

## Peak Sensitivity Wavelength: 905nm

The MTAPD-06-xxx-905F is a circular ( $\Phi 500\mu\text{m}$ ) .2 mm<sup>2</sup> active area Avalanche Photodiode with optimized sensitivity at 905 nm & housed in a hermetic TO-46 metal can package. It is well suited for applications requiring High Speed & Low Noise in visible-near IR applications.

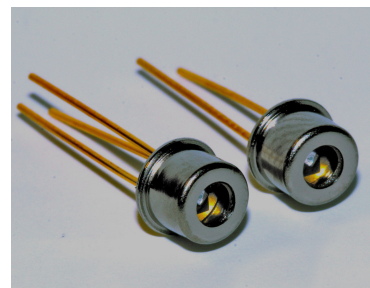
### FEATURES

- >Fast Rise Time
- >Ultra Low Noise
- >Low Capacitance
- >High Gain
- >Optimum Gain M100

- >Operating Voltages:  
120v - 160v, 160v - 200v  
Other Voltages Available

### APPLICATIONS

- >Optical rangefinders
- >High speed optical communications
- >Medical Equipment
- >Bar Code Readers



## Absolute Maximum Ratings



| ITEMS                         | SYMBOL | RATINGS    | UNIT |
|-------------------------------|--------|------------|------|
| Storage Temperature           | Tstg   | -55 ~ +125 | °C   |
| Operating Temperature         | Topr   | -20 ~ +85  | °C   |
| Power Dissipation             | Pd     | 1          | mw   |
| Forward Current               | If     | 1          | mA   |
| Operating Voltage             | Vop    | 0.95 x Vbr | V    |
| Lead Soldering Temperature *1 | Tls    | 260        | °C   |

\*1: Time 10 Sec max

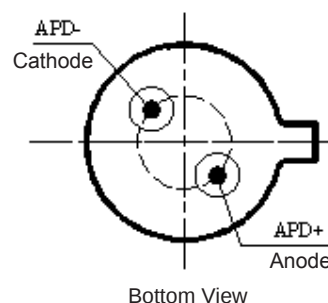
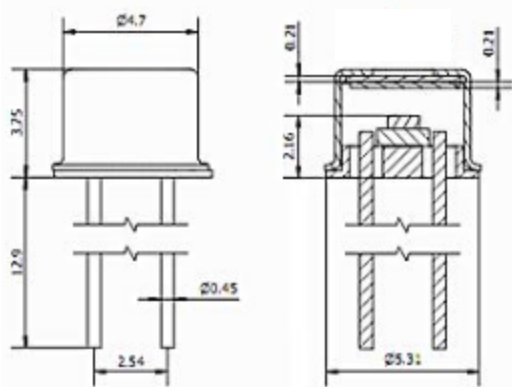
## Electrical & Optical Characteristics (Ta=23°C)

| ITEMS                   | SYMBOL    | CONDITIONS                             | MIN. | TYP          | MAX. | UNIT |
|-------------------------|-----------|----------------------------------------|------|--------------|------|------|
| Spectral Response       | $\lambda$ | --                                     |      | 400 - 1100   |      | nm   |
| Active Area             |           | --                                     |      | Diameter 500 |      | um   |
| Responsivity            | Re        | $\lambda=905\text{nm}$ , oe=1uW, M=100 | 50   | 55           | --   | A/W  |
| Rise Time               | tR        | f=1MHz, RL=50Ω, $\lambda=905\text{nm}$ | --   | 0.6          | --   | ns   |
| Dark Current            | ID        | M=100                                  | 0.1  | 0.4          | 1.0  | nA   |
| Capacitance             | Cj        | M=100, f=1MHz                          |      | 1.2          |      | pF   |
| Optimal Gain            | M         | --                                     |      | 100          |      |      |
| Breakdown Voltage       | Vbr       | IR=2uA                                 | 80   | --           | 200  | V    |
| Temperature Coefficient |           | Tc=-40°C - 85°C                        |      | 0.9          |      | V/°C |

