



## APD-x90A500 -x 905nm 500um Silicon Avalanche Photodiode in TO-46 Package

### Description

The Lasermate APD-x90A500-x is a high reliability, low dark current, 500um dia. active area Silicon avalanche photodiode (APD) with high sensitivity from 400nm to 1100nm. The detector is housed in TO-46 package and with high gain up to M=300.



### Features

- High reliability, low dark current
- Top illumination planar APD
- High Gain up to M=300
- Dia. 500um Active area
- Spectral range 400nm to 1100nm
- Hermetic TO-46 can package

### Applications

- Ultra-weak pulse optical detection
- Laser lidar, laser range finder
- Optical fiber sensor, OTDR
- High resolution optical coherence tomography
- Scientific analysis and experiment

### Product Overview

The following table lists the available part numbers, as well as the package type and breakdown voltage of each of the part numbers.

Part Number	Package	Breakdown Voltage
APD-B90A500-1	TO-46 Can with Ball Lens Cap	120-160V
APD-B90A500-2	TO-46 Can with Ball Lens Cap	160-200V
APD-SF90A500-1	TO-46 Can with 2mm Flat Window	120-160V
APD-SF90A500-2	TO-46 Can with 2mm Flat Window	160-200V
APD-LF90A500-1	TO-46 Can with 3mm Flat Window	120-160V
APD-LF90A500-2	TO-46 Can with 3mm Flat Window	160-200V

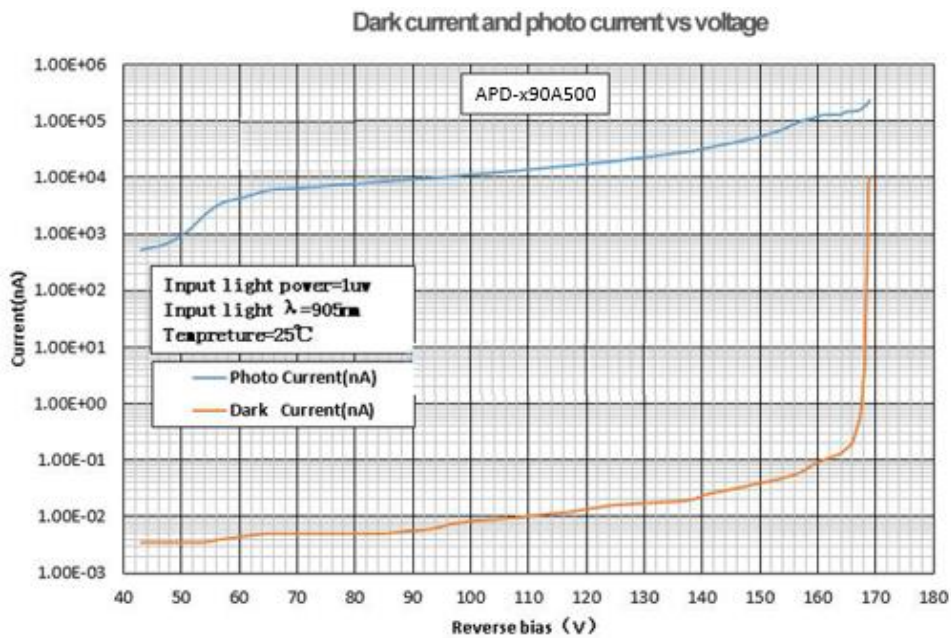
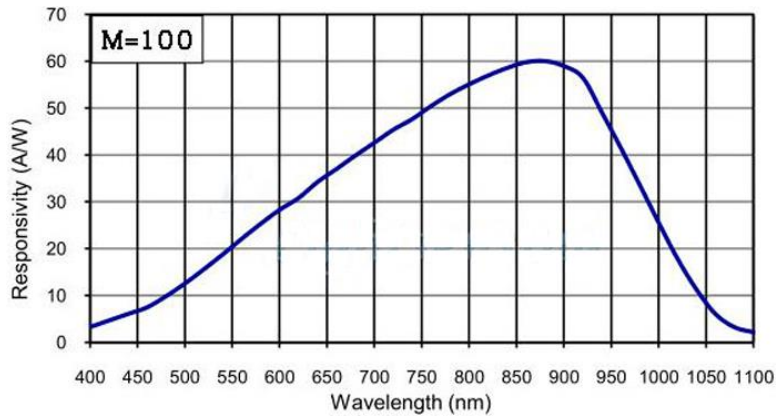


