

Silicon Detectors and Emitters

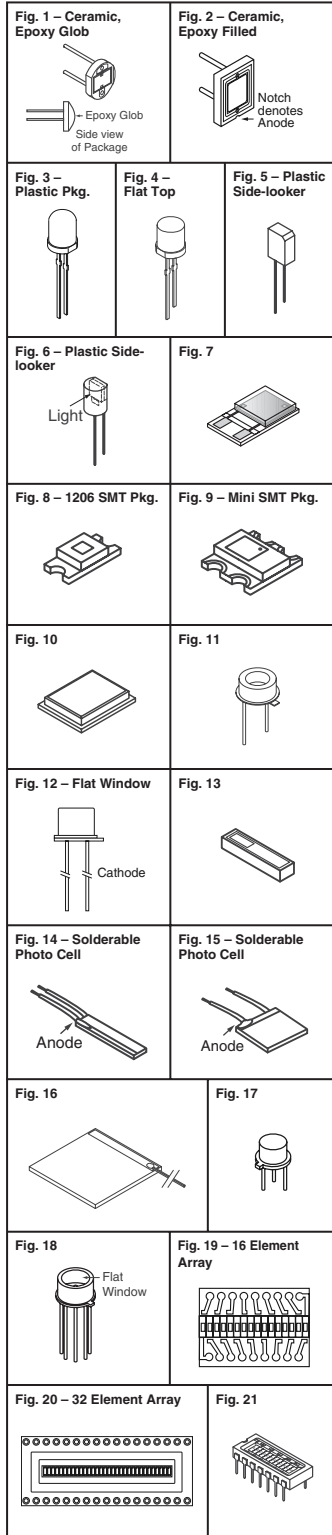
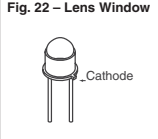
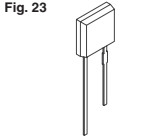
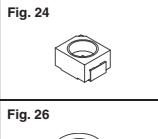
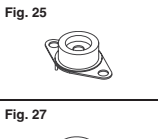
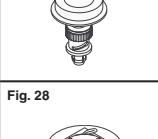
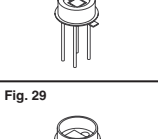
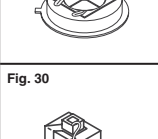
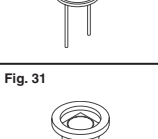
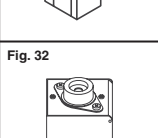
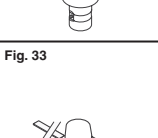
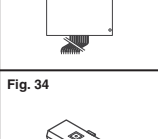
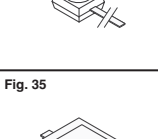
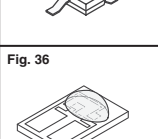
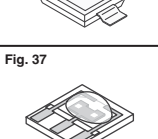
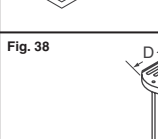
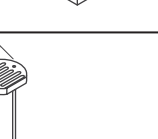
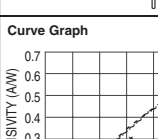
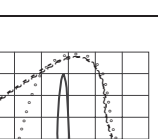


