

## Si APD TO-CAN Type IV

**Model: AA-SXXXXT0X00TO46-XX-X-X-D**



### Features:

- Fast rise time, low noise, low capacitance, high gain
- Planar and front illuminated
- Active area 500  $\mu\text{m}$
- Laser range finder, laser radar

### Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Operating Temperature	$T_{OP}$	-20	80	$^{\circ}\text{C}$
Storage Temperature	$T_{stg}$	-40	100	$^{\circ}\text{C}$
Operating Voltage	$V_{op}$	150	200	V
Solder Reflow temperature	$S_{temp}$	—	260	$^{\circ}\text{C}$
Dissipation Power	—	—	1	mW
Forward Current	$I_F$	—	1	mA

### Electrical/Optical Characteristics (@ $T_c=22\pm 3^{\circ}\text{C}$ )

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Optical Wavelength Range	$\lambda$	—	400~1100			nm
Active Area	$\Phi$	—	500			$\mu\text{m}$
Responsivity	$R_e$	$\lambda=905\text{nm}$ , $\phi_e=1\mu\text{W}$ , $V_{op}=200\text{V}$ , with 905nm Optional filter		13		A/W
Rise Time	$T_R$	$f=1\text{MHz}$ , $RL=50$ $\Omega$ , $\lambda=905\text{nm}$		2		ns
Dark Current	$I_D$	$V_{op}=200\text{V}$	0.2	0.3	1	nA
Capacitance	$C_{tot}$	$M=100$ , $f=1\text{MHz}$		1		pF
Optimal Gain	$M$	$V_{op}=200\text{V}$		30		
Breakdown Voltage	$V_{BR}$	$I_R=10\mu\text{A}$		350		V

## Equivalent circuit diagram and Applications Information

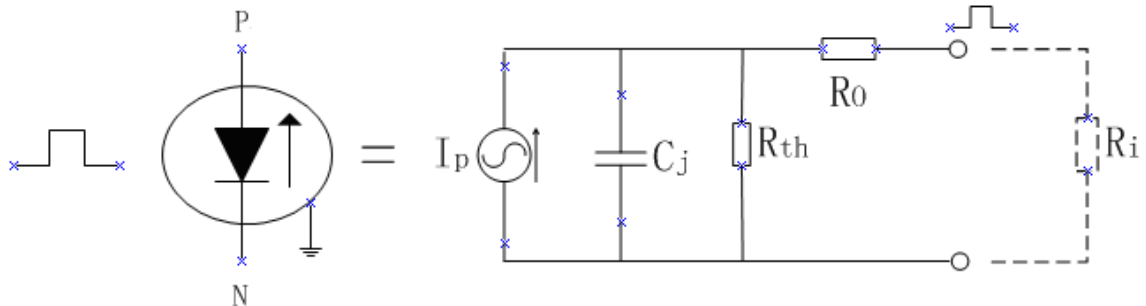


Figure 1- Equivalent circuit diagram

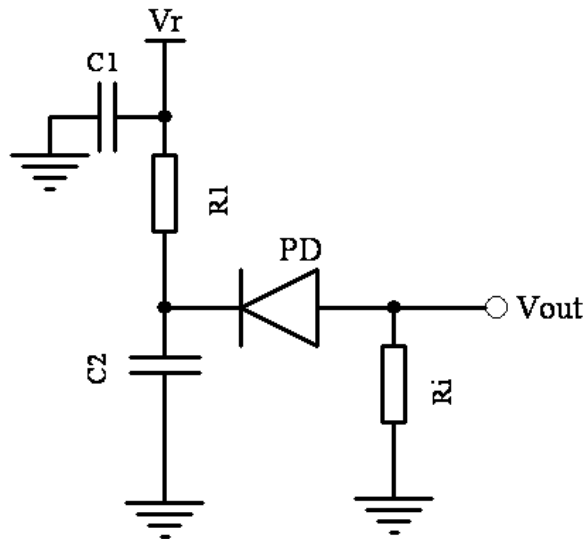


Figure 2- Applications diagram

Notes : C1—filter capacitor, filter noise from  $V_r$ .