**Specifications**

Absolute Maximum Ratings				
Parameters	Symbol	Value	Unit	Conditions
Operating voltage	$V_{op}$	$0.95 \times V_{BR}$	V	
Forward current	$I_F$	1	mA	
Operating temperature	$T_{op}$	-45 to 85	°C	
Storage temperature	$T_{stg}$	-45 to 125	°C	
Power dissipation		1	mW	
Soldering temperature	$T_{sol}$	260	°C	10 seconds

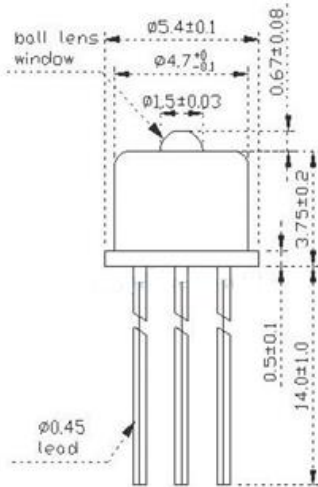
Electro-Optical Characteristics (Top=22+/-3°C)						
Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
Response spectrum	$\lambda$	400		1100	Nm	
Active diameter	$\varnothing$		500		Um	
Responsivity	$R_e$		0.57		A/W	$\lambda=905\text{nm}$ , 1uw, M=1
Multiplication gain	M		60			$\lambda=905\text{nm}$ , 1uw, $0.8V_{BR}$
			100			$\lambda=905\text{nm}$ , 1uw, $0.85V_{BR}$
Response time	$T_r$		0.5		ns	M=100, RL=50Ω, $\lambda=905\text{nm}$
Dark current	$I_d$		0.05	1.2	nA	M=100
Total capacitance	$C_{tot}$		1.5		pF	M=100, f=1MHz
Reverse breakdown voltage	$V_{BR}$	120		200	V	$I_R=10\mu\text{A}$
Maximum instantaneous input power	P			0.3	mW	M=100, 905nm, 10ns, 10KHz
Operating voltage temperature coefficient	$\delta$		0.9	1.3	V/°C	$T_c=-40$ to $85^\circ\text{C}$
Package		Hermetic TO-46 can				

### Typical Characteristics

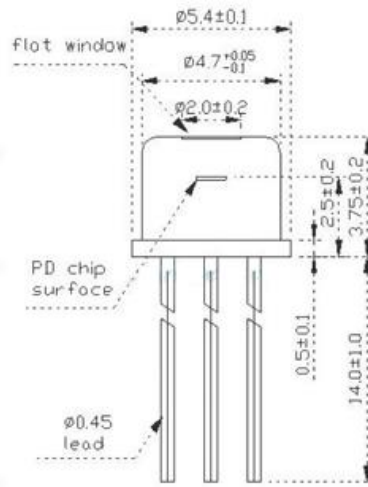


**Outline Dimensions (unit: mm)**

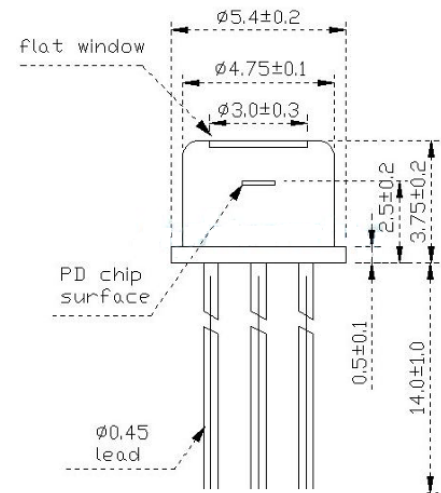
**APD-B90A500:**



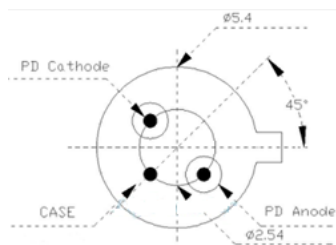
**APD-SF90A500:**



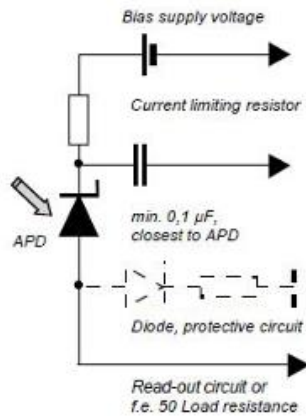
**APD-LF90A500:**



**Pin Configuration**



**Application Circuit**



Note: Specifications are subject to change without notice.