

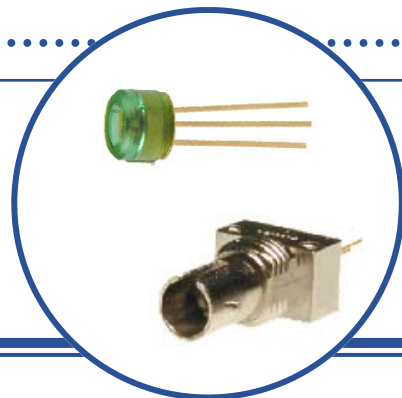
# Fiber Optic Receiver

## 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 50 $\mu$ m to 200 $\mu$ m 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.

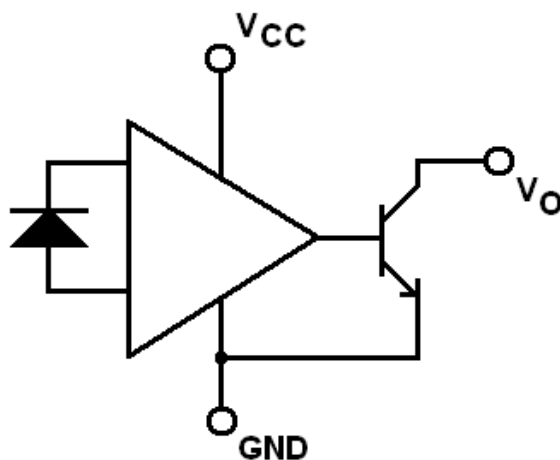
This receiver is designed to operate from a single 5V supply. It is essential that a bypass capacitor be connected from  $V_{CC}$  to GND in order to ensure the best possible operation.

### 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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# Fiber Optic Receiver

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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

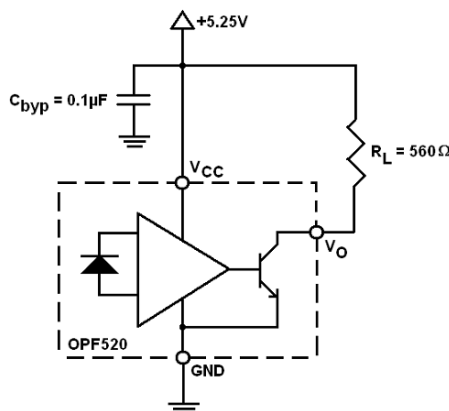
4.75 ≤ V<sub>CC</sub> ≤ 5.25, Fiber Sizes ≤ 200μm, NA ≤ 0.35, T<sub>A</sub> = 25°C unless otherwise specified

| 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 Note2     |
| 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<br>(Guaranteed Output High) |       |     | -40<br>0.1 | dBm<br>μW | λp = 850 nm                                                     |
| P <sub>OC(L)</sub>              | Peak Input Power Level, Output Low<br>(Guaranteed Output Low)   | -25.4 |     | -9.2       | dBm       | λp = 850 nm, I <sub>O</sub> = 8 mA                              |
|                                 |                                                                 | 2.9   |     | 120        | μW        |                                                                 |
|                                 |                                                                 | -24   |     | -10        | dBm       | λp = 850 nm, I <sub>O</sub> = 8 mA                              |
|                                 |                                                                 | 4.0   |     | 100        | μW        | -40°C ≤ T <sub>A</sub> ≤ +85°C                                  |
| 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

