



Deep UV Large Area Avalanche Photodiodes (LAAPD)

120 to 1000 nm Silicon APD

Advanced Photonix LAAPD series has the largest active area Avalanche Photodiodes (APD) in the industry with up to 16mm active area diameter. The Deep UV patented devices operate at up to 2000V with gains of up to 300. With extremely low noise & high stable gain, these LAAPDs can sense light down to 120nm with 120% quantum efficiency. These 16mm active area devices are available with three different performances. They are non-cooled, windowless in a SHV package.

Applications

Instrumentation

Medical

Features

Very Large Active Area

Low Noise

High Speed

Windowless

120% quantum efficiency

Absolute Maximum Ratings

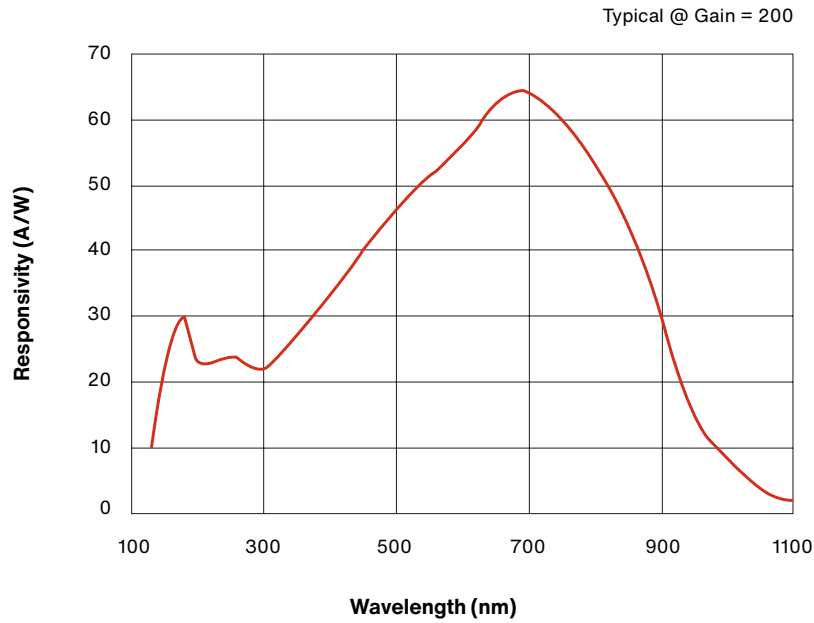
Parameter	Symbol	Min	Max	Unit
Operating Temperature	T_{OP}	-55	+45	°C
Storage Temperature	T_{STG}	-55	+70	°C

*Non-Condensing, Gain = 250

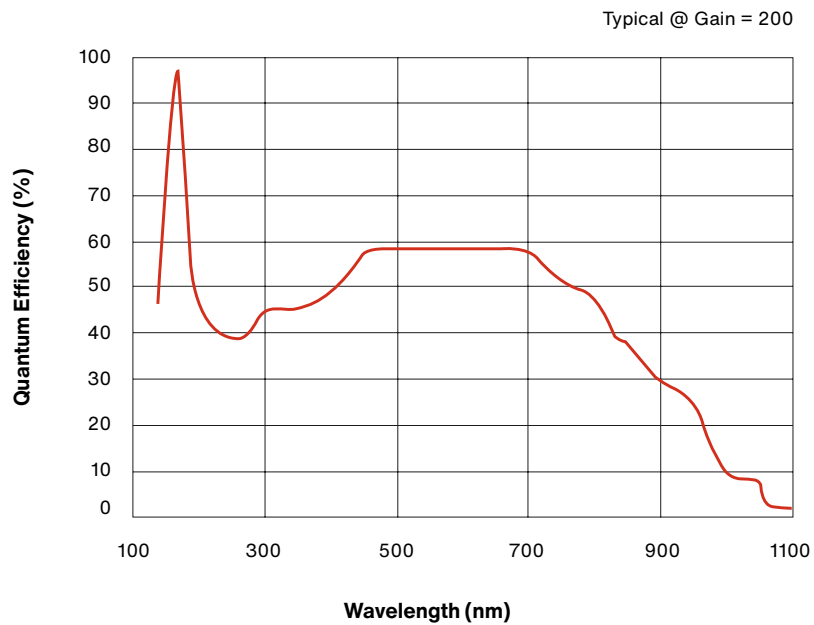
Typical Electro-Optical Specifications at $T_A = 23\text{ °C}$, Gain = 200