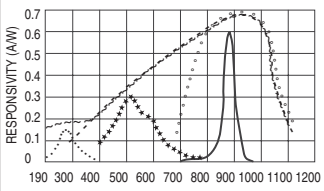
Photo Detectors

Fig.	Active Area (mm)	Short Cir. Curr. (Isc) (uA) Typ.	Dark Curr. (Id) (nA) Max	Sensitivity Wavelength (nm) Min. Peak Max.	Junction Cap. (pF) Typ.	Response Time (ns) Typ.	Viewing Angle (2x Theta)	Digi-Key Part No.	1	5	25	100
Blue Enhanced Photo Conductive Detectors, Curve Line B												
1	17.74	235	50	350 950 1,100	100	20	120	PDB-C107-ND	11.27	—	7.99	7.36
2	100	1,300	30	350 950 1,100	300	25	120	PDB-C110-ND	42.80	—	33.89	32.10
1	7.95	110	30	350 950 1,100	60	16	120	PDB-C113-ND	11.02	—	8.02	7.27
3	1.55	60	30	400 950 1,100	6	10	30	PDB-C134-ND	1.55	—	.90	.80
4	4.10	67	30	400 950 1,100	18	50	61	PDB-C139-ND	2.40	—	1.48	1.31
1	29.02	400	25	350 950 1,100	200	18	120	PDB-C140-ND	20.27	—	14.46	13.90
3	4.10	150	30	400 950 1,100	18	50	59	PDB-C142-ND	2.40	—	1.48	1.31
5	8.02	90	15	400 950 1,100	10	15	120	PDB-C156-ND	2.19	—	1.34	1.17
6	9.00	145	30	400 950 1,100	10	50	120	PDB-C158-ND	2.19	—	1.34	1.17
7	7.95	110	10	350 950 1,100	60	100	—	PDB-C165-ND	10.82	—	7.00	6.56
8	0.74	10	10	400 950 1,100	15	50	140	PDB-C152SMCT-ND	1.72	—	1.02	.86
8	0.74	10	10	400 950 1,100	15	50	140	PDB-C152SMTR-ND	—	2036.43/3,000	—	—
9	2.10	25	10	400 950 1,100	4	10	—	PDB-C154SMCT-ND	1.82	—	1.08	.91
9	2.10	25	10	400 950 1,100	4	10	—	PDB-C154SMTR-ND	—	1463.62/2,000	—	—
10	7.67	90	30	400 900 1,100	15	20	—	PDB-C171SMCT-ND	2.27	—	1.35	1.13
10	7.67	90	30	400 900 1,100	15	20	—	PDB-C171SMTR-ND	—	919.33/1,000	—	—
Photo Conductive Detectors with Daylight Filter, Curve Line D												
3	1.55	60	30	700 950 1,100	6	10	30	PDB-C134F-ND	1.55	—	.90	.80
4	4.10	67	30	700 950 1,100	18	50	61	PDB-C139F-ND	2.40	—	1.48	1.31
3	4.10	150	30	700 950 1,100	18	50	40	PDB-C142F-ND	2.40	—	1.48	1.31
5	8.02	90	15	700 950 1,100	10	15	120	PDB-C156F-ND	2.19	—	1.34	1.17
6	9.00	145	30	700 950 1,100	10	50	120	PDB-C158F-ND	2.19	—	1.34	1.17
9	2.10	25	10	700 950 1,100	4	10	—	PDB-C154SMFCT-ND	1.82	—	1.08	.91
Blue Enhanced Photovoltaic Detectors, Curve Line B												
11	1.17 x 2.64	40	300	350 — 1,100	340	190	65	PDB-V104-ND	37.07	—	29.06	27.06
1	17.74	200	0.80	350 950 1,100	2,000	1,000	120	PDB-V107-ND	6.88	—	4.74	4.31
2	100	1,200	0.333	350 950 1,100	10,000	2,000	120	PDB-V110-ND	20.84	—	15.63	14.59
1	7.95	80	0.50	350 950 1,100	800	750	120	PDB-V113-ND	11.14	—	7.21	6.76