C2—bypass capacitor, the loop to ground for AC signal.

R1—current-limiting resistor, protect APD from a higher voltage.

Ri—sampling resistor, convert the current signal into a voltage signal.

### Typical characteristic curves

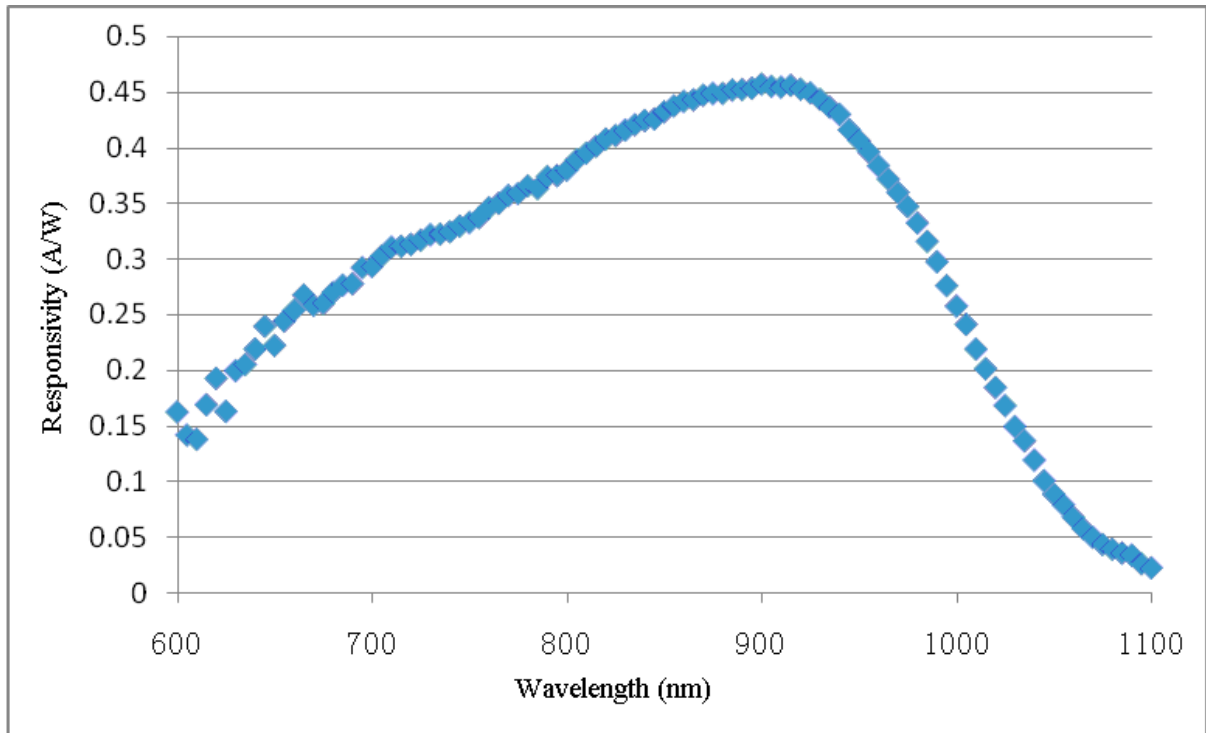


Figure 3- Responsivity without Optional filter,  $V_R=0V$

