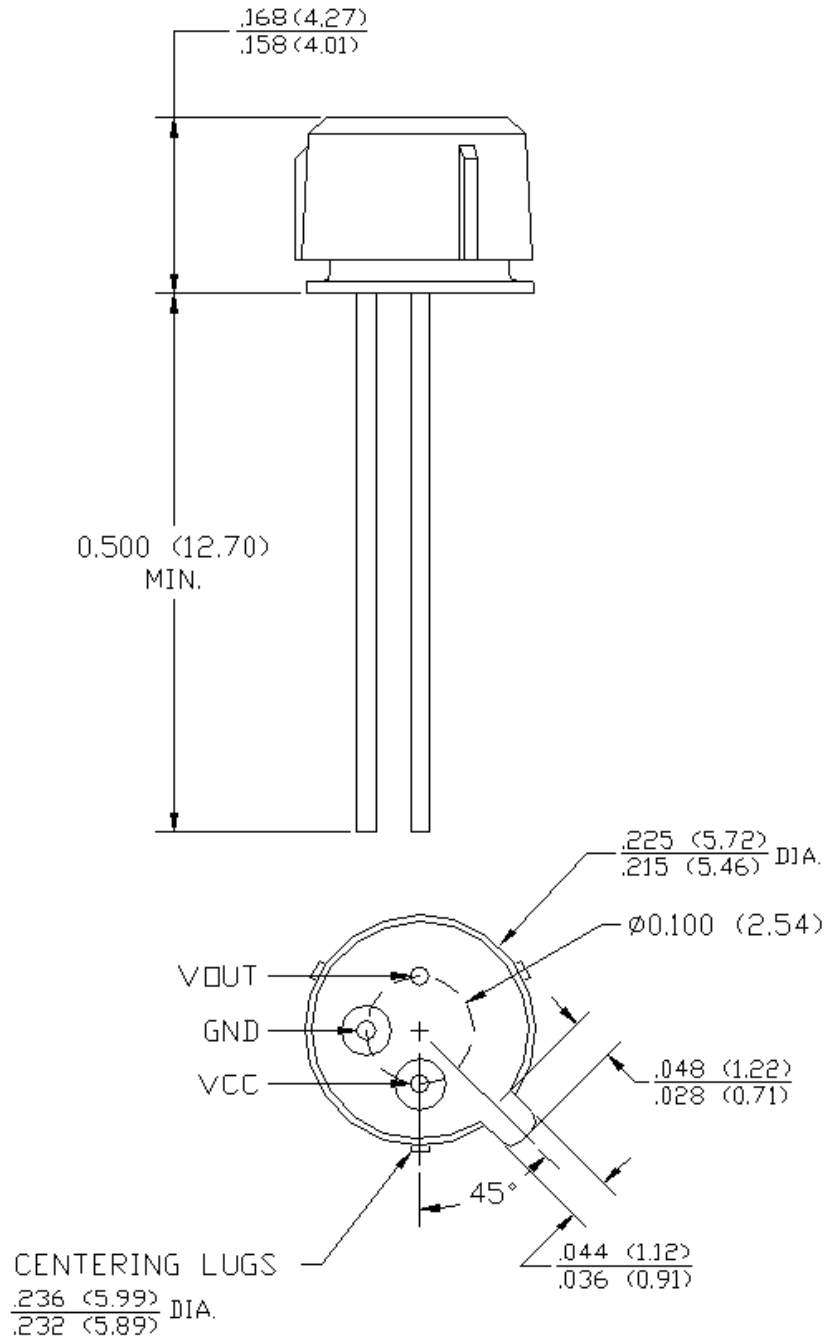
Vertical = 5V/div Horizontal = 200 ns/div  
200/230  $\mu\text{m}$  fiber,  $P_{OC} = 120\ \mu\text{W}$  (peak)



