

Standard Si PIN Photodiodes

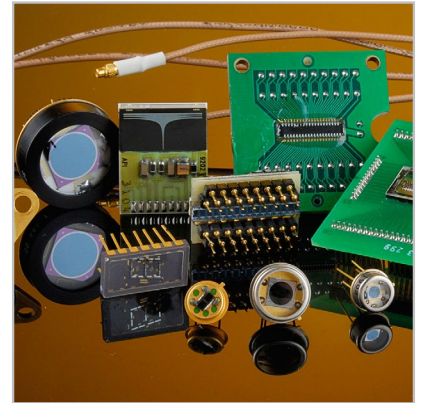
LUNA is a leading supplier of opto-electronic solutions and sensors and instrumentation to a global OEM customer base.

LUNA supports the customer from the initial concept by the designing of the semiconductor, hybridization of support electronics, packaging and signal conditioning or processing from prototype through full-scale production and validation/test. The served markets are: Telecom, Homeland Security, Military, Medical, and Industrial/NDT.

Single Element Silicon PIN Photodiodes

These planar diffused photodiodes are designed for either photoconductive (low capacitance, high speed applications) or photovoltaic operation (low noise, DC applications). Photodiodes are semiconductors that generate a current or voltage when illuminated by light. They have no internal gain, but can operate with much greater dynamic range than other types of photon detectors. In addition to a wide variety of standard detector configurations, LUNA also welcomes the opportunity to design a custom solution to meet your exact needs.

Detailed data sheets for each product are available on request. (The online version of this document includes links to the individual data sheets.)



Ordering Information

Red Enhanced Photodiodes in Leaded Packages

Product Number	Packaging	Active Area	Dark Current/nA ($V_R = 5\text{ V}$)	Capacitance/pF ($V_R = 10\text{ V}$)	Rise Time/ns ($V_R = 10\text{ V}$)
SD057-11-21-011	TO-46	1.3 x 1.3 mm	0.5	6	13
SD100-11-21-221	TO-5*	2.5 mm diam.	1.6	18	13
SD172-11-21-221	TO-5*	4.7 x 3.2 mm	5.0	53	13
SD200-11-21-241	TO-8*	5.1 mm diam.	6.5	71	13
SD445-11-21-305	Ceramic	10.0 x 10.0 mm	30.0	300	40

(* = isolated cathode)

Red Enhanced High Performance Photodiodes in Leaded Packages

Product Number	Packaging	Active Area	Dark Current/nA ($V_R = 5\text{ V}$)	Capacitance/pF ($V_R = 5\text{ V}$)	Rise Time/ns ($V_R = 10\text{ V}$)
SD057-14-21-011	TO-46	1.3 x 1.3 mm	0.1	9	13
SD076-14-21-011	TO-46	2.7 x 1.1 mm	0.2	15	13
SD100-14-21-021	TO-5	2.5 mm diam.	0.3	26	13
SD172-14-21-021	TO-5	4.7 x 3.2 mm	1.0	76	13
SD200-14-21-041	TO-8	5.1 mm diam.	1.3	102	13
SD445-14-21-305	Ceramic	10.0 x 10.0 mm	6.0	500	13

Red Enhanced Ultra Low Capacitance Photodiodes in Leaded Packages

Product Number	Packaging	Active Area	Dark Current/nA ($V_R = 50\text{ V}$)	Capacitance/pF ($V_R = 50\text{ V}$)	Rise Time/ns ($V_R = 50\text{ V}$)
SD041-11-33-211	TO-46*	1.0 x 0.8 mm	2.0	0.5	13
SD076-11-31-211	TO-46*	1.1 x 2.7 mm	8.0	2.5	5
SD100-11-31-221	TO-5*	2.5 mm diam.	12.0	3.5	6
SD172-11-31-221	TO-5*	4.7 x 3.2 mm	35.0	10.0	13
SD200-11-31-241	TO-8*	5.1 mm diam.	50.0	11.0	8
SD290-11-31-241	TO-8*	7.6 x 5.6 mm	110.0	22.0	8