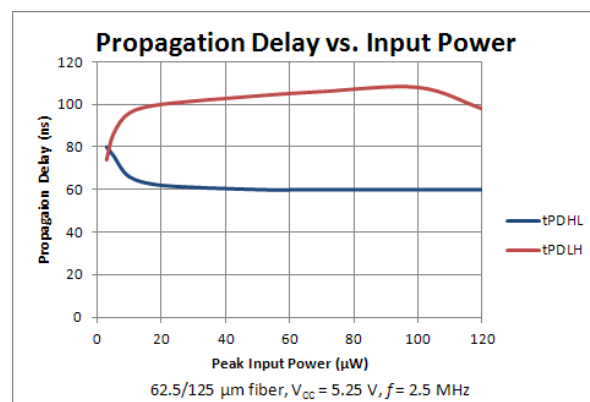
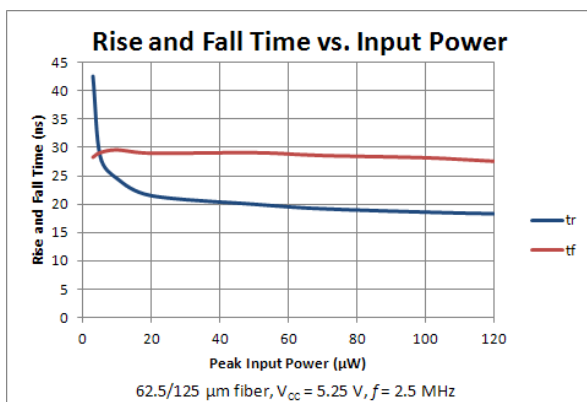
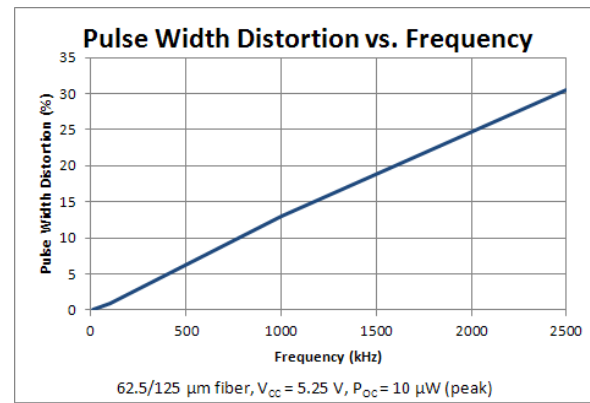
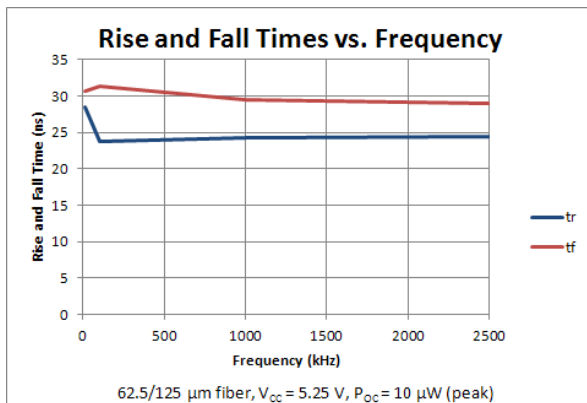
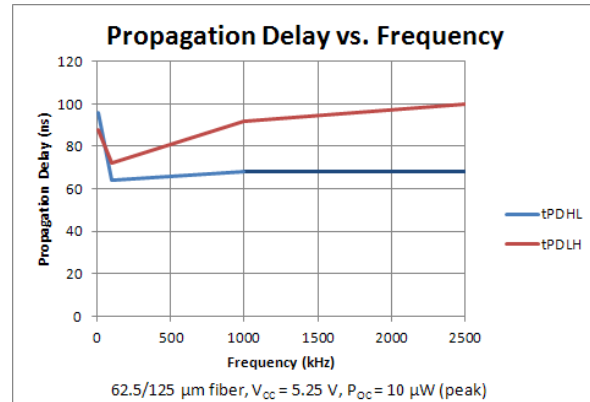
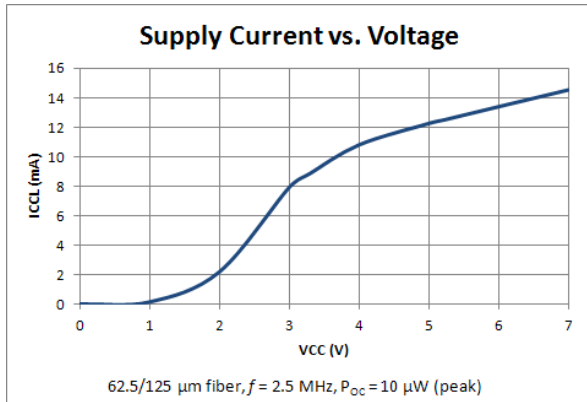


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### Switching Characteristics

(See Recommended Test Circuit)