### TO-46 Package Dimensions (2 Pin)

MTAPD-06-013-905F  $V_{br}=120-160V$

MTAPD-06-014-905F  $V_{br}=160-200V$

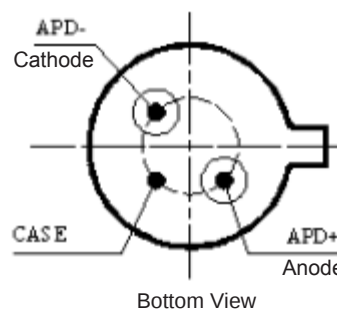
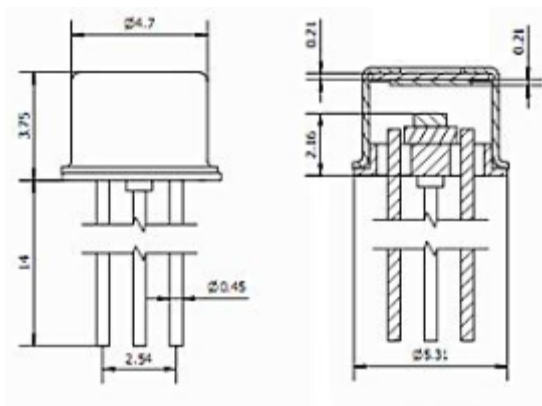


