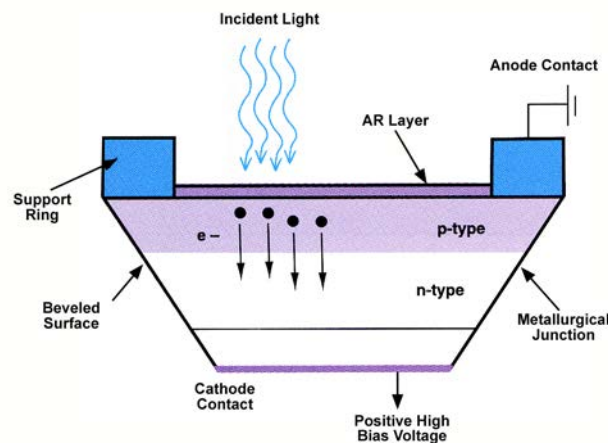


Large Area APDs

LUNA LAAPDs are essentially a solid-state equivalent of PMTs (photo-multiplier tubes) and can replace vacuum tube technology with compact, rugged, silicon devices in many applications. LAAPDs range in active area diameters from 5 mm to 16 mm and operate at voltages up to 2000 V with gains of up to three hundred. Several proprietary and patented technologies enable Advanced Photonix to fabricate devices that are unique in their size, have extremely low noise levels, and have high stable gain. Also, based on the generic LAAPD structure the company provides several wavelength-enhanced versions. These color-enhanced devices feature spectral characteristics that are trimmed to suit specific customer needs. Red, blue and UV-enhanced devices come in both windowed and windowless packages. Windowless deep UV (DUV) detectors extend their useful operating range down to 150 nm, offering effective quantum efficiency (QE) of up to 120 %. This windowless option also allows for direct x-ray and scintillation detection applications. The cooled LAAPDs offer even lower noise and have extremely stable output and are unaffected by ambient temperature changes.



LAAPDs are fabricated from neutron transmutation doped (NTD) silicon, which features ultra-uniform resistivity. The p-n junction is built near the front surface. A critical processing step is the cutting of the detector die at a controlled angle. This bevelled-edge structure reduces the electric field at the junction boundary preventing premature breakdown, further assuring stable operation at high gains.



Technical Specifications

The following is a summary of the LAAPD specifications. Detailed data sheets for each device are available on request. The online version of this document contains links to the individual data sheets.

Windowless Large Area APDs

16 mm



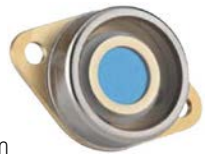
Product Number	Active Area Dia. (mm)	Spectral Enhancement	Responsivity (A/W)	Bias Voltage (V)	Capacitance Typ (pF)	Dark Current Typ (nA)	Rise Time 675 nm, 50 Ω Typ (ns)
SD630-70-75-500	16	DUV	30 (160 nm)	1700-2000	130	280	15
SD630-70-72-500	16	Red/IR	100 (750 nm)	1700-2000	130	280	12

Cooled Large Area APDs

5 mm



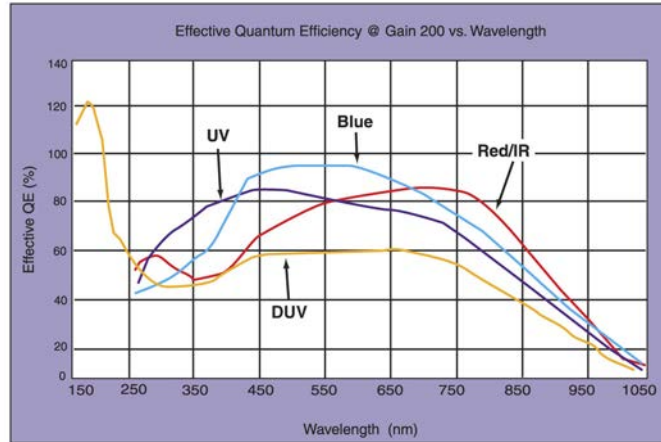
10 mm



Product Number	Active Area Dia. (mm)	Spectral Enhancement	Responsivity (A/W)	Bias Voltage (V)	Capacitance Typ (pF)	Dark Current Typ (nA)	Rise Time 675 nm, 50 Ω Typ (ns)	TEC Current $T_h=35^\circ\text{C}^1$ (A)
SD197-70-74-591	5	Blue	95 (500 nm)	1700-2000	25	10	10	0.85
SD197-70-72-591	5	Red/IR	95 (500 nm)	1700-2000	25	10	10	0.85
SD394-70-74-591	10	Blue	35 (500 nm)	1700-2000	50	15	12	0.95
SD394-70-72-591	10	Red/IR	135 (750 nm)	1700-2000	50	15	12	0.95

Notes

¹ Temperature at rear-side of cooled package



Part Number Definition