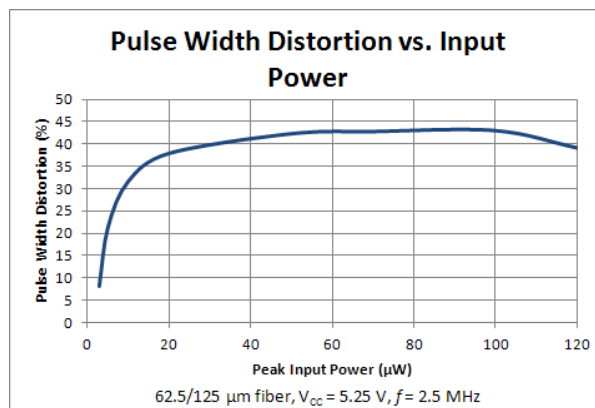
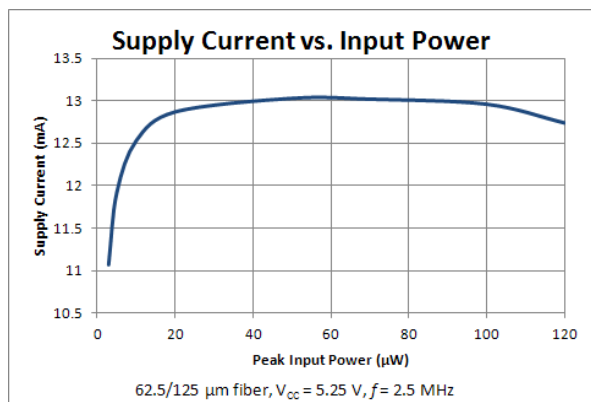


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### Switching Characteristics

(continued)



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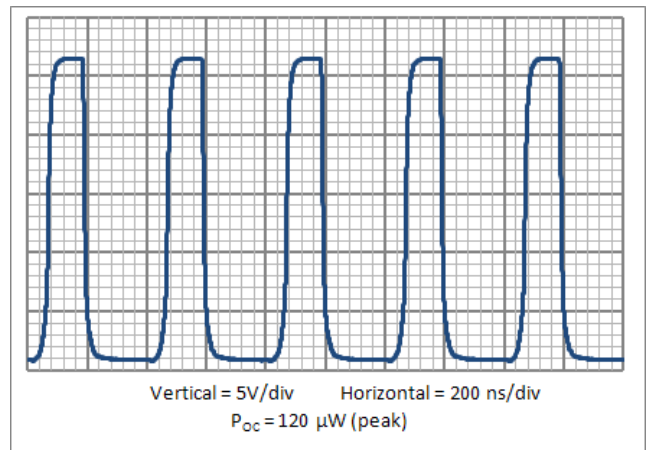
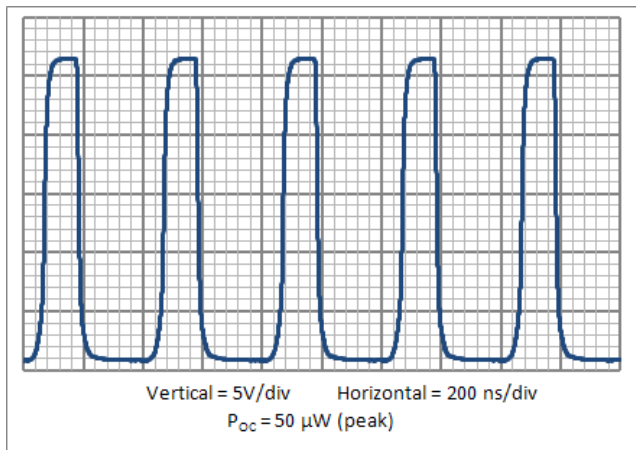
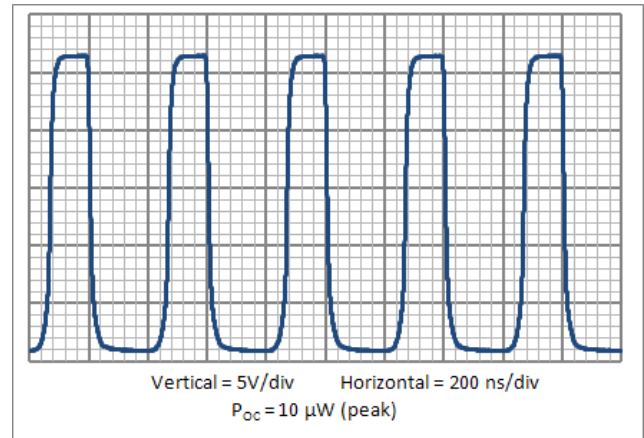
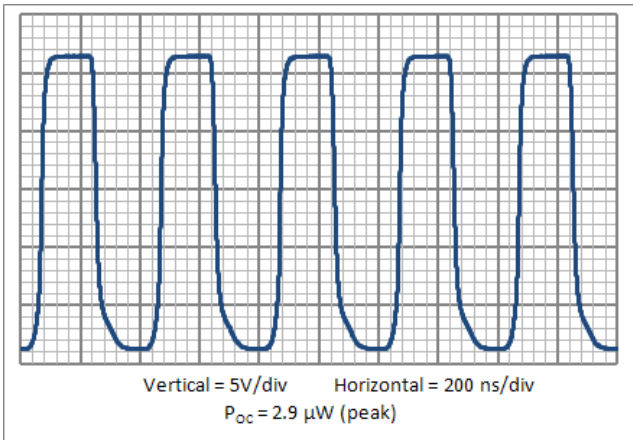


