

Si APD LCC6 Type I

Model: AA-SXXXXL0X00LCC6-X-A



Features:

- Fast rise time, low noise, low capacitance, high gain
- Planar and front illuminated
- Active area 200 or 500 μm
- LCC6 Package
- With optional filter of 635nm
- Laser range finder, laser radar

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Operating Temperature	T_{OP}	-20	85	$^{\circ}\text{C}$
Storage Temperature	T_{stg}	-55	125	$^{\circ}\text{C}$
Operating Voltage	V_{op}	—	$0.95 \times V_{BR}$	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	λ	—	400~1100			nm
Active Area	Φ	—	200/500			μm
Responsivity	R_e	$\lambda=800\text{nm}$, $\phi_e=1\mu\text{W}$, $M=100$	35	50		A/W
Rise Time	T_R	$f=1\text{MHz}$, $RL=50\Omega$, $\lambda=800\text{nm}$		0.3		ns
Dark Current	I_D	$M=100$	$0.02^{[1]}$	$0.05^{[1]}$	$0.4^{[1]}$	nA
			$0.05^{[2]}$	$0.1^{[2]}$	$0.5^{[2]}$	
Capacitance	C_{tot}	$M=100$, $f=1\text{MHz}$		$1.5^{[1]}$		pF
				$3^{[2]}$		
Optimal Gain	M			100		
Breakdown Voltage	V_{BR}	$I_R=10\mu\text{A}$	80		200	V
Temperature Coefficient	δ	$-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$		$0.6^{[1]}$		$\text{V}/^{\circ}\text{C}$
				$0.6^{[2]}$		

