

# photodiodes

## ► Features

- Low-cost visible and near-IR photodetector
- Excellent linearity in output photocurrent over 7 to 9 decades of light intensity
- Fast response times
- Available in a wide range of packages including epoxy-coated, transfer-molded, cast, and hermetic packages, as well as in chip form
- Low noise
- Mechanically rugged, yet compact and lightweight
- Available as duals, quads or as linear arrays
- Usable with almost any visible or near-infrared light source such as solid state laser diodes, neon, fluorescent, incandescent bulbs, lasers, flame sources, sunlight, etc.
- Can be designed and tested to meet the requirements of your application

## ► Typical Applications

- Fiber-Optic Communications
- Instrumentation
- High-Speed Switching
- Spot Position Tracking and Measurement
- Photometry
- Data Transmission
- UV Light Meters
- Fluorescent Light Detection
- Laser Range Finding
- Barcode Scanning
- Laser Safety Scanning
- Distance Measurement

Datasheets available upon request

## Description

PerkinElmer Optoelectronics offers a broad array of Silicon and InGaAs PIN and APDs.

### InGaAs Avalanche Photodiodes

The high-quality InGaAs avalanche photodiodes (APDs) are packaged in hermetically sealed TO cans and ceramic blocks designed for the 900 to 1700 nm wavelength region.

### InGaAs PIN Photodiodes

High-quality Indium Gallium Arsenide photodiodes designed for the 900 to 1700 nm wavelength region, these photodiodes are available in standard sizes ranging from 50 microns to 5 mm in diameter. Packages include ceramic submount, TO packages, and chip form.

### Silicon Avalanche Photodiodes

These are reliable, high-quality detectors in hermetically sealed TO packages designed for high-speed and high-gain applications. A “reach-through” structure is utilized which provides very low noise performance at high gains, and a full range of active areas is available.

### Silicon PIN Photodiodes

Offered for low- to high-speed applications, these PINs are designed for the 250 nm to 1100 nm range. Standard sizes range from 100 microns to 10 mm in diameter.

### Silicon PN Photodiodes

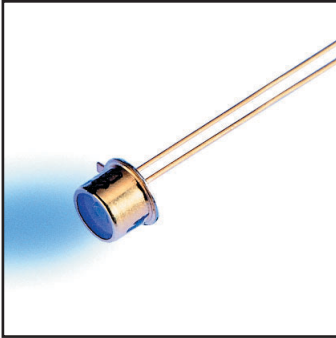
This format includes a variety of high-volume, low-cost silicon photodiodes that meet the demanding requirements of today’s commercial and consumer markets.

### Alternate Source/Second Source Photodiodes

PerkinElmer’s nearest equivalent devices are selected on the basis of general similarity of electro-optical characteristics and mechanical configuration. Interchangeability in any particular application is not guaranteed, suitability should be determined by the customer’s own evaluation.

### Detector Modules

Preamplifier modules are hybrid devices with a photodiode and a matching amplifier in a compact hermetic TO package. An integral amplifier allows for better ease of use and noise bandwidth performance. 14-pin, DIL, and/or fibered packaged modules are available on a custom basis.



**Indium Gallium Arsenide  
PIN Photodiodes, Large-Area,  
and Small-Area  
Indium Gallium Arsenide APDs**

- High Responsivity
- Low Capacitance for High Bandwidths
- Available in Various Hermetic Packages

**InGaAs APDs—900 nm to 1700 nm**

**Technical Specification**

Part Number	Standard Package	Photo Sens. Diam. $\mu\text{m}$	Resp. A/W @1300 nm	Resp. A/W @1550 nm	Dark Curr. Id (nA)	Spect. Noise Curr. Dens. In (pA/ $\sqrt{\text{Hz}}$ )	Cap. @100 kHz Cd (pF)	Bandwidth GHz into 50 W	NEP @ 1550 nm pW/ $\sqrt{\text{Hz}}$	VOP for Gain=10 V
C30644E	TO window	50	8.4	9.4	6	0.15	1	2	0.03	40-90
C30644ECER	Ceramic	50	8.4	9.4	6	0.15	0.8	2	0.03	40-90
C30645E	TO window	80	8.4	9.4	10	0.25	1.2	1	0.13	40-90
C30645ECER	Ceramic	80	8.4	9.4	10	0.25	1	1	0.13	40-90
C30662E	TO window	200	8.4	9.4	200	1.4	2.5	0.2	0.15	40-90
C30662ECER	Ceramic	200	8.4	9.4	200	1.4	2.5	0.2	0.15	40-90
C30733ECER	Ceramic	30	8.4	9.4	5	<0.1	0.25	3	0.01	40-90