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### Typical Waveforms for Various Input Powers

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

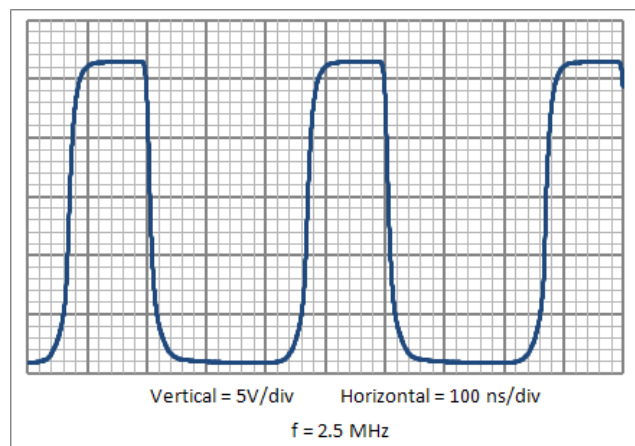
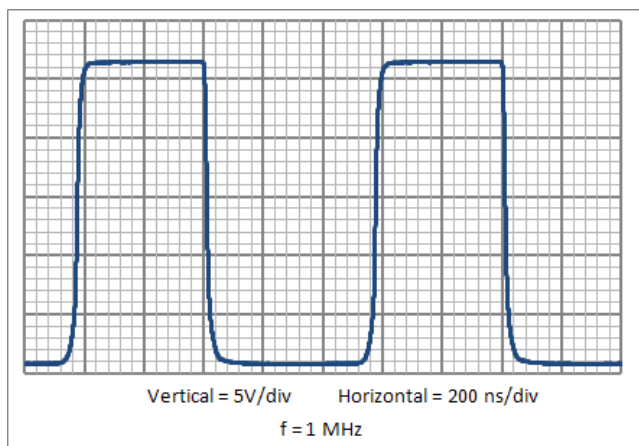
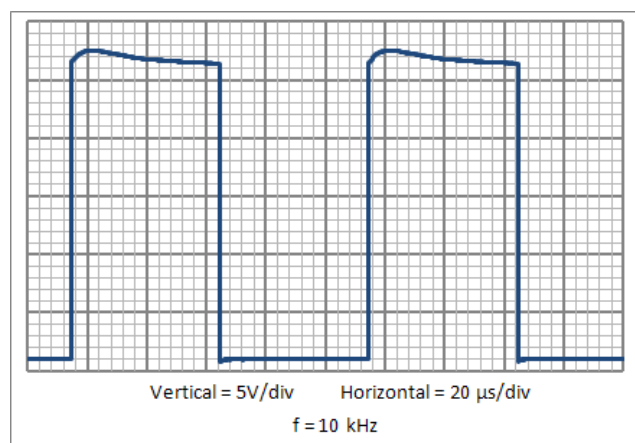
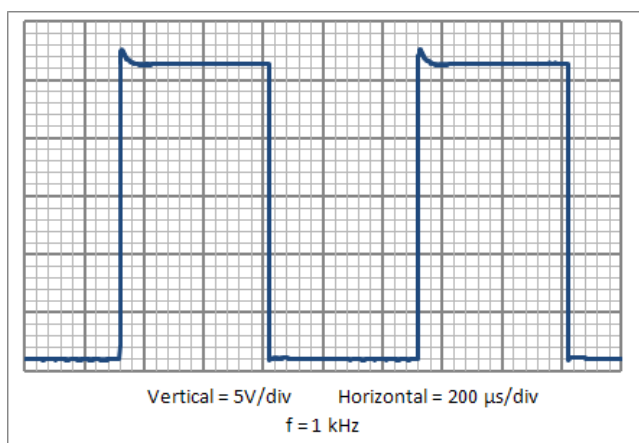