11	3.15 x 5.69	230	550	350 — 1,100	2,000	190	63	PDB-V114-ND	39.79	—	31.51	29.85
U.V. Enhanced Photovoltaic Detectors, Curve Line A — RoHS Compliant												
12	17.63	230	0.05	190 — 1,100	2,000	900	63	PDU-V114-ND	24.78	—	19.07	17.80
Red Enhanced Solderable Photo Cells, Curve Line B												
13	1.88 x 0.56	17	2.00	350 — 1,100	10	10	—	PDB-C601-1-ND	2.03	—	1.25	1.08
13	1.88 x 0.56	13	7.00	350 — 1,100	250	300	—	PDB-V601-1-ND	2.03	—	1.25	1.08
14	14.50	185	35	350 940 1,100	125	25	—	PDB-C607-2-ND	11.33	—	7.33	6.87
15	42.40	545	75	350 940 1,100	240	30	—	PDB-C609-2-ND	11.91	—	7.71	7.23
16	6.07 x 6.98	545	75	350 — 1,100	240	30	—	PDB-C609-3-ND	9.64	—	6.99	6.22
16	6.07 x 6.98	545	100	350 — 1,100	5,500	1,500	—	PDB-V609-3-ND	9.64	—	6.99	6.22
14	68.70	900	150	350 940 1,100	300	45	—	PDB-C612-2-ND	11.35	—	8.26	7.49
14	3.91 x 17.55	800	80	350 — 1,100	9,000	2,800	—	PDB-V612-2-ND	12.43	—	9.18	8.44
15	86.40	1,000	180	350 940 1,100	350	50	—	PDB-C613-2-ND	11.82	—	8.60	7.79
14	232.70	2,800	700	350 940 1,100	775	150	—	PDB-C615-2-ND	20.94	—	15.71	14.66
14	9.25 x 25.17	2,800	700	350 — 1,100	25,800	7,000	—	PDB-V615-2-ND	37.07	—	29.06	27.06
14	62.91	650	135	350 940 1,100	285	40	—	PDB-V617-2-ND	10.97	—	7.98	7.24
Blue Enhanced Bi-Cells, Quadrants and Multi-Element Detector Arrays, Curve Line B												
17	3.23±	75	2.00	350 950 1,100	15	8	72	PDB-C201-ND	17.93	—	13.45	12.56
18	1.61±	50	1.00	350 950 1,100	8	7	71	PDB-C203-ND	21.27	—	15.96	14.90
19	2.31±	28	5.00	350 950 1,100	40	800	—	PDB-C216-ND	38.81	—	30.42	28.32
20	1.47±	11	0.15	350 950 1,100	30	200	—	PDB-C232-ND	—	—	—	108.90
21	2.03 x 0.97±	—	2.70	350 — 1,100	28	190	—	SD219-51-03-301-ND	243.41	—	204.15	—
Photo Conductive Silicon Photodiodes												
23	2.90	38	1.00	400 950 1,100	60	100	—	PDB-C168-ND	5.26	—	3.58	3.23
23	8.10	102	30	400 950 1,100	25	50	—	PDB-C169-ND	5.26	—	3.58	3.23
23	1.70	27	0.60	400 950 1,100	30	100	—	PDB-C170-ND	5.26	—	3.58	3.23
10	7.67	85	30	840 900 1,050	15	20	—	PDI-C172SMFCT-ND	2.27	—	1.35	1.13
10	7.67	85	30	840 900 1,050	15	20	—	PDI-C172SMFTR-ND	—	919.33/1,000	—	—
10	7.67	90	30	800 900 1,050	15	20	—	PDV-C173SMCT-ND	2.27	—	1.35	1.13
InGaAs Photodetectors — RoHS Compliant												
17	.200	—	1.00	800 — 1,700	0.75	0.18 (max.)	—	SD004-11-41-211-ND	14.59	—	11.36	10.67