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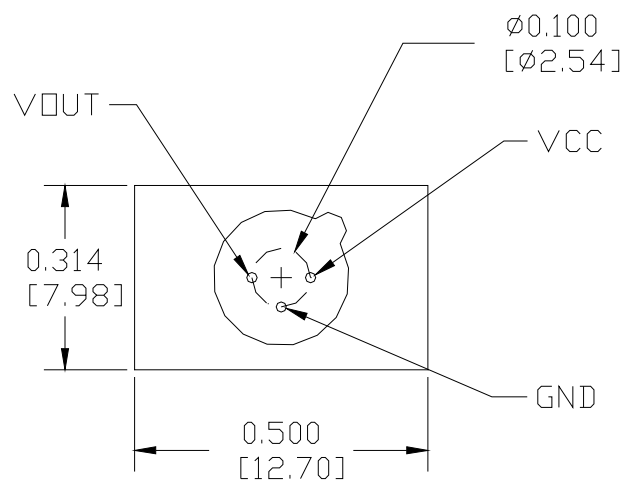
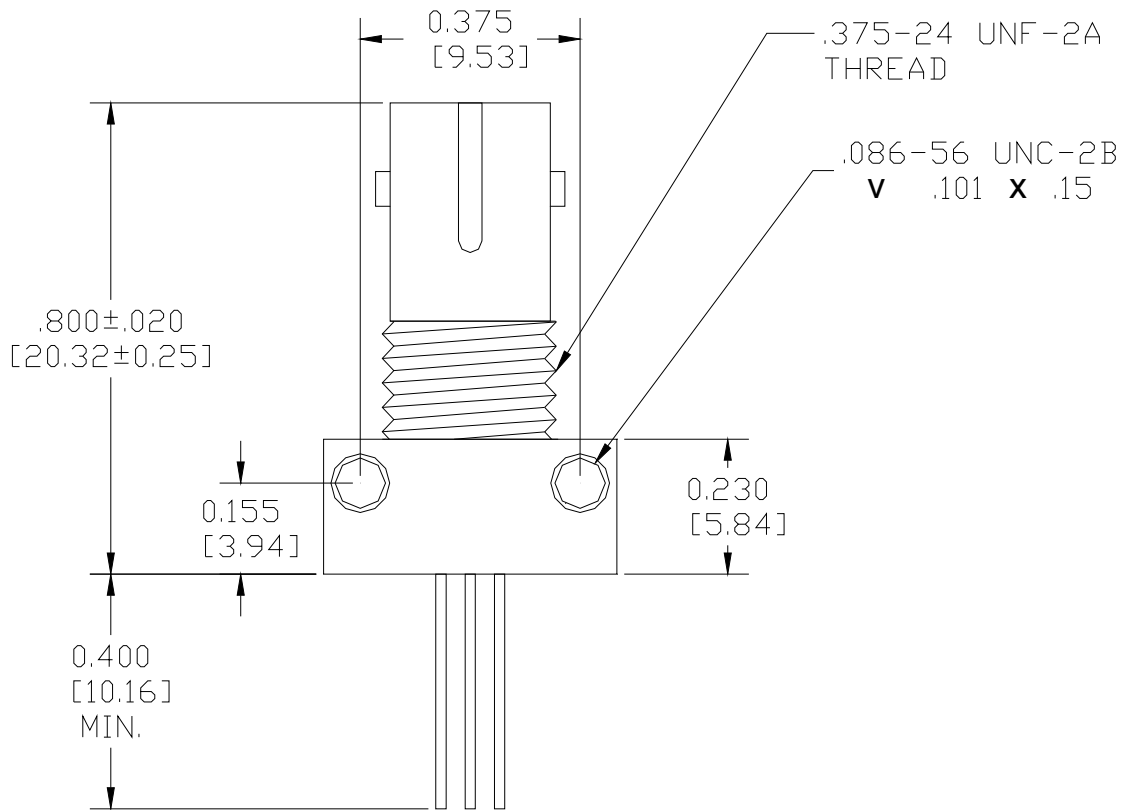
**Mechanical Outline — OPF520**



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Mechanical Outline — OPF522



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