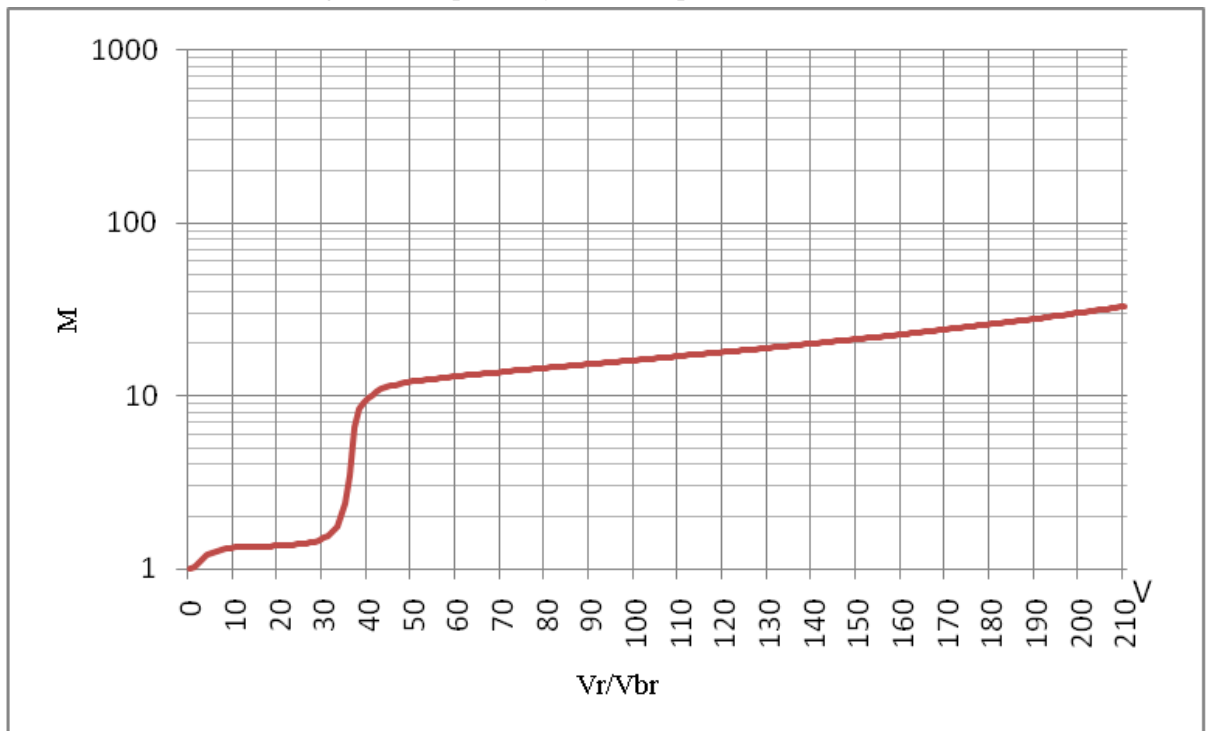


Figure 4- Multiplication

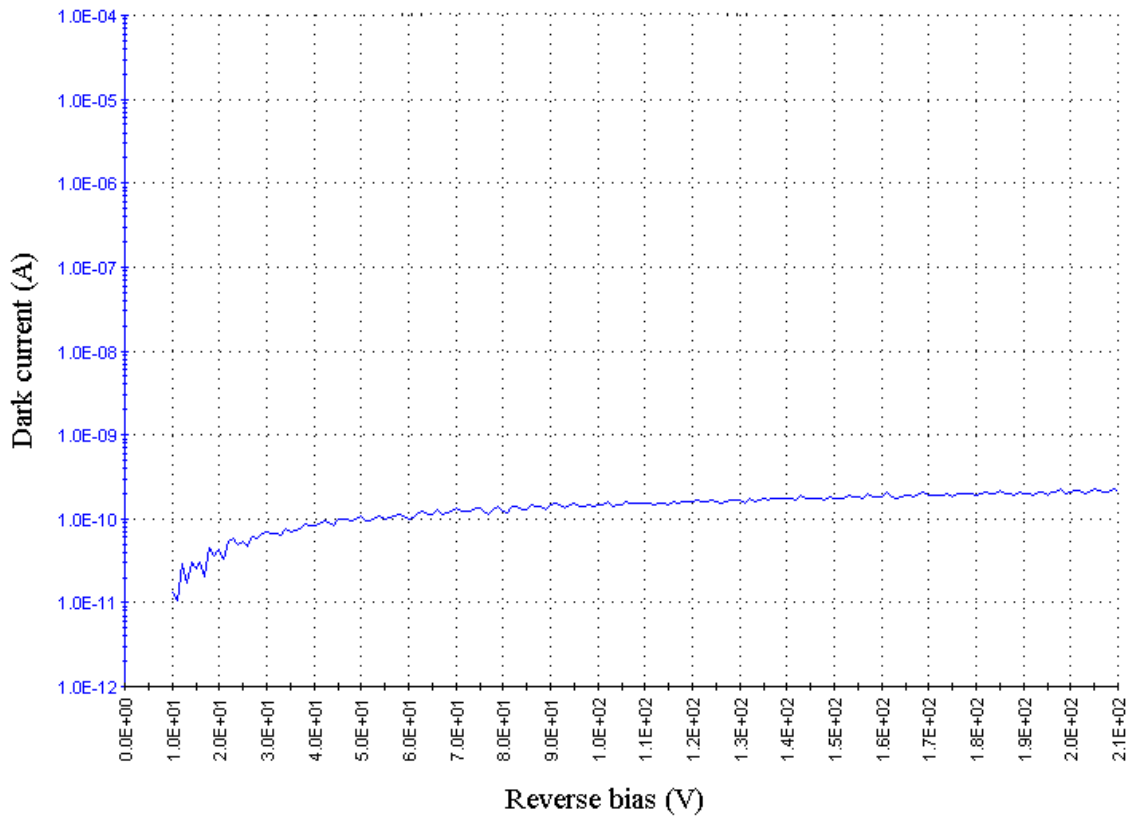


Figure 5- Dark current

