


**Advanced Photonix offers the largest size APDs at the highest gain and lowest noise. This can increase your sensitivity to low light levels, and reduce the effects of amplifier noise for wide bandwidth and high frequency applications...**

	<b>Advanced Photonix, Inc.</b>		
	1240 Avenida Acaso, Camarillo CA 93012 (805) 987 0146 Fax: (805) 484 9935		
<b>Large APD Standard Parts List</b>			
<b>5 mm diameter APDs</b>			
<b>Output Connection</b>	<b>Coating</b>	<b>Window</b>	<b>Part Number</b>
2 pin	IR	Bare	197-70-71-520
2 pin	IR	Glass	197-70-71-521
2 pin	VIS	Bare	197-70-72-520
2 pin	VIS	Glass	197-70-72-521
<b>10 mm diameter APDs</b>			
1 pin (ground the case)	VIS	Bare	394-70-72-510
1 pin (ground the case)	VIS	Glass	394-70-72-511
<b>10 mm APDs Special Order</b> for SHV connector, 6 weeks (unless in stock) for IR coating, minimum order of 5 pieces + 6 weeks (unless in stock)			
<b>16 mm diameter APDs</b>			
SHV	VIS	Bare	630-70-72-500
SHV	VIS	Glass	630-70-72-501
1 pin (ground the case)	VIS	Bare	630-70-72-510
1 pin (ground the case)	VIS	Glass	630-70-72-511
<b>16 mm APDs Special Order</b> for IR coating, minimum order of 5 pieces + 6 weeks (unless in stock)			

***If you need an APD in a custom shape or size, chances are we can accommodate you...***

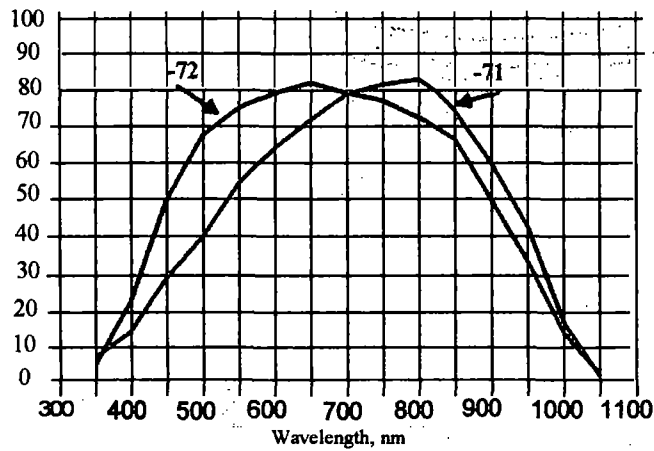


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**Large APD Preliminary Electro-Optical Characteristics @ T = 22°C**