17	.200	—	5.00	800 — 1,700	6	1.15 (max.)	88	SD012-11-41-211-ND	36.02	—	29.79	27.93
17	1.50	—	50	800 — 1,700	250	10.0 (max.)	113	SD060-11-41-211-ND	125.53	—	108.10	105.20
Gallium Nitride (GaN) Detectors — RoHS Compliant												
11	0.076	1.0	100,000	200 — 365	24	10	61	PDU-G101A-ND	11.74	—	8.54	7.74
11	0.076	1.0	100,000	200 — 320	24	10	61	PDU-G102B-ND	13.65	—	10.08	9.26
24	—	.001	100,000	200 — 365	24	10	—	PDU-G105A-SM-ND	9.39	—	6.81	6.06
24	—	.001	100,000	200 — 320	24	10	—	PDU-G106B-SM-ND	9.66	—	7.03	6.37
Silicon Avalanche Photodiode — RoHS Compliant												
17	0.30	—	10	400 — 1,100	—	1	—	SD012-70-62-541-ND	92.14	—	78.34	73.81
17	0.90	—	30	400 — 1,100	—	2	—	SD036-70-62-531-ND	99.67	—	84.74	79.83
25	5.00	—	18	350 — 1,050	25	10	—	SD197-70-72-591-ND	685.47	—	—	—
25	5.00	—	18	350 — 1,050	25	10	—	SD197-70-74-591-ND	685.47	—	—	—
25	10	—	35	350 — 1,050	50	12	—	SD394-70-72-591-ND	940.37	—	—	—
25	10	—	35	350 — 1,050	50	12	—	SD394-70-74-591-ND	940.37	—	—	—
26	16	—	600	350 — 1,050	130	15	—	SD630-70-72-500-ND	1177.42	—	—	—
26	16	—	600	350 — 1,050	130	15	—	SD630-70-73-500-ND	1177.42	—	—	—
26	16	—	600	350 — 1,050	130	15	—	SD630-70-74-500-ND	1177.42	—	—	—
26	16	—	600	350 — 1,050	130	15	—	SD630-70-75-500-ND	1177.42	—	—	—
Red Enhanced Silicon Photodiode												
17	0.83 x 1.02	—	8.00	350 — 1,100	5.6	190	91	SD041-11-33-211-ND	18.95	—	14.22	13.27
18	0.50±	—	0.40	350 — 1,100	15	190	67	SD055-23-21-211-ND	45.28	—	35.85	33.97
11	1.30	—	2.00	350 — 1,100	28	190	51	SD057-11-21-011-ND	20.55	—	15.41	14.39
11	1.30	—	0.50	350 — 1,100	28	190	51	SD057-14-21-011-ND	20.55	—	15.41	14.39
17	0.58 x 1.19	—	1.00	350 — 1,100	15	190	42	SD066-24-21-011-ND	25.27	—	19.44	18.15
17	1.09 x 2.67	—	30	350 — 1,100	17.5	190	59	SD076-11-31-211-ND	24.63	—	18.95	17.69
22	1.09 x 2.67	—	0.90	350 — 1,100	50	190	55	SD076-14-21-011-ND	20.11	—	15.09	14.08
18	1.50±	—	3.50	350 — 1,100	45	190	86	SD085-23-21-021-ND	37.81	—	29.64	27.59
17	2.54	—	6.40	350 — 1,100	87	190	90	SD100-11-21-221-ND	22.30	—	17.16	16.01
17	2.54	—	50	350 — 1,100	28	190	90	SD100-11-31-221-ND	26.05	—	20.04	18.71
17	2.54	—	1.60	350 — 1,100	87	190	82	SD100-14-21-021-ND	21.63	—	16.23	15.15
18	2.54	—	10	250 — 1,100	87	—	—	SD100-41-21-231-ND	80.38	—	65.05	60.41
27	2.54 x 2.18	—	—	350 — 1,100	—	—	—	SD112-42-11-221-ND	59.08	—	47.27	44.74