Test conditions: T = 22°C

**InGaAs PIN Large-Area—900 nm to 1700 nm**

**Technical Specification**

Part Number	Standard Package	Photo Sens. Diam. mm	Resp. A/W @850 nm	Resp. A/W @1300 nm	Resp. A/W @1550 nm	Dark Curr. Id (nA)	NEP @ 1300 nm pW/ $\sqrt{\text{Hz}}$	Cap. @100 kHz Cd (pF)	Bandwidth MHz into 50 W	Max. Power for .15 dB Linearity (dBm)	Bias Volt for these Specs V
C30619G	TO-18	0.5	0.2	0.86	0.95	5	<0.1	8	350	>+13	5
C30641G	TO-18	1	0.2	0.86	0.95	5	<0.1	40	75	>+13	2
C30642G	TO-5	2	0.2	0.86	0.95	10	0.1	350	20	+11	0
C30665G	TO-5	3	0.2	0.86	0.95	25	0.2	1000	3	+11	0
C30723G	TO-8	5	0.2	0.86	0.95	30	0.3	2500	2.5	+11	0

Test conditions: T = 22°C

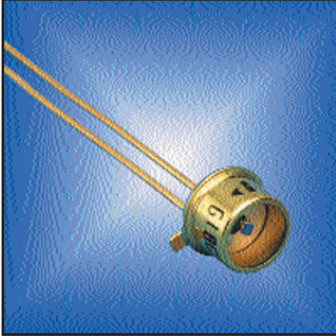
**InGaAs PIN Small-Area—900 nm to 1700 nm**

**Technical Specification**

Part Number	Standard Package	Photo Sens. Diam. $\mu\text{m}$	Resp. A/W @1300 nm	Resp. A/W @1550 nm	Dark Curr. Id (nA)	Spect. Noise Curr. Dens. In (pA/ $\sqrt{\text{Hz}}$ )	Cap. @100 kHz Cd (pF)	Bandwidth GHz into 50 W	NEP @ 1550 nm pW/ $\sqrt{\text{Hz}}$	Bias Volt for these Specs V
C30616ECER	Ceramic	50	0.86	0.95	0.5	<0.02	0.35	>3.5	<0.02	5
C30637ECER	Ceramic	75	0.86	0.95	0.8	<0.02	0.4	3.5	<0.02	5
C30617ECER	Ceramic	100	0.86	0.95	1	<0.02	0.55	3.5	<0.02	5
C30617B	Ball lens	100	0.8	0.9	1	<0.02	0.8	3.5	<0.02	5
C30618ECER	Ceramic	350	0.86	0.95	2	0.02	4	0.8	0.02	5
C30618G	TO window	350	0.86	0.95	2	0.02	4	0.8	0.02	5

Test conditions: T = 22°C

# photodiodes



## Silicon Avalanche Photodiodes

- Hermetically Sealed Packages

### Si APD—Standard Types—400 nm to 1100 nm

#### Technical Specification

Part Number	Standard Package	Photo Sens. Diam. mm	Resp. 900 nm A/W	Dark Curr. Id (nA)	Spect. Noise Curr. Dens. In (pA/√Hz)	Cap. @100 kHz: Cd (pF)	Resp. Time tr (ns)	NEP @ 900 nm fW/√Hz	VOP Range V
C30817E	TO-5	0.8	75	50	0.5	2	2	7	275-425
C30872E	TO-8	3	45	100	0.5	10	2	11	275-425
C30902E	TO-18	0.5	77 (@ 830 nm)	15	0.23	1.6	0.05	3 (@ 830 nm)	180-250
C30902S	TO-18	0.5	128 (@ 830 nm)	15	0.11	1.6	0.05	0.86 (@ 830 nm)	180-250
C30916E	TO-5	1.5	70	100	0.5	3	2	8	275-425