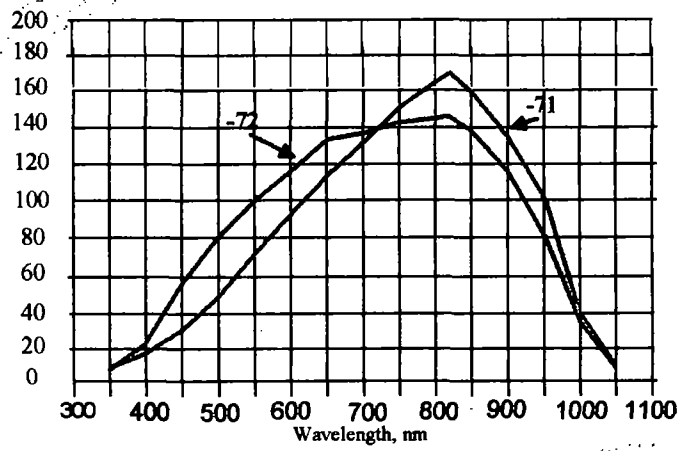
Performance Parameters	197-70 series	394-70 series	630-70 series	units
Active Diameter (typical)	5	10	16	mm
Active Area (typical)	19.6	78.5	201.1	mm <sup>2</sup>
typical Total Efficiency E (Quantum x Absorption)				
532 nm (-72 coating):		73		%
675 nm (-72 coating):		82		%
840 nm (-71 coating):		74		%
typical Total Efficiency E @ Peak Wavelength				
-71 coating (infrared):		82		%
-72 coating (visible):		82		%
typical Responsivity R at a Gain of 300				
532 nm (-72 coating):		95		A/W
675 nm (-72 coating):		135		A/W
840 nm (-71 coating):		160		A/W
typical Responsivity R @ Gain =300, @ Peak Wavelength				
-71 coating (infrared):		165		A/W
-72 coating (visible):		145		A/W
Highest Stable Gain M (typical)		500		
Temperature Coefficient for Constant Gain		1.8		V/°C
Breakdown Voltage V <sub>br</sub> (typical)		-2450		V
max. Dark Current I <sub>dr</sub> @ Gain of 300	160	350	800	nA
Junction Capacitance C <sub>j</sub> (typical) @ Gain of 300	25	50	110	pF
max. Dark Noise Current i <sub>no</sub> @ M=300 and 10 kHz	2	5	7	pA/Hz <sup>1/2</sup>
Noise Equivalent Power NEP (typical) @ M = 300				
532 nm:	24	40	54	fW/Hz <sup>1/2</sup>
675 nm:	18	26	36	fW/Hz <sup>1/2</sup>
840 nm:	14	22	32	fW/Hz <sup>1/2</sup>
Direct X-ray Detection typical Resolution, <sup>55</sup> Fe (5.9 keV)	11	13	15	% FWHM
max. Equivalent Noise Charge ENC, 100 ns shaping time	90	100	140	electrons
max. Impulse Risetime t <sub>r</sub> , 50 ohm load		5		ns
typical/max. Square Wave (Step) Response t <sub>m</sub> , 50 ohm load		30/50		ns
typical Dynamic Range with <3% nonlinearity		10 <sup>6</sup> :1		
typical 3 dB Bandwidth	43	29	17	MHz
typical Surface Uniformity, with 100 micron laser spot		+/- 5		%
<b>Maximum Ratings</b>				
Maximum Reverse Bias Current @ 22°C (average value)	60	160	400	10 <sup>-6</sup> Amps
Maximum Power Dissipation @ 22°C (average value)	150	400	1000	mW
Storage Temperature		-60 to +100		°C
Operating Temperature		-40 to +70		°C
Soldering Temperature, for 5 seconds		200		°C



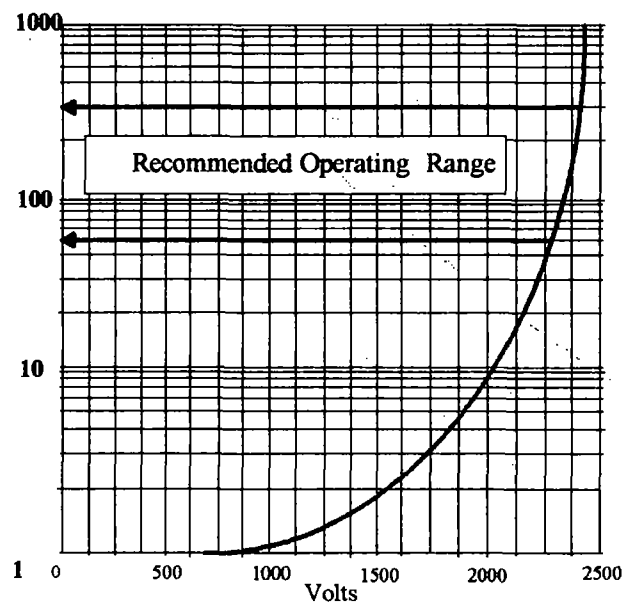
# 5, 10, 16 mm Diameter APDs Typical Performance Specifications