(* = isolated cathode)

Blue Enhanced Photodiodes in Leaded Packages

Product Number	Packaging	Active Area	Dark Current/ nA	Capacitance/ pF	Rise Time/ ns
SD100-12-22-021	TO-5	2.5 mm diam.	1.6	87	13
SD200-12-22-041	TO-8	5.1 mm diam	6.5	102	13
SD200-12-22-241	TO-8*	5.1 mm diam.	6.5	102	13
SD290-12-22-241	TO-8*	5.6 x 7.6 mm	13.0	213	13
SD444-12-12-171	BNC connector	11.3 mm diam.	13.0	213	13

(* =isolated cathode)

Blue Enhanced Photoconductive Photodiodes

Product Number	Packaging	Active Area	Dark Current/ nA	Capacitance/ pF	Rise Time/ns ($V_R = 10 V$)
PDB-C107	Ceramic	5.7 x 3.1 mm	150	100	13
PDB-C109	TO-8	8.1 x 5.3 mm	5	120	13
PDB-C110	Ceramic	9.9 x 9.4 mm	10	300	13
PDB-C113	Ceramic	2.9 x 2.9 mm	5	60	13
PDB-C122	Ceramic submount	0.3 x 0.3 mm	0.5	5	13
PDB-C140	Ceramic	7.6 x 3.8 mm	10	200	13
PDB-C164	Metalized Ceramic	2.6 x 1.2 mm	1	7	13
PDB-C165	Metalized Ceramic	2.9 x 2.9 mm	1	60	13

UV Enhanced Photodiodes

Product Number	Packaging	Active Area	Dark Current/nA ($V_R = 10 \text{ mV}$)	Capacitance/pF ($V_R = 0 \text{ V}$)	Rise Time/ns ($V_R = 0 \text{ V}$)
SD012-UVA-005	SMT	0.076 mm ²	0.0001	10	
SD012-UVA-011	TO-46	0.076 mm ²	0.0001	10	
SD012-UVB-005	SMT	0.0076 mm ²	0.0001	10	
SD012-UVB-011	TO-46	0.0076 mm ²	0.0001	10	
SD012-UVC-011	TO-46	0.0076 mm ²	0.0001	10	

UV Enhanced Photodiodes (Photoconductive)

Product Number	Packaging	Active Area	Dark Current/nA ($V_R = 5 \text{ V}$)	Capacitance/ pF	Rise Time/ns ($V_R = 10 \text{ V}$)
SD100-13-23-022	TO-5	2.5 mm diam.	0.1	9	13
SD100-13-23-222	TO-5*	2.5 mm diam.	1	9	13
SD200-13-23-042	TO-8	5.1 mm diam.	6	102	13
SD200-13-23-242	TO-8*	5.1 mm diam.	6	102	13

(* = isolated cathode)

Surface Mount Packages

Product Number	Packaging	Active Area	Dark Current/ nA ($V_R = 10\text{ V}$)	Capacitance/ pF	Rise Time/ ns
SD019-101-411	0805	0.2 mm ²	0.5	6	1000
SD019-111-411	0805	0.2 mm ²	0.5	6	1000
SD019-111-IR920	0805	0.4 x 0.4 mm	0.02	6	1
SD019-141-411- RGB	0805	0.2 mm ²	0.5	6	10
SD040-101-411	1206	0.8 mm ²	0.5	20	
SD040-111-411	1206	0.8 mm ²	0.5	20	
PDB-C150SM	SOT-23 surface mount	0.4 x 0.4 mm	2	1	6
PDB-C152SM	Surface mount	0.8 x 0.8 mm	2	15	50
PDB-C154SM	Surface mount	1.5 x 1.5 mm	2	5	10
PDB-C171SM	Surface mount	2.8 x 2.8 mm	2	25	100