Test conditions: T = 22°C

### Si APD—Arrays Quadrant and Linear—400 nm to 1100 nm

#### Technical Specification

Part Number	Standard Package	Photo Sens. Diam. mm	Resp. @830 nm A/W	Dark Curr. Id (nA)	Spect. Noise Curr. Dens. In (pA/√Hz)	Cap. @100 kHz: Cd (pF)	Resp. Time tr (ns)	NEP @ 830 nm fW/√Hz	VOP Range V
C30927E-01	TO-8	1.5 total	62 (@900 nm)	25	0.25	1	3	16 (@900 nm)	275-425
C30927E-02	TO-8	1.5 total	62 (@900 nm)	25	0.25	1	3	16 (@900 nm)	275-425
C30927E-03	TO-8	1.5 total	62 (@900 nm)	25	0.25	1	3	16 (@900 nm)	275-425
C30985E	Custom	0.3 pitch	31	1	0.1	0.5	2	3	250-425

Test conditions: T = 22°C

### Si APD—Low Cost, High Volume—400 nm to 1000 nm

#### Technical Specification

Part Number	Standard Package	Photo Sens. Diam. mm	Resp. @900 nm A/W	Dark Curr. Id (nA)	Spect. Noise Curr. Dens. In (pA/√Hz)	Cap. @100 kHz: Cd (pF)	Resp. Time tr (ns)	NEP @ 900 nm fW/√Hz	VOP Range V
C30724E	TO-18	0.5	9 (@ M=15)	25	0.1	1	5	11	120-200
C30724P	Plastic	0.5	9 (@ M=15)	25	0.1	1	5	11	120-200
C30737E	TO-18	0.5	47 (@ I-800 nm M=100)	20	0.3	2.5	0.3	6.4 (@ 800 nm M=100)	120-200

Test conditions: T = 22°C

### Si APD—TE-Cooled

#### Technical Specification

Part Number	Standard Package	Photo Sens. Diam. mm	Resp. @830 nm A/W	Dark Curr. Id (nA)	Spect. Noise Curr. Dens. In (pA/√Hz)	Cap. @100 kHz: Cd (pF)	Resp. Time tr (ns)	NEP @ 830 nm fW/√Hz	ADP VOP Range V
C30902S-TC	TO-66	0.5	128	2	0.04	1.6	0.5	0.3	160-250
C30902S-DTC	TO-66	0.5	128	1	0.02	1.6	0.5	0.16	160-250

Test conditions: T = 0°C for -TC and -20°C for -DTC

ADP VOP Range: temperature dependent



### Silicon Avalanche Photodiodes

- Low Cost, High Volume

### Si APD—NIR-Enhanced—400 nm to 1100 nm

#### Technical Specification

Part Number	Standard Package	Photo Sens. Diam. mm	Resp. @1060 nm A/W	Dark Curr. Id (nA)	Spect. Noise Curr. Dens. In (pA/√Hz)	Cap. @100 kHz Cd (pF)	Resp. Time tr (ns)	NEP @ 900 nm m=15 fW/√Hz	VOP Range V
C30954E	TO-5	0.8	36	50	0.5	2	2	14	275-425
C30955E	TO-5	1.5	34	100	0.5	3	2	15	275-425
C30956E	TO-8	3	25	100	0.5	10	2	20	275-425

Test conditions: T = 22°C

### Si APD—Lightpipe

#### Technical Specification

Part Number	Standard Package	Photo Sens. Diam. mm	Resp. @830 nm A/W	Dark Curr. Id (nA)	Spect. Noise Curr. Dens. In (pA/√Hz)	Cap. @100 kHz Cd (pF)	Resp. Time tr (ns)	NEP @ 830 nm fW/√Hz	VOP Range V
C30921E	TO-18	0.5	77	15	0.23	1.6	0.05	3	180-250
C30921S	TO-18	0.5	128	15	0.11	1.6	0.05	0.86	180-250

