VTB Process Photodiodes

VTB PROCESS
BLUE ENHANCED, ULTRA HIGH DARK RESISTANCE

FEATURES

- *Enhanced UV to IR spectral range*
- *Integral IR rejection filters available*
- *Response @ 220 nm, 0.06 A/W, typical with UV window*
- *Response @ 365 nm, 0.14 A/W typical*
- *High open circuit voltage @ low light levels*
- *1 to 2% linearity over 7 to 9 decades*
- *Very low dark current & high shunt resistance*

PRODUCT DESCRIPTION

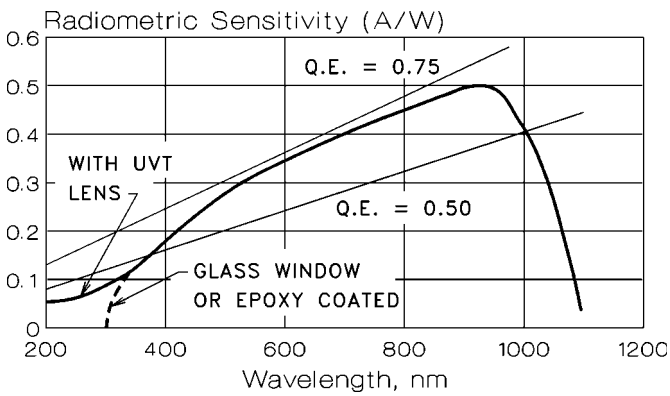
This series of P on N silicon planar photodiodes have been designed to maximize their response through the visible part of the spectrum. Those units with UV transmitting windows also exhibit excellent response in the UV region and are characterized at 220 nm.

"B" series devices have a built-in infrared rejection filter for those applications where a detector is needed that approximates the human eye. Typical transmission of wavelengths greater than 750 nm is less than 3% when measured with an incandescent source operating at 2850 K.

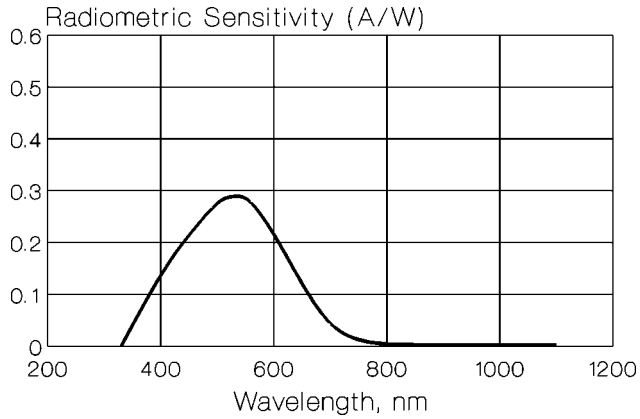
Diodes made with the VTB process are primarily intended for use in the photovoltaic mode but may be used with a small reverse bias. All photodiodes in this series exhibit very high shunt resistance. This characteristic leads to very low offsets when the diodes are used in high gain transimpedance op-amp circuits.

TYPICAL CHARACTERISTIC CURVES @ 25°C (UNLESS OTHERWISE NOTED)

Absolute Spectral Response

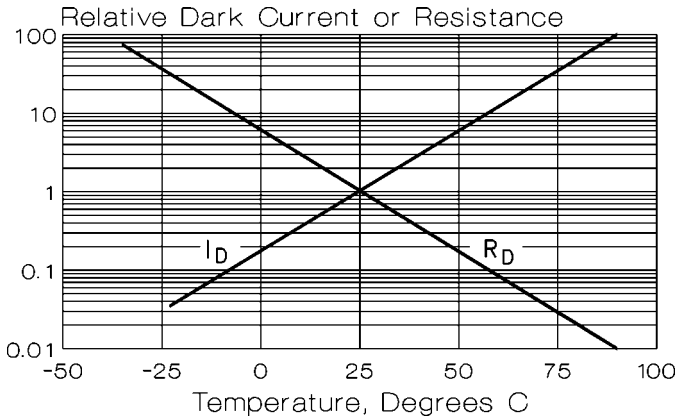


Absolute Spectral Response "B" Series (Filtered)