Parameters	Symbol	Conditions	APX-APD-200-DUV-00			APX-APD-200-DUV-01			APX-APD-200-DUV-02			Units
			min	typ	max	min	typ	max	min	typ	max	
Active Area Diameter	AA_{ϕ}	-	-	16	-	-	16	-	-	16	-	mm
Spectral Range	λ	Spot Scan	120	-	1000	120	-	1000	120	-	1000	nm
Responsivity	R_{λ}	$\lambda=150\text{nm}$	-	25	-	-	25	-	-	25	-	A/W
		$\lambda=350\text{nm}$	-	35	-	-	35	-	-	35	-	A/W
Operating Voltage	V_{OP}	-	1700	-	2000	1750	-	2050	1750	-	2050	V
Capacitance	C_J	$f=1\text{MHz}$	-	130	-	-	130	-	-	130	-	pF
Dark Current	I_D	-	-	-	600	-	-	600	600	-	1200	nA
Noise Current Spectral Density	i_n	$f=100\text{kHz}$	-	2.5	10	-	2.5	10	-	2.5	10	$\text{pA}/\sqrt{\text{Hz}}$
Temp. Coefficient Breakdown Voltage	$V_{BD}(t)$	-	-	1	-	-	1	-	-	1	-	$\text{V}/\text{°C}$
Response Time*	T_R	$R_L=50\Omega, \lambda=675\text{nm}$	-	15	22	-	15	22	-	15	22	ns

Spectral Response

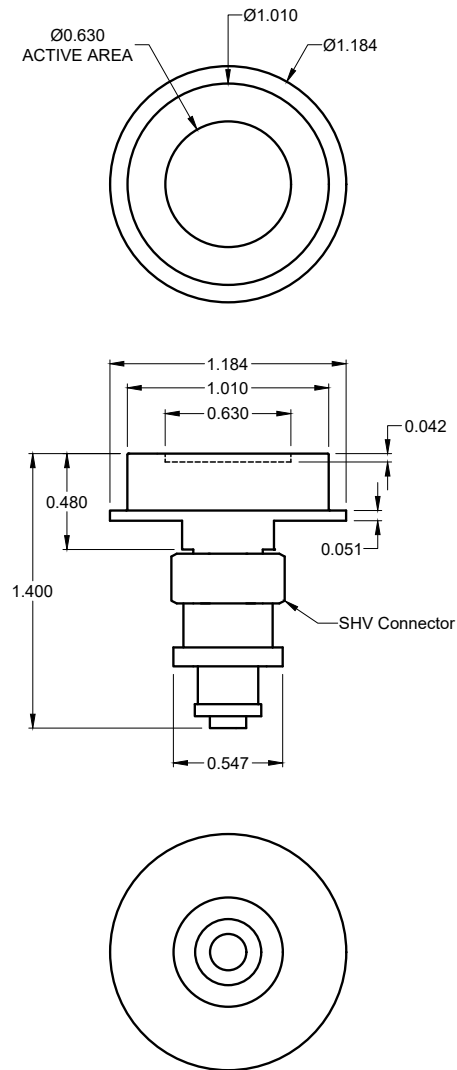


Quantum Efficiency



Mechanical Specifications

Units are in inches



SILICON APD - LAAPD

Tolerances (unless otherwise noted)

- General: $0.XX \pm 0.01"$, $0.XXX \pm 0.005"$

Care and handling instructions

Your photodiodes are packaged and shipped in opaque, padded containers to avoid ambient light exposure and damage due to shock from dropping or jarring.

Care must be taken to avoid photodiode exposure to high ambient light levels, particularly from tungsten sources or sunlight.

- Photodiodes can be rendered inoperable if dropped or sharply jarred. The wire bonds are delicate and can become separated from the photodiode's bonding pads when the detector is dropped or otherwise receives a sharp physical blow.
- Most windows on photodiodes are either silicon or quartz. They should be cleaned with isopropyl alcohol and a soft (optical grade) pad.
- Photodiode exposure to extreme high or low storage temperatures can affect the subsequent performance. Maintain a non-condensing environment for optimum performance and lifetime.
- All devices are considered ESD sensitive. The photodiodes are shipped in ESD protective packaging. When unpacking and using these products, anti-ESD precautions should be observed.
- Photodiode packages and/or operation may be impaired if exposed to CHLOROETHENE, THINNER, ACETONE, TRICHLOROETHYLENE or any harsh chemicals.
- Photodiodes in plastic packages should be given special care. Clear plastic packages are more sensitive to environmental stress than those of black plastic. Storing devices in high humidity can present problems when soldering. Since the rapid heating during soldering stresses the wire bonds and can cause wire to bonding pad separation, it is recommended that devices in plastic packages to be baked for 24 hours at 85°C.
- The leads on the photodiode **SHOULD NOT BE FORMED**. If your application requires lead spacing modification, please contact Applications group before forming a product's leads. Product warranties could be voided.
- Most devices are provided with wire or pin leads for installation in circuit boards or sockets. Observe the soldering temperatures and conditions specified below:
 - Soldering Iron: Soldering 30 W or less
 - Temperature at tip of iron 300°C or lower.
 - Dip Soldering: Bath Temperature: 260±5°C.
 - Immersion Time: within 5 Sec.
 - Soldering Time: within 3 Sec.
 - Vapor Phase Soldering, Reflow Soldering: **DO NOT USE**

Legal Disclaimer

Information in this data sheet is believed to be correct and reliable. However, no responsibility is assumed for possible inaccuracies or omission. Specifications are subject to change without notice.