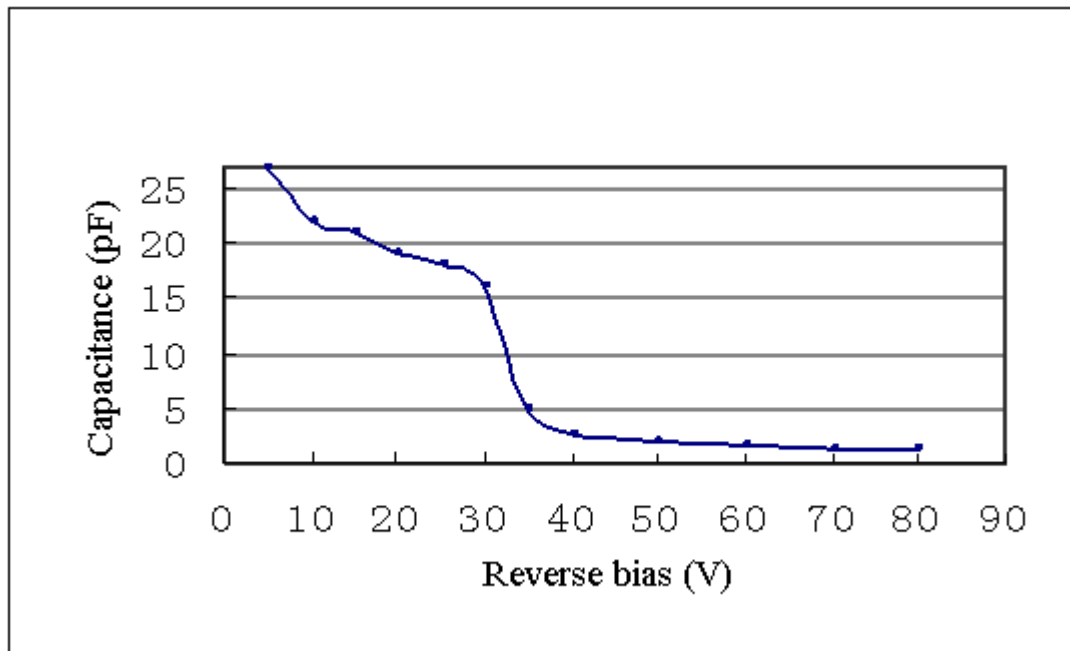


Figure 6- Capacitance

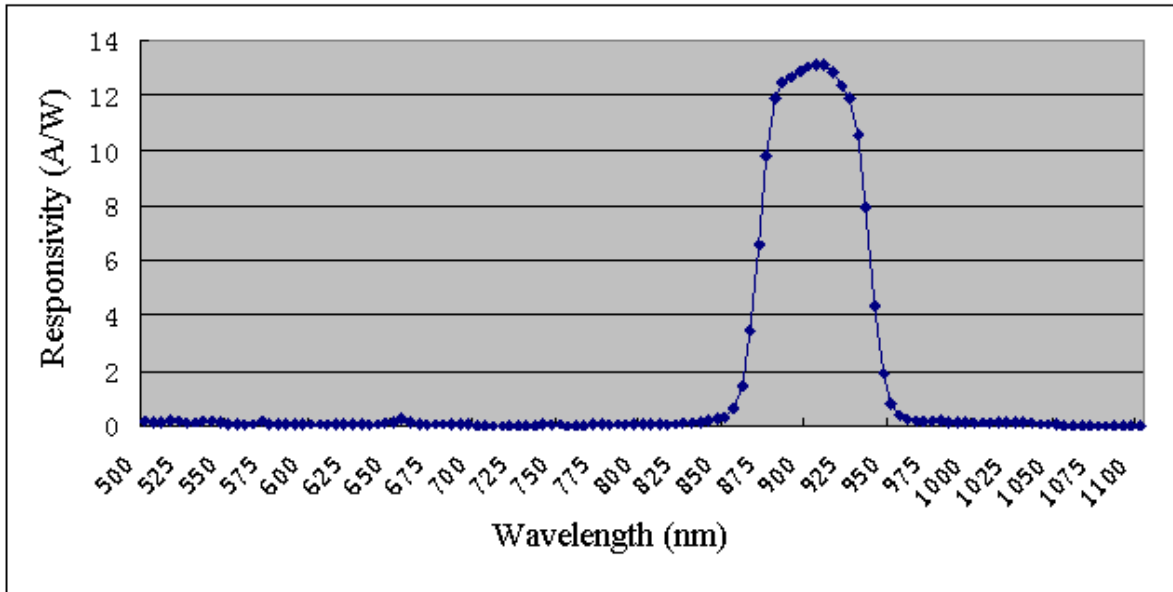
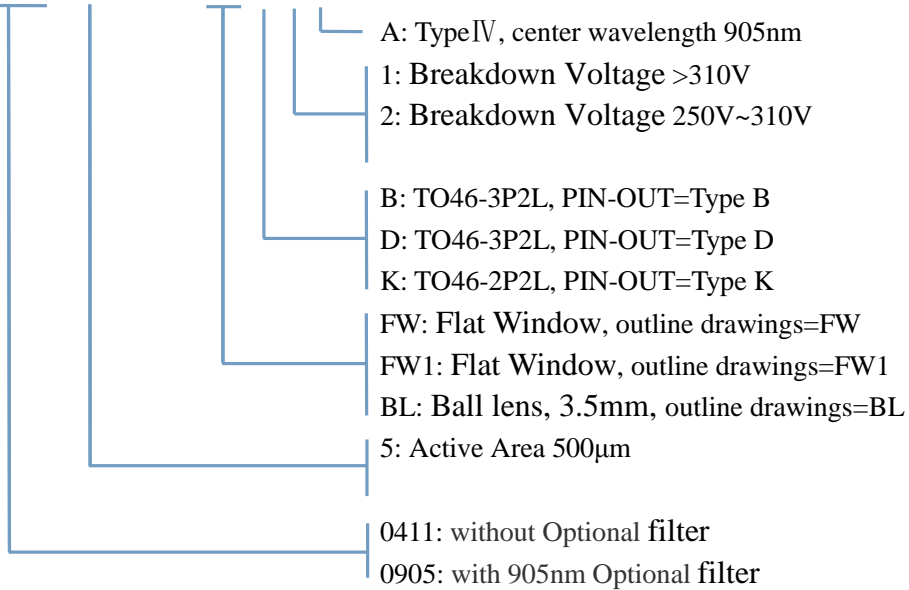