Silicon Detectors and Emitters

Curve Graph



RESPONSIVITY (A/W)

WAVELENGTH (nm)

A(-) U.V. Enhanced Silicon Detectors
 B(-) Blue Enhanced Silicon Detectors
 C(.) Silicon Carbide U.V. Detectors
 D(*) Daylight Filter Detectors
 E(-) GaAlAs Photodiodes
 F(*) CdS Photoconductive Cells (relative responsivity)

Photo Detectors (Cont.)

Fig.	Active Area (mm)	Short Cir. Curr. (Isc) (uA) Typ.	Dark Curr. (Id) (nA) Max	Sensitivity Wavelength (nm)			Junction Cap. (pF) Typ.	Response Time (ns) Typ.	Viewing Angle (2x Theta)	Digi-Key Part No.	Price Each			
				Min.	Peak	Max.					1	5	25	100
18	9.65±	—	27	350	—	1,100	375	190	120	SD380-23-21-051-ND◆	104.78	—	84.76	78.59
18	9.65±	—	27	350	—	1,100	375	190	120	SD380-23-21-251-ND◆	118.99	—	98.55	91.25
17	—	—	31	350	—	1,100	390	190	—	SD385-24-21-041-ND◆§	33.93	—	25.90	24.56
18	11.30	—	150	250	—	1,100	1,700	—	—	SD444-41-21-261-ND▲	299.91	—	254.83	—
2	1.00	—	120	350	—	1,100	1,700	190	120	SD445-11-21-305-ND◆	38.88	—	30.48	28.38
2	1.00	—	30	350	—	1,100	1,700	190	120	SD445-14-21-305-ND◆	38.88	—	30.48	28.38
Blue Enhanced Silicon Photodiodes — RoHS Compliant														
29	5.31 x 8.10	500	15	350	—	1,100	120	190	79	PDB-C109-ND	37.81	—	29.64	27.59
30	0.33 x 0.33	1.5	2.00	350	—	1,100	5	190	—	PDB-C122-ND	—	24.32	21.64	20.52
7	1.17 x 2.64	25	10	350	—	1,100	7	190	—	PDB-C164-ND	18.44	—	13.84	12.91
17	2.54	—	6.40	350	—	1,100	87	190	82	SD100-12-22-021-ND	19.82	—	14.87	13.88
18	2.54	—	10	250	—	1,100	87	—	—	SD100-42-22-231-ND▲	80.38	—	65.05	60.41
27	2.54 x 2.18	—	—	—	—	—	—	—	—	SD112-45-11-221-ND▲	56.98	—	45.59	43.15
18	5.59 x 7.62	—	52	350	—	1,100	725	190	90	SD290-12-22-241-ND	38.28	—	30.01	27.94
31	11.28	—	52	350	—	1,100	725	190	95	SD444-12-12-171-ND	119.35	—	98.85	91.53
18	11.30	—	150	250	—	1,100	—	—	—	SD444-42-22-261-ND▲	299.91	—	254.83	—
UV Enhanced Silicon Photodiodes — RoHS Compliant														
17	2.54	—	6.50	250	—	1,100	87	190	90	SD100-13-23-222-ND	32.28	—	24.64	23.36
18	2.54	—	10	250	—	1,100	87	—	—	SD100-43-23-232-ND▲	80.38	—	65.05	60.41
17	5.08	—	30	250	—	1,100	345	190	95	SD200-13-23-242-ND	54.38	—	43.51	41.18
18	11.30	—	150	250	—	1,100	170	—	—	SD444-43-23-262-ND▲	299.91	—	254.83	—
Silicon Avalanche Photodiodes Module — RoHS Compliant														
32	5.00	—	—	350	—	1,050	—	—	—	SD197-70-72-661-ND	1715.14	—	—	—
32	5.00	—	—	350	—	1,050	—	—	—	SD197-70-74-661-ND	1715.14	—	—	—
32	10.00	—	—	350	—	1,050	—	—	—	SD394-70-72-661-ND	1900.56	—	1790.43	—
32	10.00	—	—	350	—	1,050	—	—	—	SD394-70-74-661-ND	1900.56	—	1790.43	—
Plastic Photodiode — RoHS Compliant														
33	0.61	10	10	700	—	1,100	25	6	48	PDB-C144-ND	2.50	—	1.55	1.37
33	0.43	10	30	400	—	1,100	5	6	48	PDB-C145-ND	2.50	—	1.55	1.37
34	0.43	2.0	30	400	—	1,100	1	6	120	PDB-C160SM-ND	4.68	—	2.71	2.42
6	2.84	120	30	400	—	1,100	30	50	120	PDB-C157-ND	2.29	—	1.41	1.25
35	2.65	90	30	400	—	1,100	15	20	120	PDB-C160SM-ND	2.14	—	1.32	1.14

‡ Per Element § Bi-cell ◆ Quad ▲ Detector/Amplifier ◆ RoHS Compliant

Oximeter Components

Fig.	661nm					880/905/940nm					Digi-Key Part No.	Price Each			
	Forward Voltage (V) Typ.	Reverse Breakdown (V)	Peak Wavelength (nm) Typ.	Spectral Bandwidth (nm) Typ.	Rise/Fall Time (µS) Typ.	Forward Voltage (V) Typ.	Reverse Breakdown (V)	Peak Wavelength (nm) Typ.	Spectral Bandwidth (nm) Typ.	Rise/Fall Time (µS) Typ.		1	25	100	250
36	1.8	5	661	25	0.1/0.04	1.2	5	905	50	1.4/0.7	PDI-E832-ND	10.59	6.86	6.43	6.15
36	1.8	5	661	25	0.8/0.8	1.3	5	940	50	0.8/0.8	PDI-E833-ND◆	36.94	28.95	26.96	25.96
37	1.8	5	661	21	0.1/0.04	1.3	5	880	50	0.8/0.8	PDI-E837-ND◆	36.94	28.95	26.96	25.96
36	1.8	5	661	21	0.1/0.04	1.2	5	880	50	0.8/0.8	PDI-E838-ND◆	36.94	28.95	26.96	25.96