Unit: mm, Tolerance:  $\pm 0.2$

### TO-46 Package Dimensions (3 Pin)

MTAPD-06-015-905F  $V_{br}=120-160V$

MTAPD-06-016-905F  $V_{br}=160-200V$



Unit: mm, Tolerance:  $\pm 0.2$

Fig 1 Responsivity,  $V_r=0V$

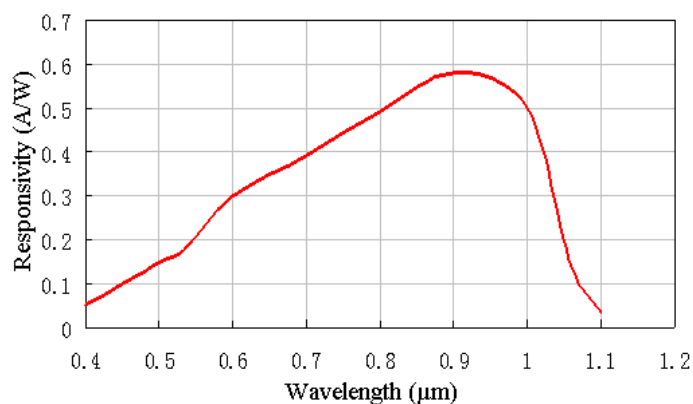


Fig 2 Dark Current

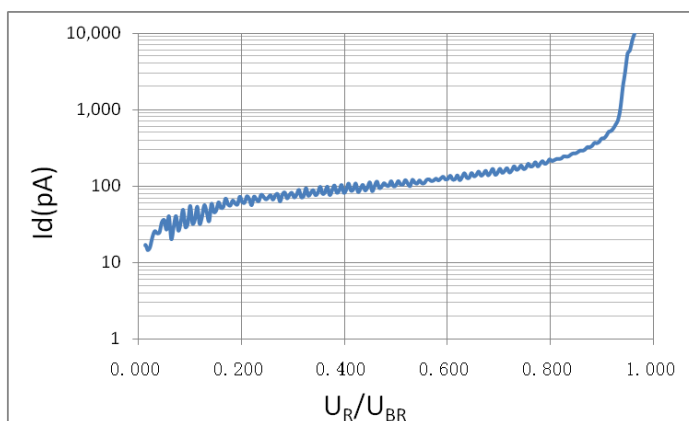


Fig 3 Multiplication

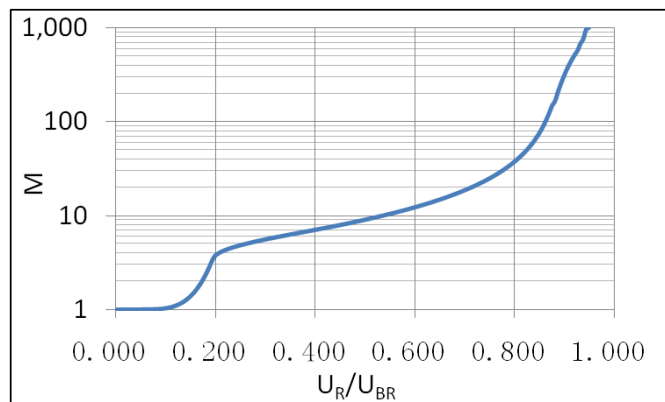


Fig 4 Capacitance

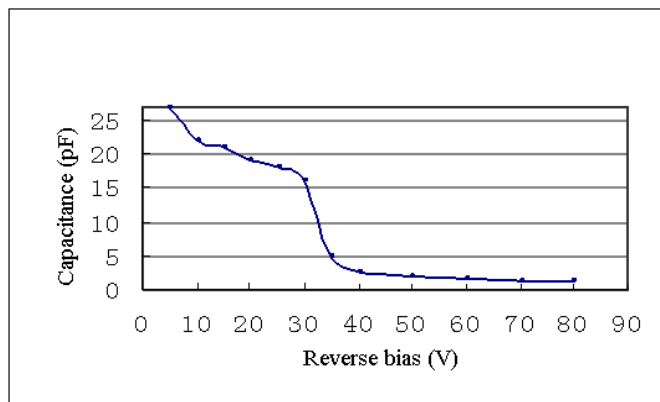
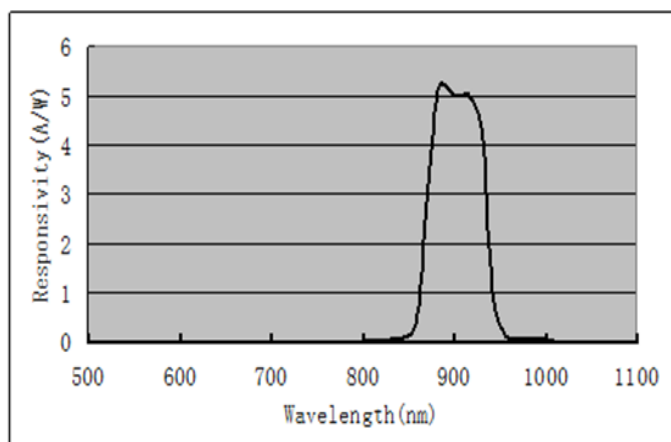
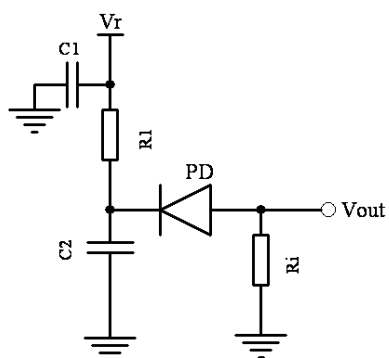


Fig 5 Responsivity,  
905nm Optional Filter, M=10

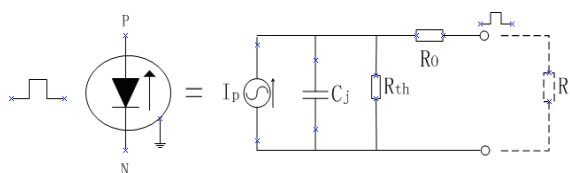


### Applications Diagram



- Notes: C1 - Filter capacitor, filter noise from Vr.  
 C2 - bypass capacitor, the loop to ground for AC signal.  
 R1 - current-limiting resistor, protect APD from higher voltage.  
 Ri - sampling resistor, convert the current signal into a voltage signal.

### Equivalent Circuit Diagram



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