Notes : [1] Active Area 200 μm

[2] Active Area 500 μm

Equivalent circuit diagram and Applications Information

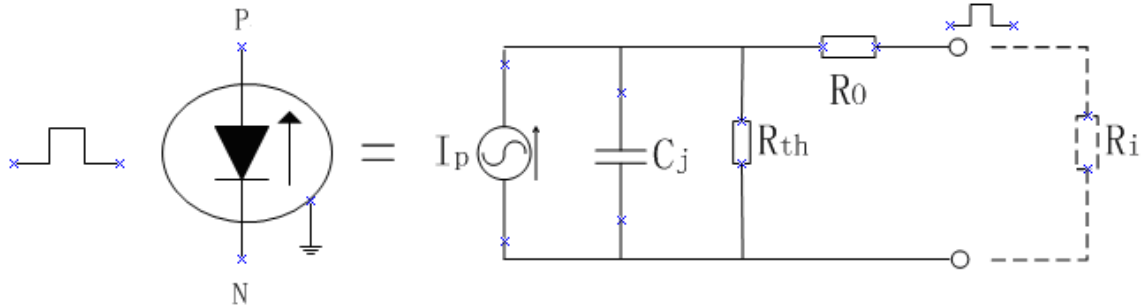


Figure 1- Equivalent circuit diagram

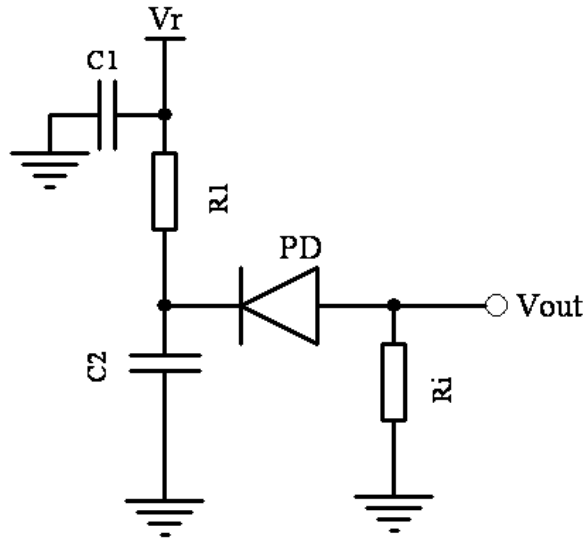


Figure 2- Applications diagram

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