Photodiode Packages with Filter

Product Number	Packaging	Active Area	Dark Current/ nA	Capacitance/ pF ($V_R = 0\text{ V}$)	Rise Time/ μs
SLD-68-026	TO-46	1.7 x 1.7 mm	100	40	1.0
SLD-70BG2	Dome package	3.6 x 3.6mm	1...100	180	4

Solderable Photodiodes

Product Number	Packaging	Active Area	Dark Current/ nA ($V_R = 5\text{ V}$)	Capacitance/ pF	Rise Time/ ns
PDB-C601-1	Bare chip	1.9 x 0.6 mm	0.5	10	10
PDB-C607-2	Chip with PVC wire	9.9 x 1.5 mm	2	125	25
PDB-C609-2	Chip with PVC wire	7 x 6.1 mm	30	240	30
PDB-C609-3	Chip with buss wire	7 x 6.1 mm	30	240	30
PDB-C612-2	Chip with PVC wire	17.6 x 3.9 mm	1	300	45
PDB-C613-2	Chip with PVC wire	9.8 x 8.8 mm	90	350	50
PDB-C615-2	Chip with PVC wire	25.2 x 9.3 mm	350	775	150
PDB-V601-1	Bare chip	1.9 x 0.6 mm	3	250	300
PDB-V609-3	Chip with buss wire	7 x 6.1 mm	50	5500	1500
PDB-V612-2	Chip with PVC wire	17.6 x 3.9 mm	40	9000	2800
PDB-V615-2	Chip with PVC wire	25.1 x 9.3 mm	350	25800	7000
PDB-V617-2	Chip with PVC wire	25.2 x	35	8500	2500
SLCD-61N5	Bare chip	93.6 mm ²	3300	2000	
SLSD-71N300	Chip with PVC		1700	1000	
SLSD-71N400	Chip with PVC		5000	1500	

CdS Photocells

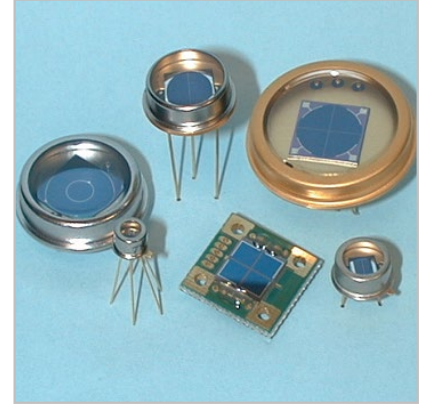
Product Number	Packaging	Spectral Peak/ nm	Light Resistance/ kOhm	Dark Resistance/ MOhm
NORPS-12	TO-18	550	12.6	1.0
NSL-19M51	TO-18	550	100	20
NSL-4132	TO-18	550	42	1.8
NSL-4142	TO-18	550	20	0.8
NSL-4172	TO-18	515	154	6.6
NSL-4182	TO-18	550	70	3
NSL-4512	TO-5	550	133	67
NSL-4522	TO-5	550	26	15
NSL-5112	TO-18	550	14	0.67
NSL-5122	TO-18	550	27	1.3
NSL-5152	TO-18	550	20	0.01
NSL-5162	TO-18	550	133	0.067
NSL-5512	TO-5	550	26	15
NSL-5522	TO-5	550	26	15
NSL-5532	TO-5	550	220	11
NSL-5542	TO-5	550	40	20
NSL-5572	TO-5	550	63	1
NSL-5922	TO-8	550	4	0.2
NSL-6112	TO-18	690	2	1.3

Multi-Element Silicon Photodiodes

These devices consist of a number of photosensitive areas imaged on a single substrate forming a one-dimensional array with a common cathode substrate.

They feature low crosstalk among adjacent elements and high uniformity in response. These types of devices provide a cost effective alternative in applications requiring several photodiodes. In addition, optical filtering can be applied for tuning to particular wavelengths or, in the case of x-ray scanning applications, scintillation crystals that interact to the x-ray energy for provide imaging.