◆ RoHS Compliant

High Power Infrared Emitters

Fig.	Forward Voltage (V) Typ.	Forward Current (mA) Con.	Output Power (mW) Typ.	Beam Angle (2x Theta)	Peak Wavelength (nm) Typ.	Digi-Key Part No.	1	25	100	250
12	1.5	100	5.6	60	880	PDI-E801-ND	10.80	7.86	7.12	6.88
22	1.5	100	5	10	880	PDI-E802-ND◆	10.80	7.86	7.12	6.88
22	1.5	100	9	6	880	PDI-E803-ND	10.80	7.86	7.12	6.88
22	1.5	100	20	80	880	PDI-E804-ND◆	12.39	8.02	7.51	7.19
22	1.5	100	10	5	880	PDI-E805-ND	10.80	7.86	7.12	6.88
3	1.5	100	30 (max.)	35	880	PDI-E808-A-ND	10.22	7.44	6.74	6.51
3	1.6	100	90	—	880	PDI-E809-ND◆	10.22	7.44	6.74	6.51
22	1.5	180	15	—	880	PDI-E813-ND◆	39.96	31.32	29.16	28.08
22	1.7	100	2.7	—	850	PDI-E825-ND◆	25.91	19.93	18.61	17.61
34	1.2	100	0.7	—	940	PDI-E940SM-ND◆	10.22	7.44	6.74	6.51

◆ RoHS Compliant

Photoconductive Cells

Fig.	Dim. D (mm)	Cell Resistance‡				Peak Wavelength (nm) Typ.	Rise/Fall Time (ms) Typ.	Digi-Key Part No.	Price Each				
		10 Lux @ 2856K		Dark					1	25	100	250	
38, Curve Line F	11.00	8	16	0.3	10	520	55/25	PDV-P5001-ND	1.92	1.18	1.05	.96	
		12	30	0.5	10				PDV-P5002-ND	1.92	1.18	1.05	.96
		12	58	1	10				PDV-P5003-ND	1.92	1.18	1.05	.96
38, Curve Line F	7.20	4	20	0.5	10	520	55/20	PDV-P7002-ND◆	2.03	1.25	1.08	1.02	
		3	11	0.2	10				PDV-P8001-ND	1.55	.90	.80	.74
		40	120	1	10				PDV-P8005-ND	1.55	.90	.80	.74
		80	240	5	10				PDV-P8006-ND	1.55	.90	.80	.74
		4	11	0.15	10				PDV-P8101-ND	1.55	.90	.80	.74
		9	20	0.3	10				PDV-P8102-ND	1.55	.90	.80	.74
		16	33	0.5	10				PDV-P8103-ND◆	1.58	.94	.83	.77
		27	60	2	10				PDV-P8104-ND◆	1.58	.94	.83	.77
		50	94	2.5	10				PDV-P8105-ND◆	1.32	.81	.69	.67
		80	240	20	10				PDV-P8107-ND	1.55	.90	.80	.74
38, Curve Line F	4.20	4	11	0.3	10	520	60/25	PDV-P9001-ND	1.30	.75	.65	.61	
		9	20	0.5	10				PDV-P9002-ND	1.30	.75	.65	.61
		11	20	0.5	10				PDV-P9002-1-ND	1.30	.75	.65	.61
		16	33	1	10				PDV-P9003-ND	1.30	.75	.65	.61
		23	33	1	10				PDV-P9003-1-ND	1.30	.75	.65	.61
		27	60	2	10				PDV-P9004-ND	1.30	.75	.65	.61
		50	94	2.5	10				PDV-P9005-ND	1.30	.75	.65	.61
		48	140	20	10				PDV-P9005-1-ND	1.30	.75	.65	.61
		80	200	5	10				PDV-P9006-ND	1.30	.75	.65	.61
		10	100	1	10				PDV-P9007-ND	1.30	.75	.65	.61
38, Curve Line F	4.20	10	200	20	10	520	60/25	PDV-P9008-ND	1.30	.75	.65	.61	
		20	45	1	10				PDV-P9103-ND	1.30	.75	.65	.61
		10	50	5	10				PDV-P9200-ND	1.30	.75	.65	.61
		5	20	20	10				PDV-P9203-ND	1.30	.75	.65	.61
		5	20	20	10				PDV-P9203-ND	1.30	.75	.65	.61

◆ RoHS Compliant ‡ Photocells are light adapted at 100 to 500 Lux.