Test conditions: T = 22°C

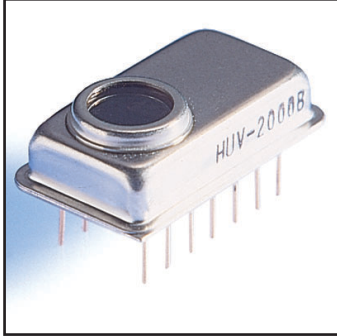
### Si APD—Radiation Detection

#### Technical Specification

Part Number	Photo Sens. Diam. mm	Resp. A/W	Dark Curr. Id (nA)	Spect. Noise Curr. Dens. In (pA/√Hz)	Cap. @100 kHz Cd (pF)	Resp. Time tr (ns)	NEP @ Peak fW/√Hz	VOP Range V
C30626	5x5	22 (@900 nm)	250	0.5	30	5	23 (@900 nm)	275-425
C30703	10x10	16 (@530 nm)	10	0.7	120	5	40 (@530 nm)	275-425

Test conditions: T = 22°C

# photodiodes



## Silicon PIN Photodiodes and Modules

- Broad Range of Photosensitive Areas
- Low Operating Voltage
- Hermetically Sealed Packages

### Si PINs—Window and Lightpipe Packages, Fast Response—400 nm to 1100 nm

#### Technical Specification

Part Number	Standard Package	Photo Sens. Diam. mm	Resp. @830 nm A/W	Dark Curr. Id nA	Spect. Noise Curr. Dens. In (fA/√Hz)	Cap. @100 kHz Cd (pF)	Resp. Time tr (ns)	NEP @ 830 nm fW/√Hz	Bias Volt for These Specs V
C30971E	TO-18	0.5	0.5	10	57	1.6	0.5	113	100
C30971EL	TO-18 Lightpipe	0.25	0.5	10	57	1.6	0.5	113	100

Test conditions: T = 22°C

### Si PINs—Large Area, Fast Response—400 nm to 1100 nm

#### Technical Specification

Part Number	Standard Package	Photo Sens. Diam. mm	Resp. @900 nm A/W	Dark Curr. Id nA	Spect. Noise Curr. Dens. In (fA/√Hz)	Cap. @100 kHz Cd (pF)	Resp. Time tr (ns)	NEP @ 900 nm fW/√Hz	Bias Volt for These Specs V
FFD-100	TO-5	2.5	0.58	2	25	8.5	3.5	44	15
FFD-200	TO-8	5.1	0.58	4	36	30	5	62	15

Test conditions: T = 22°C

### Si PINs—Quadrant—220 nm to 1100 nm

#### Technical Specification

Part Number	Standard Package	Photo Sens. Diam. total mm	Resp. @900 nm A/W	Dark Curr. Id nA	Spect. Noise Curr. Dens. In (fA/√Hz)	Cap. @100 kHz Cd (pF)	Resp. Time tr (ns)	NEP @ 900 nm fW/√Hz	Bias Volt for These Specs V
C30845E	TO-5	8	0.6	7	47	8	6	79	45
UV-140BQ-4	TO-5	1.3x1.3 (x4)	0.58	—	4	34	<1 μsec	7	0
YAG-444-4A	Custom	11.4	0.4 @1.06 μm	40	118	9	25	295	180

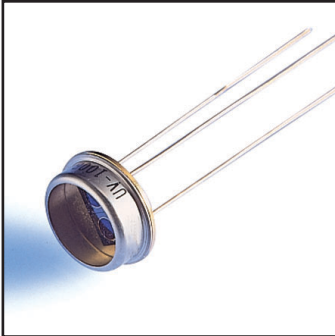
Test conditions: T = 22°C

### Si PINs—Standard N-Type—400 nm to 1100 nm

#### Technical Specification

Part Number	Standard Package	Photo Sens. Diam. mm	Resp. @900 nm A/W	Dark Curr. Id nA	Spect. Noise Curr. Dens. In (fA/√Hz)	Cap. @100 kHz Cd (pF)	Resp. Time tr (ns)	NEP @ 900 nm fW/√Hz	Bias Volt for These Specs V
C30807E	TO-18	1	0.6	1	18	2.5	3	30	45
C30808E	TO-5	2.5	0.6	3	31	6	5	52	45
C30822E	TO-8	5	0.6	5	40	17	7	67	45
C30809E	TO-8	8	0.6	7	47	35	10	79	45
C30810E	Custom	11.4	0.6	30	98	70	12	163	45