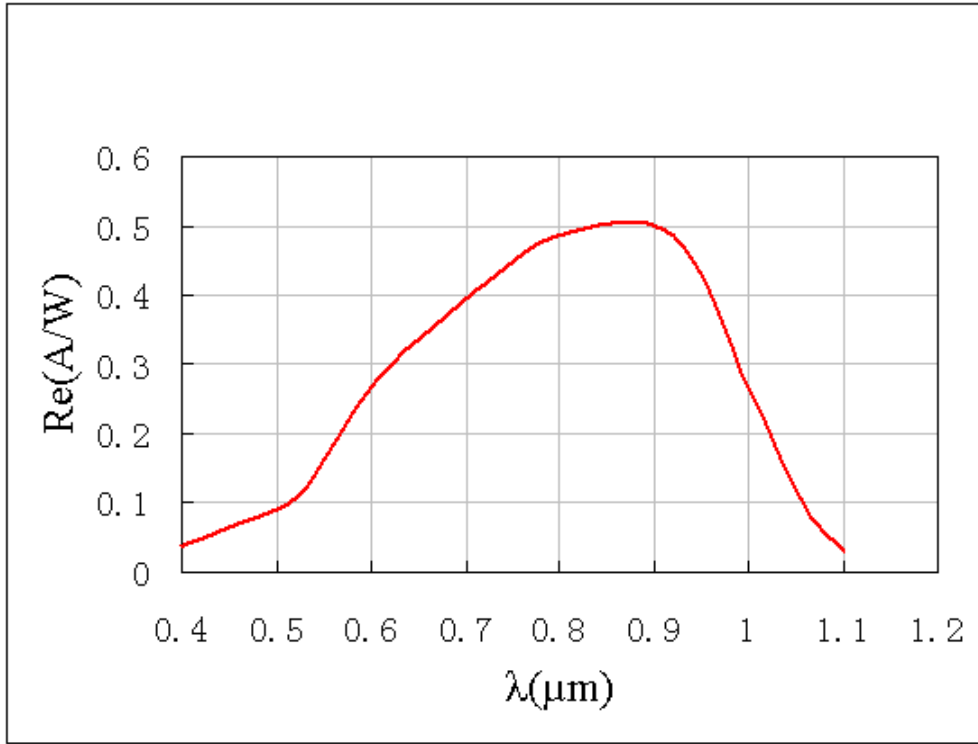


Figure 3- Responsivity, $V_R=0V$

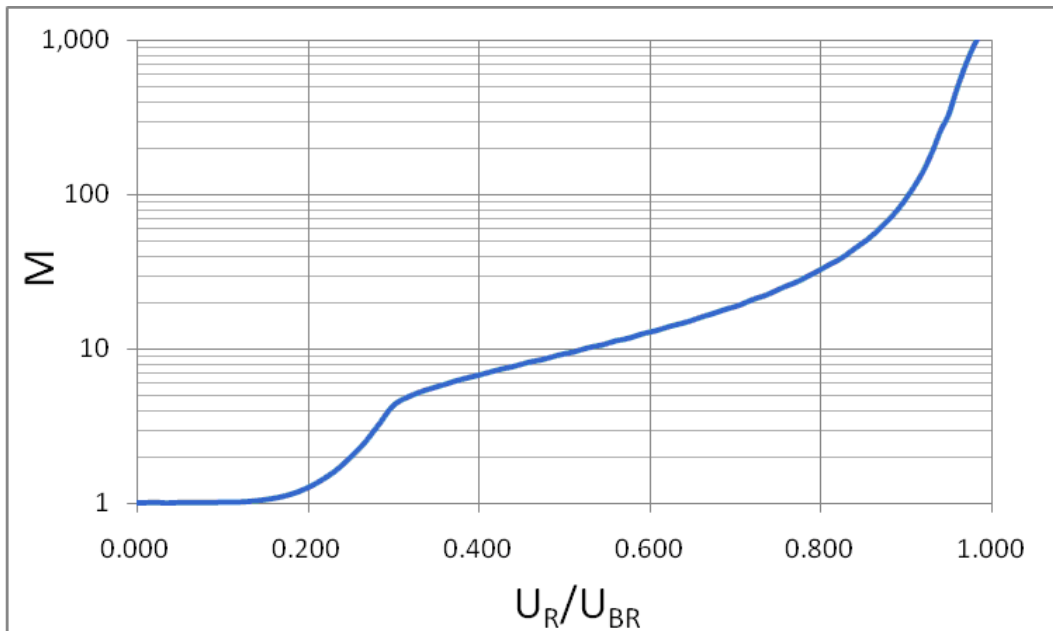


Figure 4- Multiplication

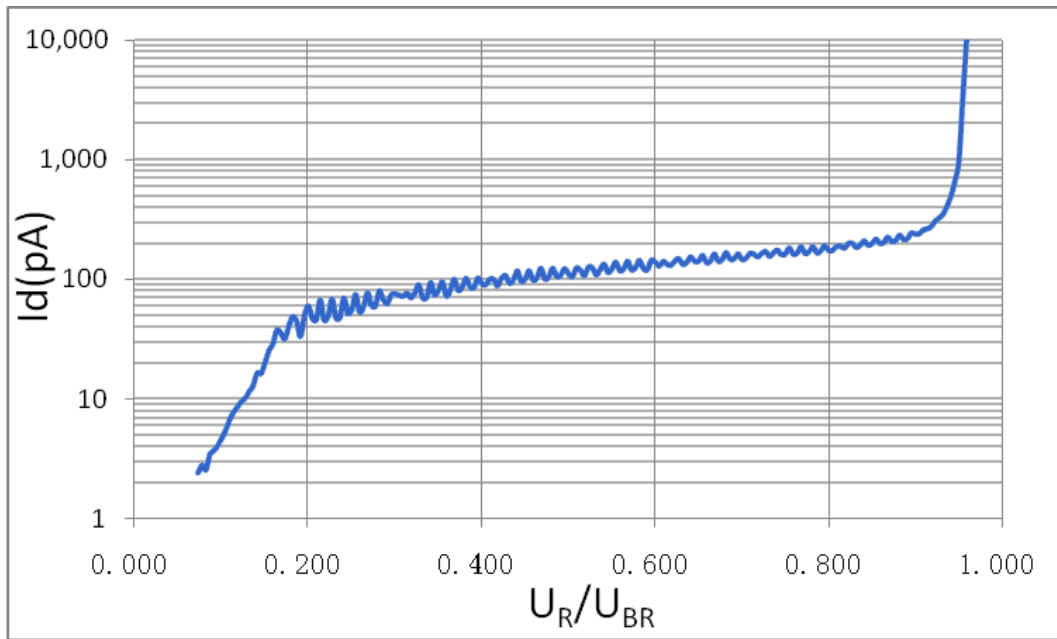


Figure 5- Dark current

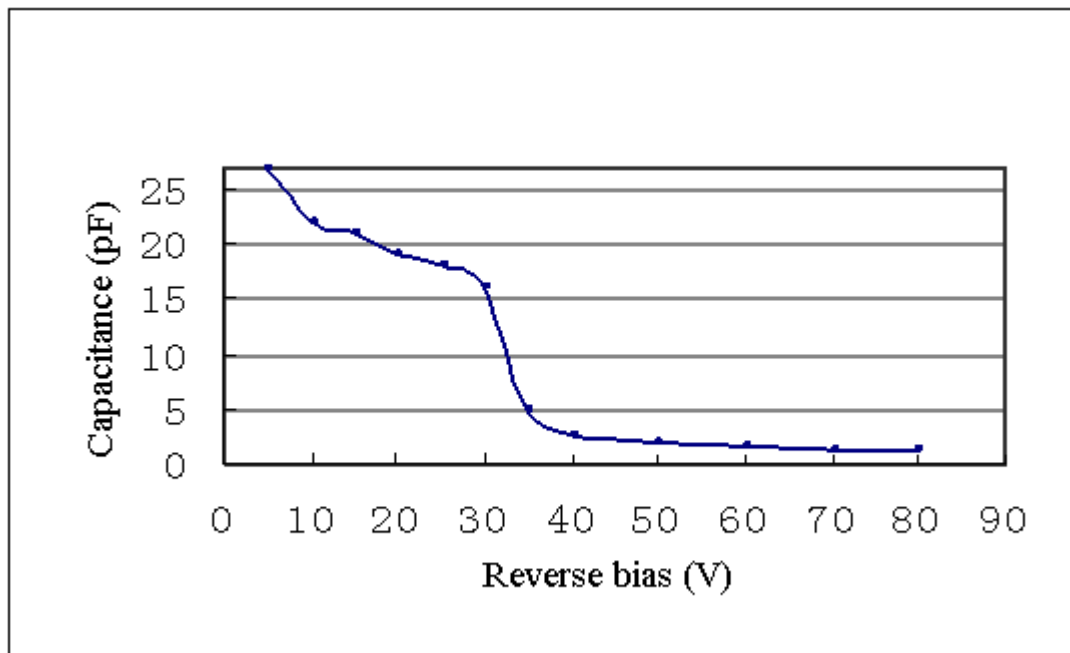


Figure 6- Capacitance