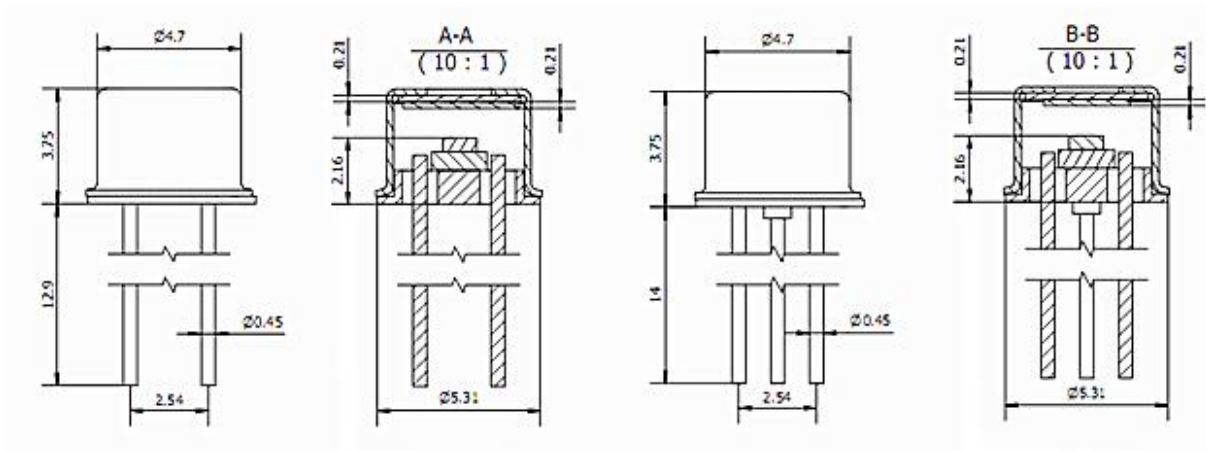
Figure 7- Responsivity with 905nm Optional filter,  $V_R=160V$