Test conditions: T = 22°C



Silicon PINs—UV Enhanced

Si PINs—UV Enhanced, Low Noise—220 nm to 1100 nm

Technical Specification

Part Number	Standard Package	Photo Sens. Diam. mm	Resp. A/W		Shunt Resis. Rd MW	Spect. Noise Curr. Dens.: In (fW/√Hz)	Cap. @100 kHz: Cd (pF)	NEP @ 900 nm fA/√Hz
			@250 nm	@900 nm				
UV-040BQ	TO-8	1	0.12	0.58	2000	3	25	5
UV-100BQ	TO-8	2.5	0.12	0.58	1000	4	120	7
UV-215BQ	TO-8	5.4	0.12	0.58	250	8	450	25
UV-245BQ	TO-8	4.4x4.7	0.12	0.58	375	7	375	20
UV-140BQ-2	TO-5	2.5x1.3 (x2)	0.12	0.58	1000	4	68	7
UV-140BQ-4	TO-5	1.3x1.3 (x4)	0.12	0.58	1000	4	34	7

Test conditions: T = 22°C

Si PIN Modules—Low Bandwidth—1 kHz to 50 kHz

Technical Specification

Part Number	Standard Package	Photo Sens. Diam. mm	Resp. MV/W		Spect. Noise Volt. Dens. Vn (μV/√Hz)	NEP @ 900 nm pW/√Hz	Bandwidth kHz into 50 W	Bias Volt for These Specs V
			@250 nm	@900 nm				
HUV-2000B	Custom	5.4	24	116	2.5	0.02	2	0
HUV-1100BG	TO-5	2.5	24	116	20	0.17	20	0

Test conditions: T = 22°C

Si PIN Modules—High Bandwidth—40 MHz to 100 MHz

Technical Specification

Part Number	PIN or APD Used	Standard Package	Photo Sens. Diam. mm	Resp. kV/W @900 nm	Lin. Volt. Out Swing (V)	Spect. Noise Volt. Dens. Vn (nV/√Hz)	NEP @900 nm pW/√Hz	Bandwidth MHz (3 dB, into 50 W)	Photo. Diode Bias
									Volt V
C30608E	C30971	TO-5	0.5	32 (@ 830 nm)	0.7	60	1.8 (@ 830 nm)	50	12
C30659-1550-R2A	C30662	TO-8	0.2	340 (@ 1550 nm)	2	35	0.103 (@ 1550 nm)	50	40-90
C30950E	C30817	TO-8	0.8	560	0.7	20	.036	50	275-425
C30919E	C30817	Custom	0.8	1000	0.7	25	.025	40	275-425

Test conditions: T = 22°C

# photodiodes



## Silicon PN Photodiodes

### Table Key

$I_{SC}$	Short-Circuit Current H=100 fc, 2850 K
$TC I_{SC}$	$I_{SC}$ Temperature Coefficient, 2850 K
$V_{OC}$	Open-Circuit Voltage H=100 fc, 2850 K
$TC V_{OC}$	$V_{OC}$ Temperature Coefficient, 2850 K
$I_D$	Dark Current H=0, $V_R=10, 50, 100$ V
$R_{SH}$	Shunt Resistance H=0, $V=10$ mV
$C_J$	Junction Capacitance H=0, $V=0, 3, 15$ V
$R_E$	Responsivity 880-940 nm
$S_R$	Sensitivity @ Peak
$\lambda_{range}$	Spectral Application Range
$\lambda_p$	Spectral Response @ Peak
$V_{BR}$	Breakdown Voltage