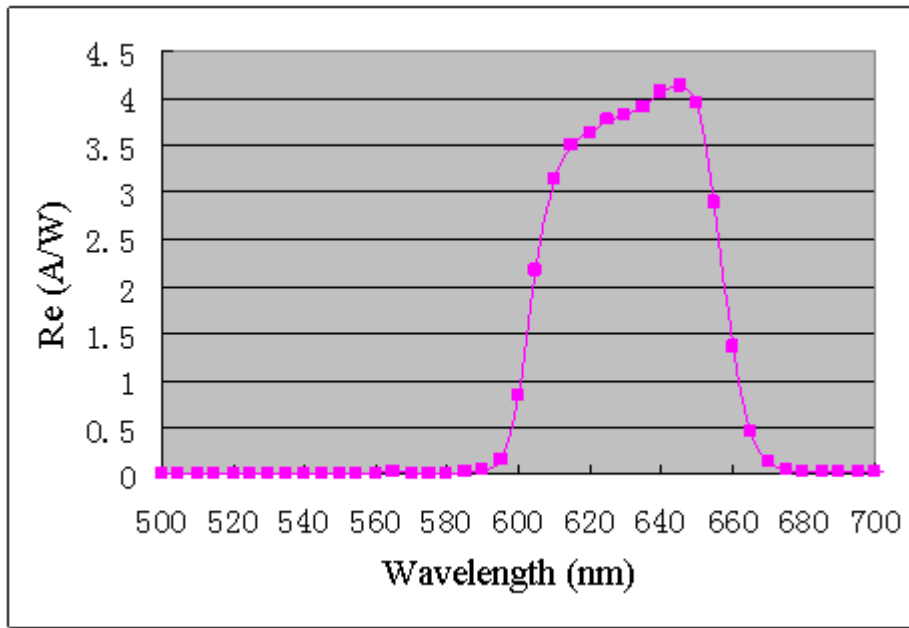
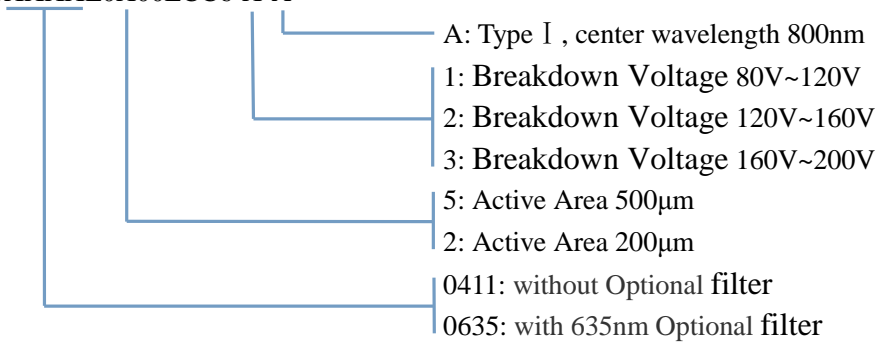


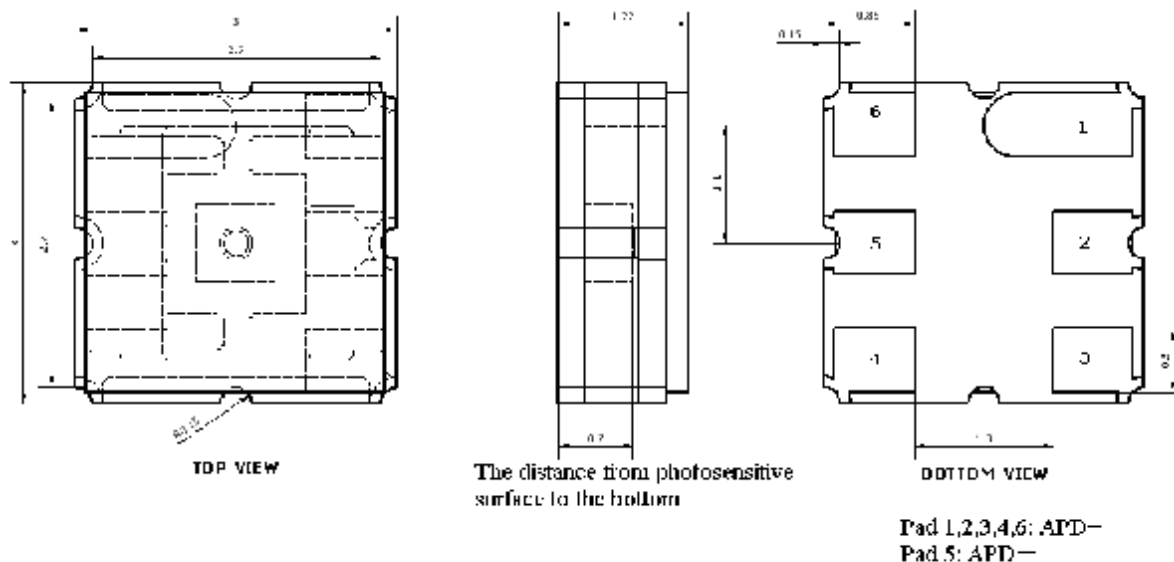
Figure 7- Responsivity with 635nm Optional filter, M=10

Ordering Information:

AA-SXXXXL0X00LCC6-X-A



Outline Drawings (in mm) & PIN-OUT



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.