### Ordering Information:

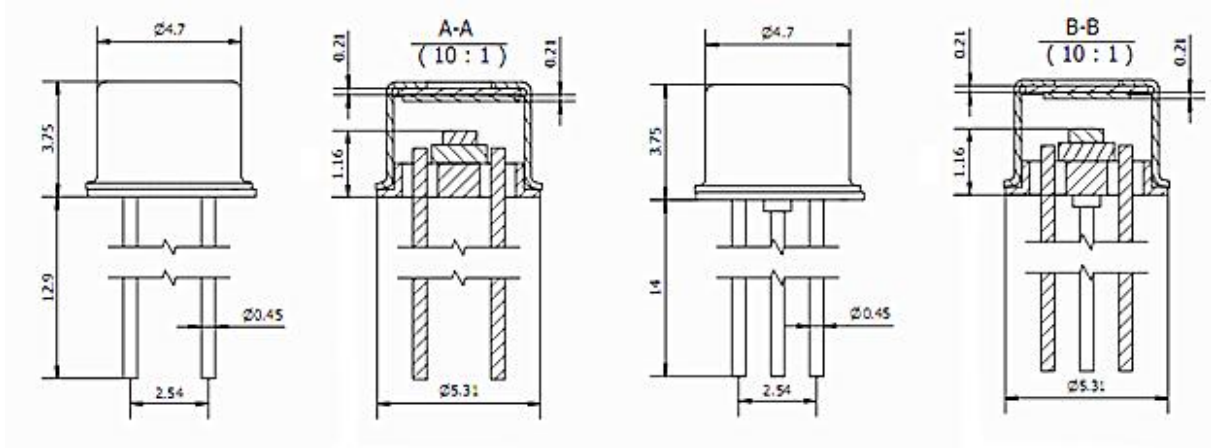
AA-SXXXXT0X00TO46-XX-X-X-D



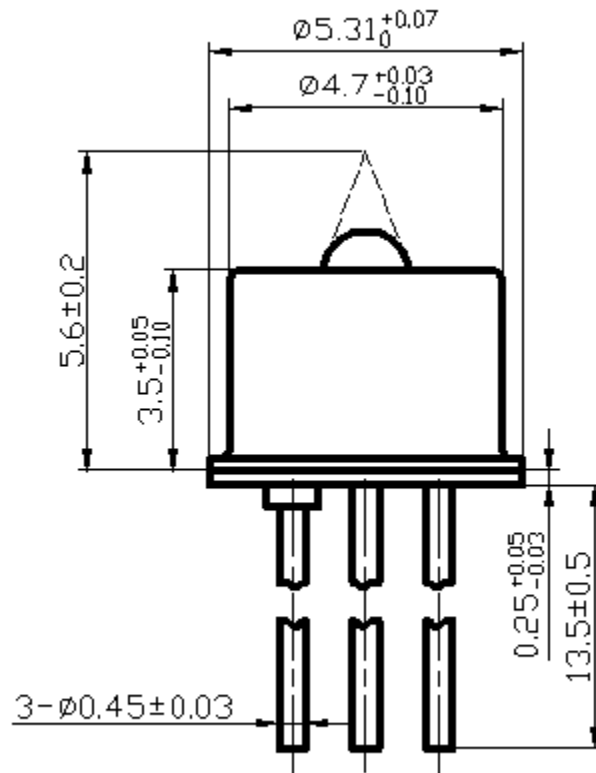
### Outline Drawings (in mm)



FW

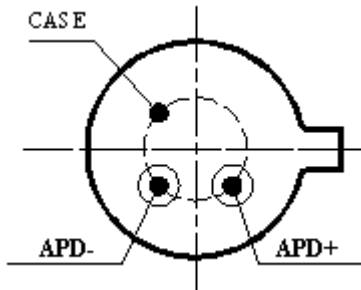


FW1

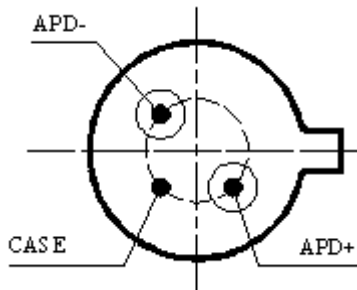


BL

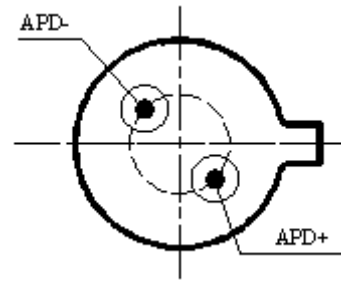
## ***PIN-OUT***



Type B (Bottom view)



Type D (Bottom view)



Type K (Bottom view)

## ***Precaution:***

- (1) The modules should be handled in the same manner as ordinary semiconductor device to prevent the electro-static damages. For safety keeping and carrying, the modules should be packaged with ESD proof material. To assemble the modules on PCB, the workbench, the soldering iron and the human body should be grounded.
- (2) Please pay special attention to the atmosphere condition because the dew on the module may cause some electrical damages.
- (3) Under such a strong vibration environment as in automobile, the performance and reliability are not guaranteed.