### Table Key

$I_{SC}$	Short-Circuit Current H=1000 lux, 2850 K
$TC I_{SC}$	$I_{SC}$ Temperature Coefficient H=1000 lux, 2850 K
$I_D$	Dark Current H=0, $V_R=100$ mV
$TC I_D$	$I_D$ Temperature Coefficient H=0, $V_R=100$ mV
$R_{SH}$	Shunt Resistance H=0, $V_R=10$ mV
$C_J$	Junction Capacitance H=0, $V=0$ V, 1 MHz
$S_R$	Sensitivity @ 400 nm
$R_E$	Responsivity 400 nm, 0.18 A/W
$t_R/t_F$	Rise/Fall Time @ 1 K $\Omega$ load $V_R=1$ V, 830 nm
$V_{OC}$	Open-Circuit Voltage H=1000 lux, 2850 K
$TC V_{OC}$	$V_{OC}$ Temperature Coefficient H=1000 lux, 2850 K

## Silicon PN—VTP Series

### Technical Specification

Part Number	$I_{SC}$ $\mu A$	$TC I_{SC}$ %/C	$V_{OC}$ mV	$TC V_{OC}$ mV/C	$I_D$ nA max.	$R_{SH}$ G $\Omega$	$C_J$ pF	$R_E$ A/(W/cm <sup>2</sup> )	$S_R$ A/W	$\lambda_{range}$ nm	$\lambda_p$ nm	$V_{BR}$ V
VTP100	55	0.24	300	-2	30	0.25	50 max.	0.047	0.5	725-1150	925	140
VTP100C	70	0.2	350	-2	30	0.25	50 max.	0.05	0.55	400-1150	925	140
VTP1012	17	0.2	350	-2	7	0.5	6 max.	0.011	0.55	400-1150	925	140
VTP1112	90	0.2	350	-2	7	0.5	6 max.	0.033	0.55	400-1150	925	140
VTP1188S	200	0.2	330	-2	30	67	180	—	0.55	400-1100	925	—
VTP1232	100 min.	0.2	420 min.	-2	25	—	180 max.	0.076	0.6	400-1100	920	—
VTP3310LA	36	0.2	350	-2	35	10	25 max.	0.015	0.55	400-1150	925	140
VTP3410LA	22	0.26	350	-2	35	10	25 max.	0.013	0.55	700-1150	925	140
VTP4085	200	0.2	330	-2	100	2	350	—	0.55	400-1100	925	—
VTP4085S	200	0.2	330	-2	50	4	350	—	0.55	400-1100	925	—
VTP5050	70	0.2	350	-2	18	0.25	24 max.	0.05	0.55	400-1150	925	140
VTP6060	200	0.2	350	-2	35	100	60 max.	0.14	0.55	400-1150	925	140
VTP7110	9	0.2	350	-2	35	7	25 max.	0.015	0.55	400-1150	925	140
VTP7210	7	0.26	350	-2	35	7	25 max.	0.015	0.55	700-1150	925	140
VTP7840	70	0.2	325	-2	20	0.25	40 max.	—	0.55	725-1150	925 1@10 mA	—
VTP8350	80	0.2	350	-2	30	100	50 max.	0.06	0.55	400-1150	925	140
VTP8440	55	0.2	350	-2	15	0.5	15 max.	0.025	0.55	400-1150	925	140
VTP8551	70	0.2	350	-2	30	0.15	50 max.	0.05	0.55	400-1150	925	140
VTP8651	55	0.24	300	-2	30	0.15	50 max.	0.045	0.5	725-1150	925	140
VTP9412	17	0.2	350	-2	7	0.4	6 max.	0.011	0.55	400-1150	925	140

