

## Peak Sensitivity Wavelength: 905nm

The MTAPD-07-xxx is a circular ( $\Phi 500\mu\text{m}$ ) .2 mm<sup>2</sup> active area Avalanche Photodiode with optimized sensitivity at 905nm & housed in a LCC3 SMD package. It is well suited for applications requiring High Speed & Low Noise in visible-near IR applications.

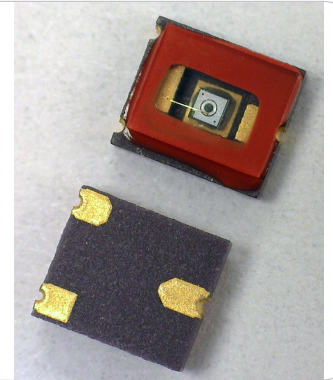
### FEATURES

- >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    |
| Solder Reflow Temperature *1 | Stemp  | 260        | °C   |

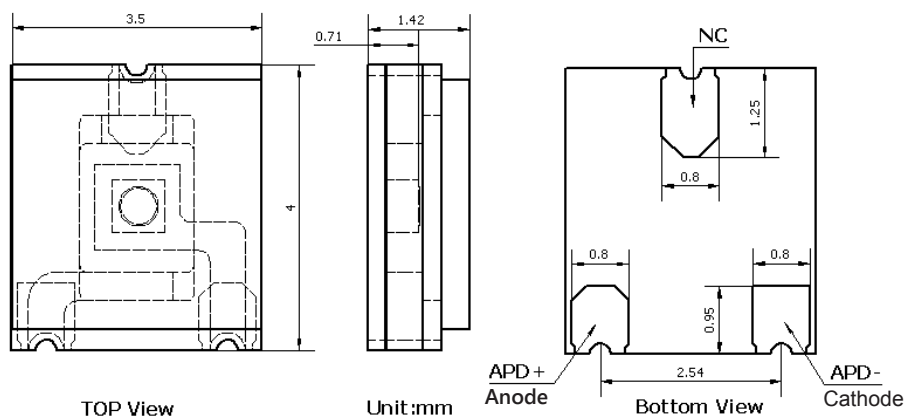
\*1: Time 5 Sec max

## 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             | $\lambda=905\text{nm}$ , $\varphi_e=1\mu\text{W}$ , M=100 | 50   | 55           | --   | A/W  |
| Rise Time               | tR             | f=1MHz, RL=50Ω, $\lambda=905\text{nm}$                    | --   | 0.6          | --   | ns   |
| Dark Current            | I <sub>D</sub> | 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 |

LCC3 SMD Package Dimensions (3 Pin)

MTAPD-07-013 Vbr=120-160V  
MTAPD-07-014 Vbr=160-200V



Unit: mm, Tolerance:  $\pm 0.2$

Fig 1 Responsivity, Vr=0V

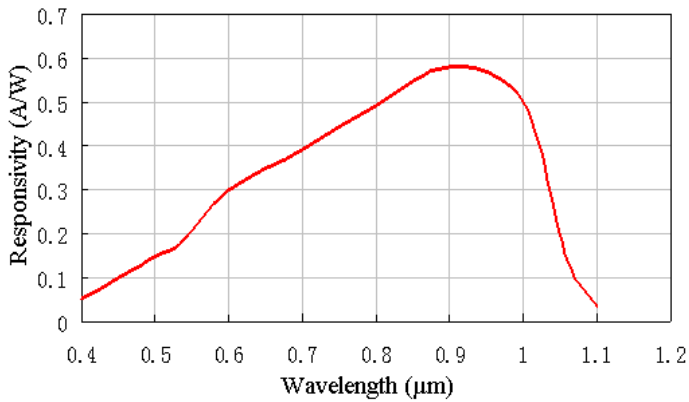


Fig 2 Dark Current

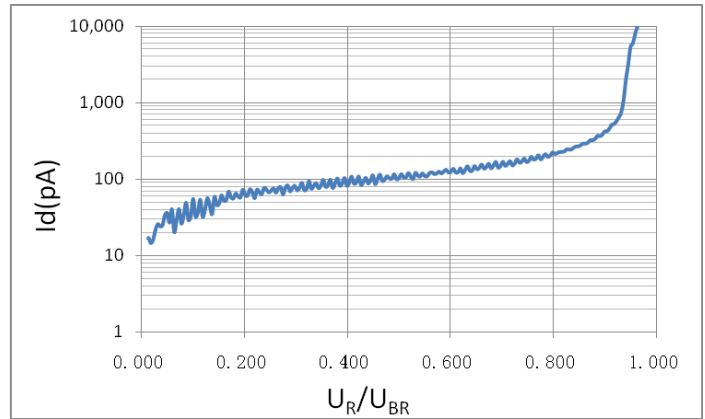


Fig 3 Multiplication

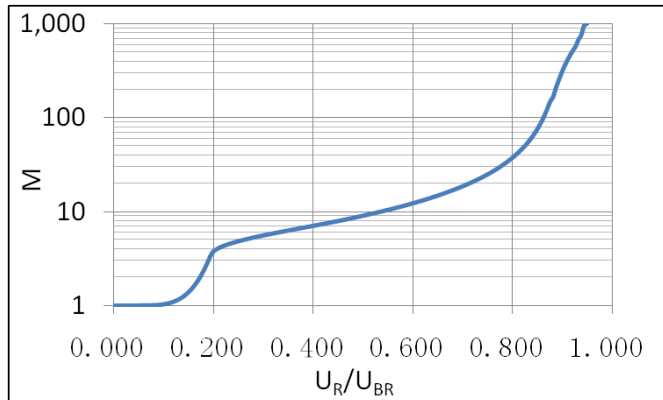
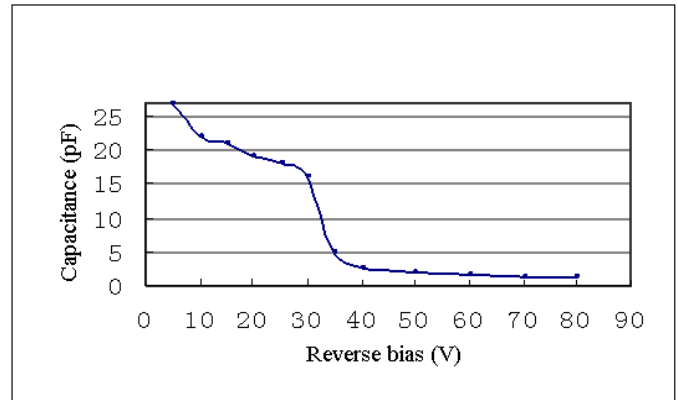
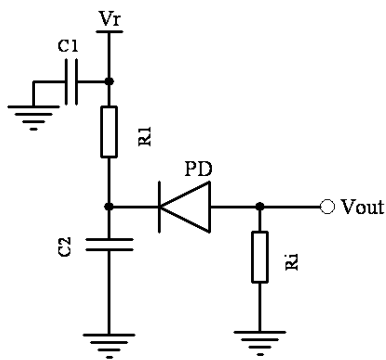


Fig 4 Capacitance

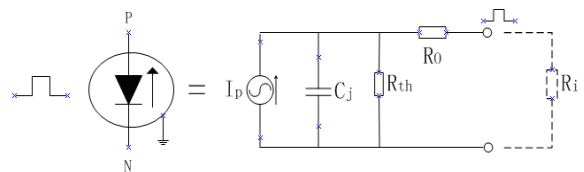


Applications Diagram



- 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



The information contained herein is subject to change without notice.



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