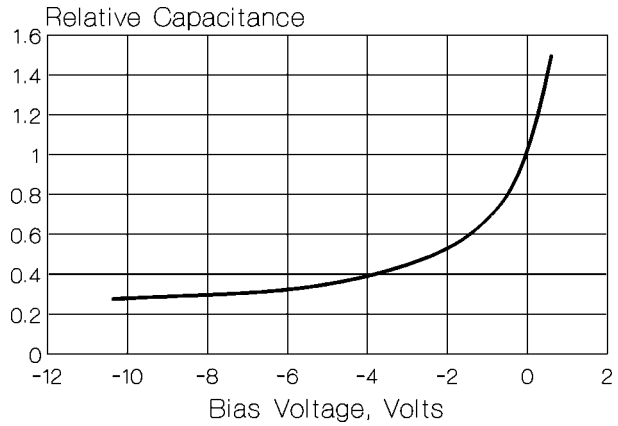


VTB Process Photodiodes

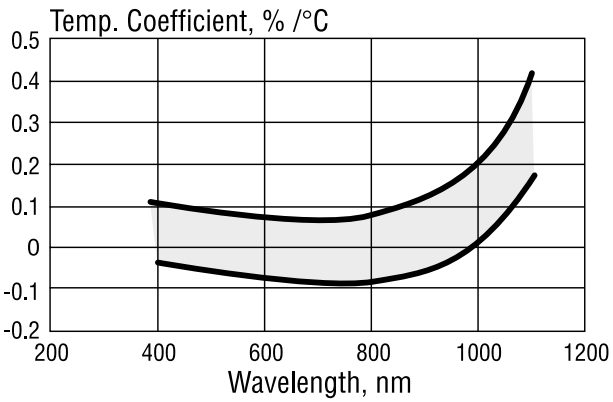
Relative Dark Current or Resistance vs. Temperature (Refered To 25°C)



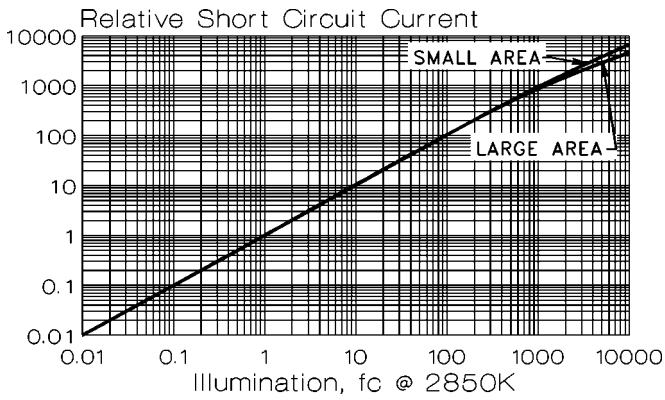
Relative Junction Capacitance vs. Voltage (Reffered To Zero Bias)



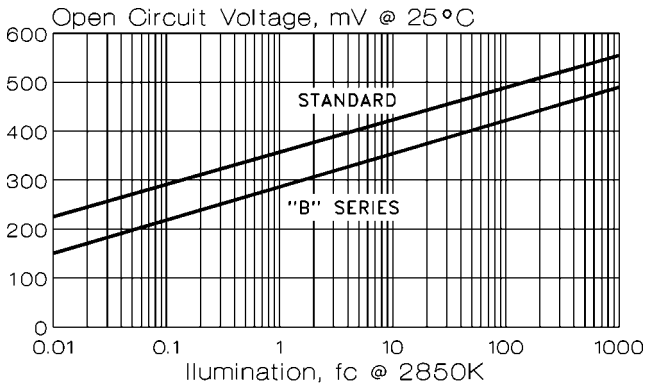
Temperature Coefficient of Light Current vs. Wavelength



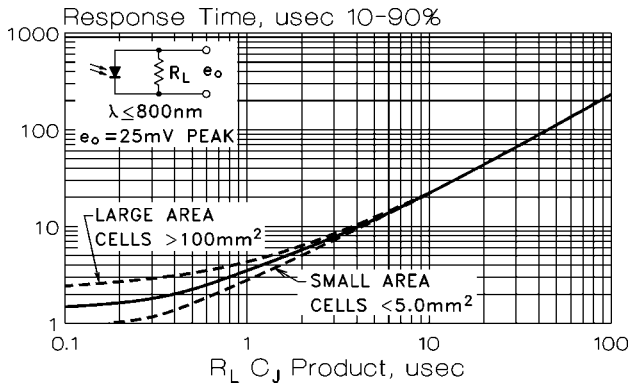
Relative Short Circuit Current vs. Illumination