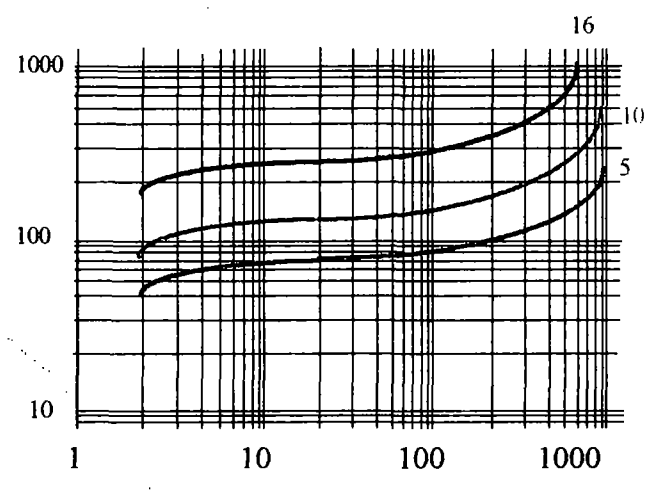
**Total Efficiency (%) vs Wavelength**



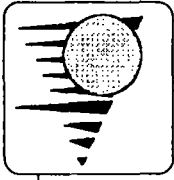
**Responsivity (A/W) @ Gain of 300**



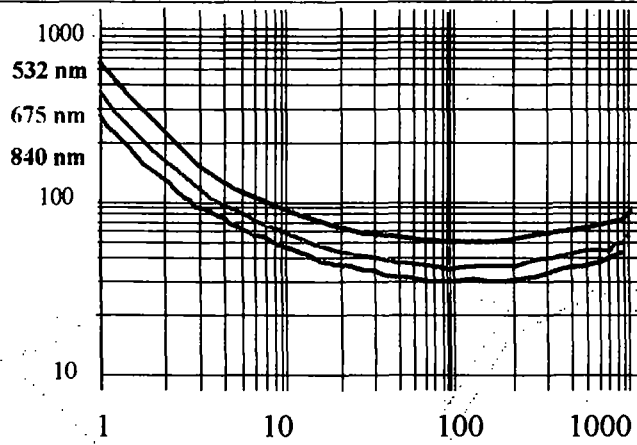
**Gain vs Reverse Bias**



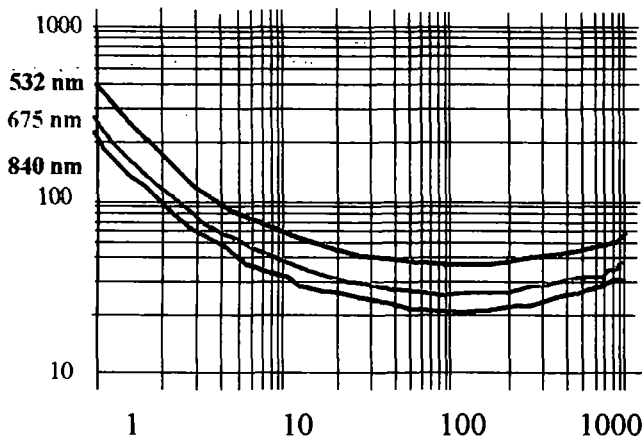
**Dark Current (nA) vs Gain**



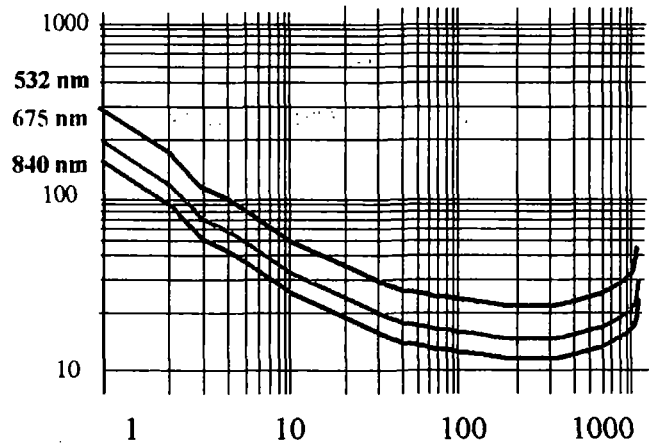
# 5, 10, 16 mm Diameter APDs /Typical Performance Specifications



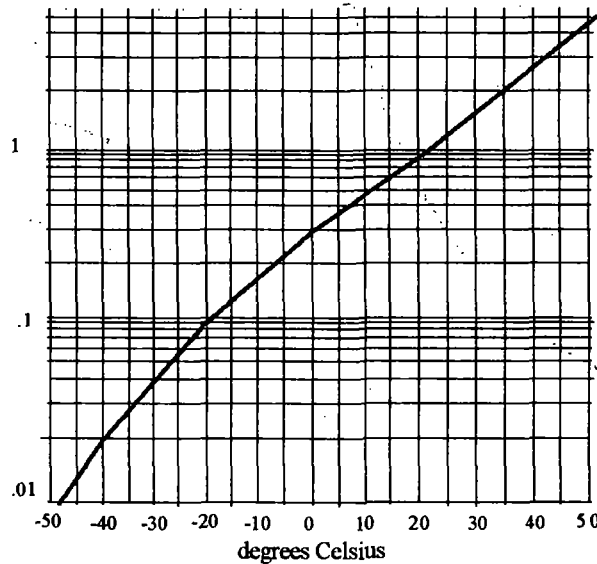
16 mm NEP (fW/Hz<sup>1/2</sup>) vs Gain @ 22C



10 mm NEP (fW/Hz<sup>1/2</sup>) vs Gain @ 22C



5 mm NEP (fW/Hz<sup>1/2</sup>) vs Gain @ 22C



Relative Shot Noise vs Temperature