Electro-optical characteristics @ 25°C

## Silicon PN—VTS Series

### Technical Specification

Part Number	$I_{SC}$ mA	$TC I_{SC}$ %/C	$I_D$ nA	$TC I_D$ %/C	$R_{SH}$ M $\Omega$	$C_J$ nF	$S_R$ A/W	$R_E$ A/(W/cm <sup>2</sup> )	$t_R/t_F$ $\mu$ sec	$V_{OC}$ V	$TC V_{OC}$ mV/C
VTS_80	3	0.2	200	+11	0.3	7.5	0.2	0.7	13	0.45	-2.6
VTS_81	1.5	0.2	100	+11	0.6	3.5	0.2	0.34	6.4	0.45	-2.6
VTS_82	0.69	0.2	50	+11	1.2	1.75	0.2	0.16	3.4	0.45	-2.6
VTS_83	0.64	0.2	50	+11	1.2	1.75	0.2	0.15	3.4	0.45	-2.6
VTS_84	0.33	0.2	40	+11	1.5	1	0.2	0.07	1.8	0.45	-2.6
VTS_85	0.16	0.2	20	+11	3	0.5	0.2	0.04	1.2	0.45	-2.6
VTS_86	0.080	0.2	10	+11	6	0.25	0.2	0.02	0.75	0.45	-2.6

Electro-optical characteristics @ 25°C

**Table Key**

I <sub>SC</sub>	Short-Circuit Current 940 nm, H=0.5 mW/cm <sup>2</sup> (VTD205, VTD206) H=5 mW/cm <sup>2</sup> , 2850 K (VTD31AA, VTB Series) 100 Lux, 2850 K (VTD34, VTD205K) 100 Lux, 2856 K (VTD206K)
TC I <sub>SC</sub>	I <sub>SC</sub> Temperature Coefficient 2850 K (VTD31AA, VTD34, VTD34F, VTB Series) 2856 K (VTD205, VTD205K, VTD206, VTD206K)
V <sub>OC</sub>	Open-Circuit Voltage 940 nm, H=0.5 mW/cm <sup>2</sup> (VTD 205, VTD205K, VTD206, VTD206K) 2850 K (VTD31AA, VTD34, VTD34F)
TC V <sub>OC</sub>	V <sub>OC</sub> Temperature Coefficient 2850 K (VTD31AA, VTD34, VTD34F, VTB Series) 2856 K (VTD205, VTD205K, VTD206, VTD206K)
I <sub>D</sub>	Dark Current H=0, V <sub>R</sub> =2 V (VTB Series) H=0, V <sub>R</sub> =10 V (VTD34, VTD34F, VTD205, VTD205K, VTD206, VTD206K, VTB100) H=0, V <sub>R</sub> =15 V (VTD31AA)
R <sub>SH</sub>	Shunt Resistance H=0, V=10 mV (VTB Series)
TC R <sub>SH</sub>	R <sub>SH</sub> Temperature Coefficient H=0, V=10 mV (VTB Series)
C <sub>J</sub>	Junction Capacitance H=0, V <sub>R</sub> =0 V, 1 MHz (VTD205, VTD205K, VTD206, VTD206K) @ 1 MHz, V <sub>R</sub> =0 V (VTD34, VTD34F)
t <sub>R</sub> /t <sub>F</sub>	Rise/Fall Time @ RL=50 Ω, V <sub>R</sub> =5 V, 850 nm (VTD205, VTD205K, VTD206, VTD206K) @ RL=1 kΩ Lead, V <sub>R</sub> =10 V, 833 nm (VTD34, VTD34F)
S <sub>R</sub>	Sensitivity @ Peak 365 nm (VTB Series)
λ <sub>range</sub>	Spectral Application Range
λ <sub>p</sub>	Spectral Response @ Peak
V <sub>BR</sub>	Breakdown Voltage

**Silicon PN—VTD Series**

**Technical Specification**

Part Number	I <sub>SC</sub> μA	TC I <sub>SC</sub> %/°C	V <sub>OC</sub> mV	TC V <sub>OC</sub> mV/°C	I <sub>D</sub> nA max.	C <sub>J</sub> pF	t <sub>R</sub> /t <sub>F</sub> nsec	S <sub>R</sub> A/W	λ <sub>range</sub> nm	λ <sub>p</sub> nm	V <sub>BR</sub> V
VTD31AA	150-225	0.2	350	-2	50	500 max.	—	0.55	400-1150	860	5 min.
VTD34	70	0.2	365	-2	30	60	50	0.6	400-1100	900	40 min.
VTD34F	—	—	350	-2	30	60	50	0.6	725-1150	940	40 min.
VTD205	25	0.2	350	-2.6	30.	72	20	0.6	800-1100	925	50
VTD205K	80	0.2	365	-2.6	30	72	20	0.6	400-1100	925	50
VTD206	25	0.2	350	-2.6	30	72	20	0.6	750-1100	925	50
VTD206K	80	0.2	365	-2.6	30	72	20	0.6	400-1100	925	50