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### Typical Waveforms for Various Frequencies

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

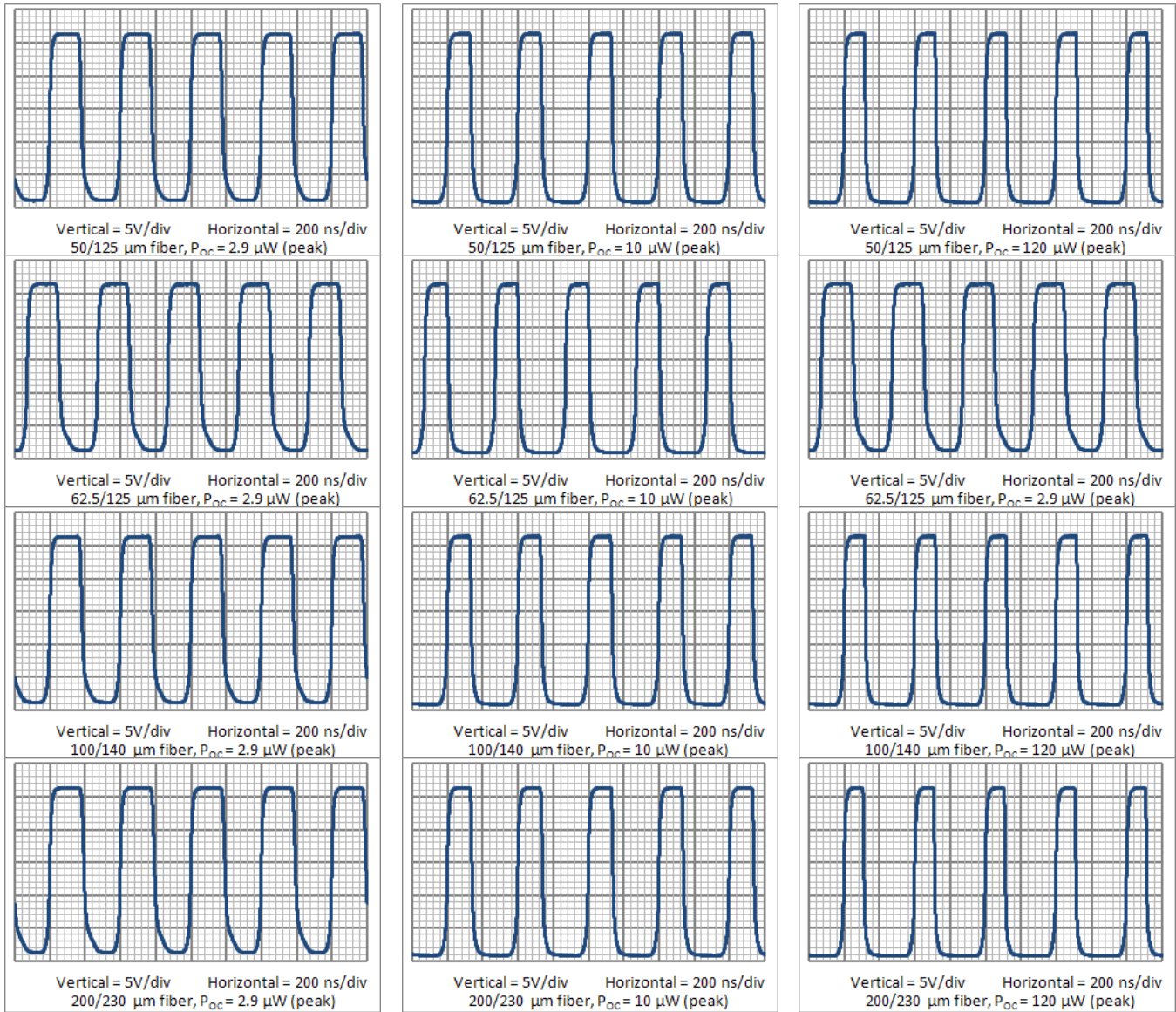


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### Typical Waveforms for Various Fiber Cables and Input Powers