Detailed data sheets for each product are available on request. (The on-line version of this document includes links to the individual data sheets)



Ordering Information

Sandwich

Product Number	Packaging	Active Area	NEP fw/ $\sqrt{\text{Hz}}$	Capacitance/pF
SD138-11-31-211	TO-5	3.5 mm diam. 3.1 mm diam.	12 45	305

Bi-Cells

Product Number	Packaging	Active Area/ Element	Dark Current/nA ($V_R = 5 \text{ V}$)	Capacitance/pF ($V_R = 10 \text{ V}$)	Rise Time/ns ($V_R = 10 \text{ V}$)
PDB-C201	TO-5	3.2 mm ²	0.5	15	13
SD066-24-21-011	TO-5	0.7 mm ²	0.2	3	13
SD113-24-21-021	TO-5	3.1 mm ²	0.9	13	13
SD160-24-21-021	TO-5	2.3 mm ²	0.7	9	13
SD385-24-21-041	TO-8		6.0	85	13

Quadrants

Product Number	Packaging	Active Area/ Element	Dark Current/nA ($V_R = 5\text{ V}$)	Capacitance/ pF	Rise Time/ns ($V_R = 10\text{ V}$)
PDB-C203	TO-5	1.6 mm ²	0.5	8	13
SD055-23-21-211	TO-18*	0.3 mm ²	0.1	3	13
SD085-23-21-021	TO-5	2.3 mm ²	0.6	9	13
SD118-23-21-021	TO-5	1.6 mm ²	0.5	7	13
SD197-23-21-041	TO-8	4.8 mm ²	1.4	20	13
SD225-23-21-040	TO-8	5.4 mm ²	1.2	24	13
SD380-23-21-051	TO-8	17.8 mm ²	5.0	75	13
SD380-23-21-251	TO-8*	17.8 mm ²	5.0	75	13

(* = isolated cathode)

Linear Arrays

Product Number	Packaging	Active Area/ Element	Dark Current/ nA ($V_R = 10\text{ V}$)	Capacitance/ pF ($V_R = 0\text{ V}$)	Rise Time/ns ($V_R = 10\text{ V}$)
SD219-51-03-301	Ceramic Package	2 mm ²	2.7	28	13

Hybrid Silicon Detectors

Silicon (Si) photodiodes can be coupled with a low noise preamplifier chip in the same package. This configuration makes them highly resistant to external noise and suitable for compact circuit design.

Additionally, devices can also be provided with a built-in thermoelectric cooler to reduce the dark current and enhance performance. This range of products is ideal for a wide range of applications involving low-light-level detection and when circuit board space is limited.

Detailed data sheets for each product are available on request. (The on-line version of this document includes links to the individual data sheets)



Ordering Information

Detector / Amplifier Hybrids without Internal Feedback Resistors

Product Number	Packaging	Active Area	Features	Gain
SD100-41-21-231	TO-5	2.54 mm diameter	Red enhanced	
SD100-42-22-231	TO-5	2.54 mm diameter	Blue enhanced	
SD100-43-23-232	TO-5	2.54 mm diameter	UV enhanced	
SD444-41-21-261	TO-8	11.3 mm diameter	Red enhanced	
SD444-42-22-261	TO-8	11.3 mm diameter	Blue enhanced	
SD444-43-23-262	TO-8	11.3 mm diameter	UV enhanced	

Detector / Amplifier Hybrids with Internal Feedback Resistors

Product Number	Packaging	Active Area	Features	Gain
SD112-42-11-221	TO-5	2.18 x 2.54 mm ²	Red enhanced	0.1 kOhm Tgain
SD112-43-11-221	TO-5	2.18 x 2.54 mm ²	Red enhanced	75 MOhm Tgain
SD112-45-11-221	TO-5	2.18 x 2.54 mm ²	Blue enhanced	600 MOhm Tgain