Electro-optical characteristics @ 25°C

**Silicon PN—VTB Series**

**Technical Specification**

Part Number	I <sub>SC</sub> μA	TC I <sub>SC</sub> %/°C	V <sub>OC</sub> mV	TC V <sub>OC</sub> mV/°C	I <sub>D</sub> pA max.	R <sub>SH</sub> GΩ	TC R <sub>SH</sub> %/°C	C <sub>J</sub> nF	S <sub>R</sub> A/W	λ <sub>range</sub> nm	λ <sub>p</sub> nm	V <sub>BR</sub> V
VTB100	65	0.12	490	-2	500	1.4	-8	2 max.	0.1	320-1100	920	40
VTB1012	13	0.12	490	-2	100	0.25	-8	0.31	0.09	320-1100	920	40
VTB1012B	1.3	0.02	420	-2	100	0.25	-8	0.31	—	330-720	580	40
VTB1013	13	0.12	490	-2	20	7	-8	0.31	0.09	320-1100	920	40
VTB1013B	1.3	0.02	420	-2	20	7	-8	0.31	—	330-720	580	40
VTB1112	60	0.12	490	-2	100	0.25	-8	0.31	0.19	320-1100	920	40
VTB1112B	6	0.02	420	-2	100	0.25	-8	0.31	—	330-720	580	40
VTB1113	60	0.12	490	-2	20	7	-8	0.31	0.19	320-1100	920	40
VTB1113B	6	0.02	420	-2	20	7	-8	0.31	—	330-720	580	40
VTB4051	200	0.12	490	-2	250	0.56	-8	3	0.1	320-1100	920	40
VTB5051	130	0.12	490	-2	250	0.56	-8	3	0.1	320-1100	920	40
VTB5051B	13	0.02	420	-2	250	0.56	-8	3	—	330-720	580	40
VTB5051J	130	0.12	490	-2	250	0.56	-8	3	0.1	320-1100	920	40
VTB5051UV	130	0.12	490	-2	250	0.56	-8	3	0.1	200-1100	920	40
VTB5051UVJ	130	0.12	490	-2	250	0.56	-8	3	0.1	200-1100	920	40
VTB6061	350	0.12	490	-2	2000	0.1	-8	8	0.1	320-1100	920	40
VTB6061B	35	0.02	420	-2	2000	0.1	-8	8	—	330-720	580	40
VTB6061CIE	12	—	—	—	2000	0.1	-8	8	—	475-650	555	—
VTB6061J	350	0.12	490	-2	2000	0.1	-8	8	0.1	320-1100	920	40
VTB6061UV	350	0.12	490	-2	2000	0.1	-8	8	0.1	200-1100	920	40
VTB6061UVJ	350	0.12	490	-2	2000	0.1	-8	8	0.1	200-1100	920	40
VTB8341	60	0.12	490	-2	100	1.4	-8	1	0.1	320-1100	920	40
VTB8440	45	0.12	490	-2	2000	0.07	-8	1	0.1	320-1100	920	40
VTB8440B	5	0.02	420	-2	2000	0.07	-8	1	—	330-720	580	40
VTB8441	45	0.12	490	-2	100	1.4	-8	1	0.1	320-1100	920	40
VTB8441B	5	0.02	420	-2	100	1.4	-8	1	—	330-720	580	40
VTB9412	13	0.12	490	-2	100	0.25	-8	0.31	0.09	320-1100	920	40
VTB9412B	1.3	0.02	420	-2	100	0.25	-8	0.31	—	330-720	580	40
VTB9413	13	0.12	490	-2	20	7	-8	0.31	0.09	320-1100	920	40
VTB9413B	1.3	0.02	420	-2	20	7	-8	0.31	—	330-720	580	40