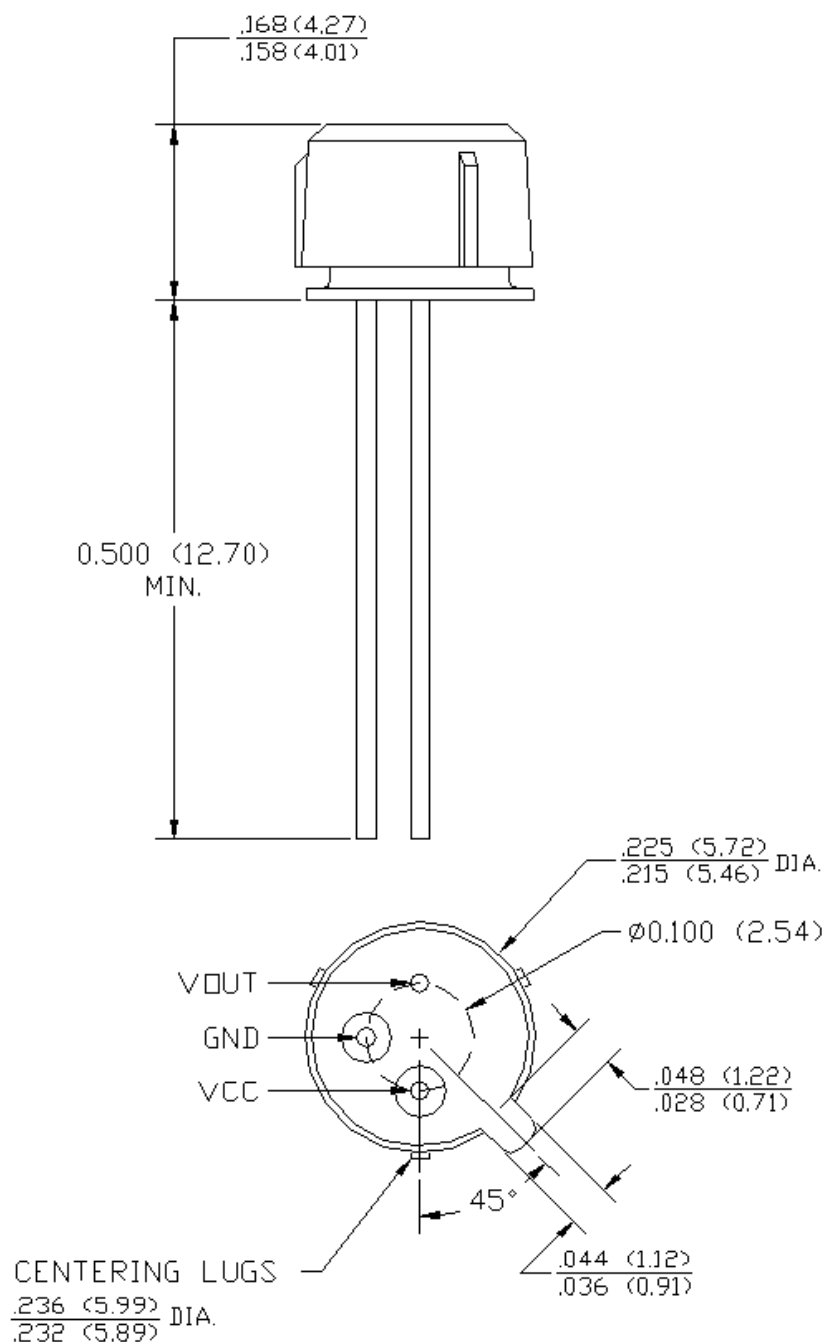
( $V_{CC} = 5.25\text{ V}$ ,  $f = 2.5\text{ MHz}$ )  
(See Recommended Test Circuit)



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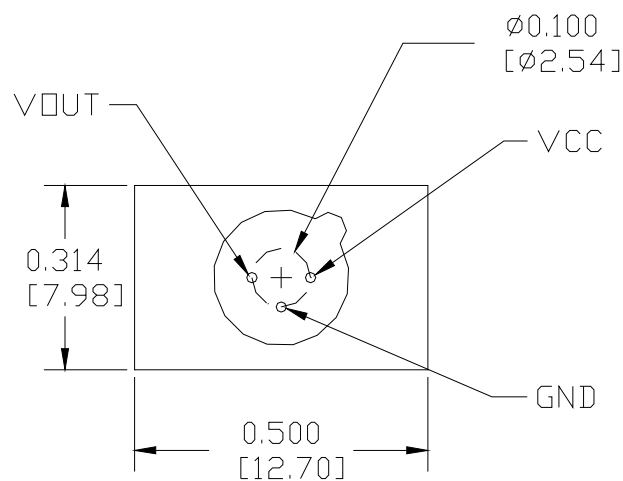
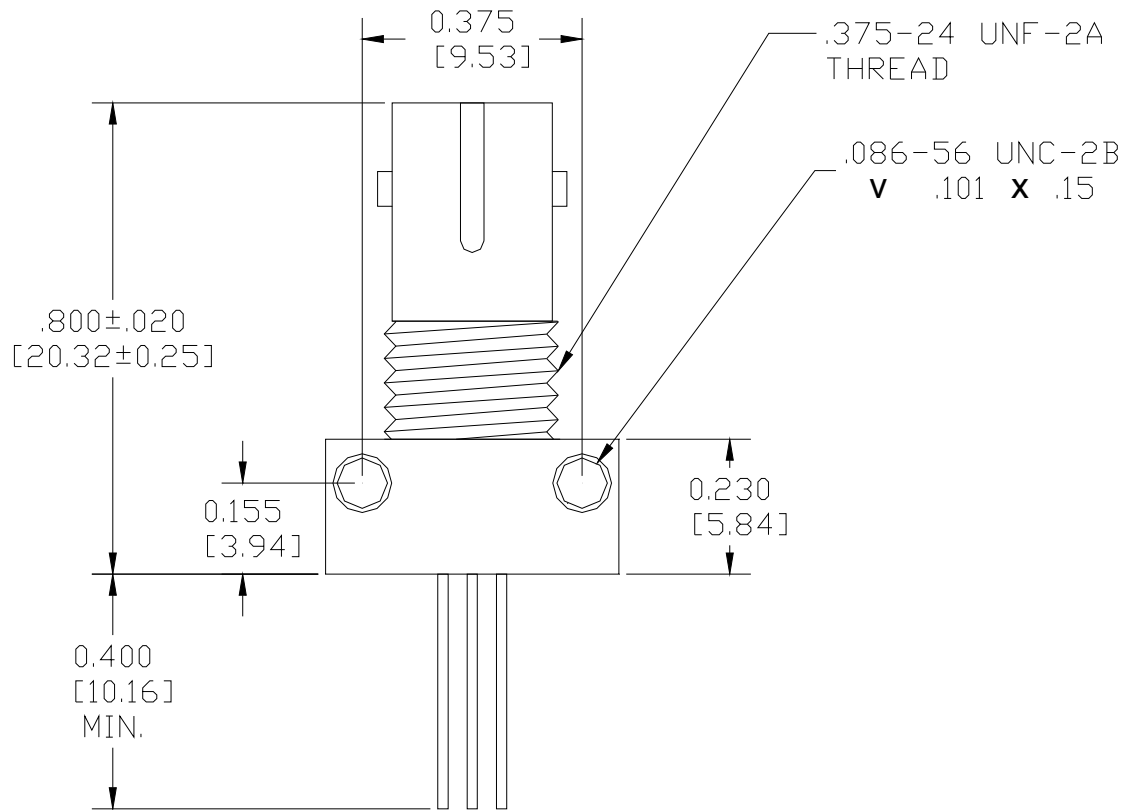
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**Mechanical Outline — OPF520**



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### Mechanical Outline — OPF522



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