Open Circuit Voltage vs Illumination

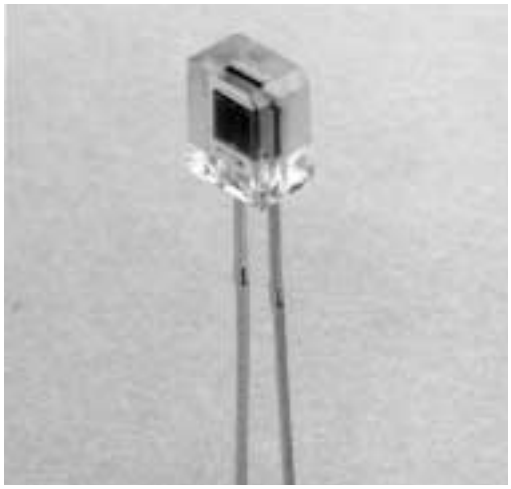


Rise/fall Times - Non Standard

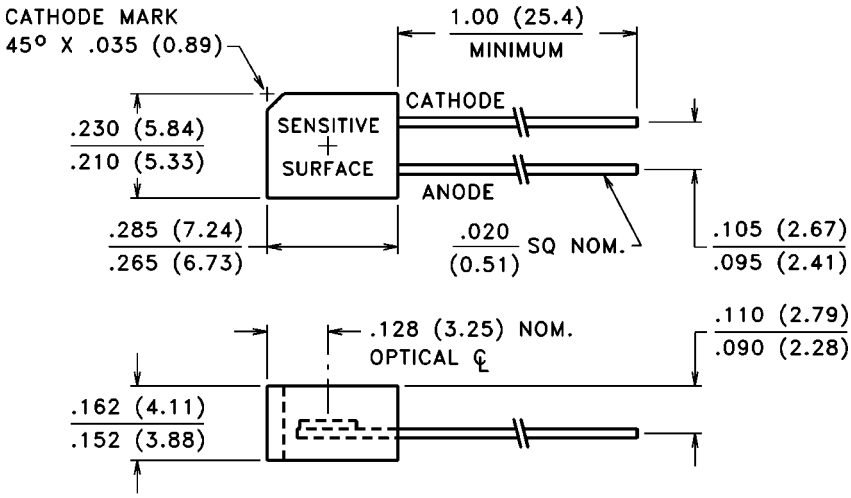


VTB Process Photodiodes

VTB100



PACKAGE DIMENSIONS inch (mm)



CASE 52 FLAT SIDELOOKER
CHIP ACTIVE AREA: .012 in^2 (7.45 mm^2)

PRODUCT DESCRIPTION

Planar silicon photodiode in a clear molded plastic sidelooker package suitable for assembly onto printed circuit boards. These diodes have very high shunt resistance and have good blue response.

ABSOLUTE MAXIMUM RATINGS

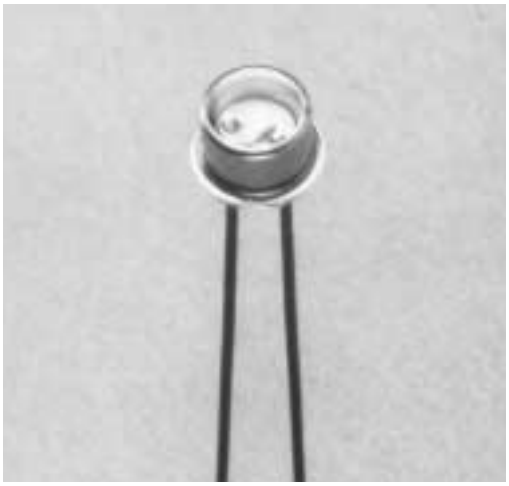
Storage Temperature:	-40°C to 100°C
Operating Temperature:	-40°C to 100°C

ELECTRO-OPTICAL CHARACTERISTICS @ 25°C (See also VTB curves, pages 21-22)

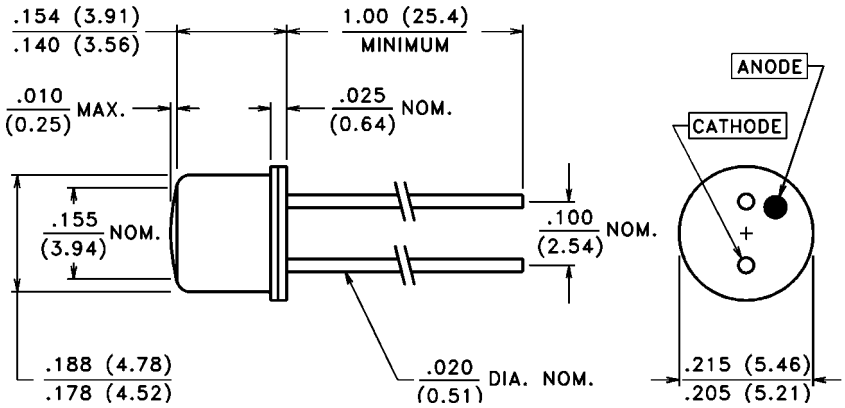
SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VTB100			UNITS
			Min.	Typ.	Max.	
I_{SC}	Short Circuit Current	H = 100 fc, 2850 K	50	65		µA
TC I_{SC}	I_{SC} Temperature Coefficient	2850 K		.12	.23	%/°C
V_{OC}	Open Circuit Voltage	H = 100 fc, 2850 K		490		mV
TC V_{OC}	V_{OC} Temperature Coefficient	2850 K		-2.0		mV/°C
I_D	Dark Current	H = 0, V_R = 10 V		50	500	pA
R_{SH}	Shunt Resistance	H = 0, V = 10 mV		1.4		GΩ
TC R_{SH}	R_{SH} Temperature Coefficient	H = 0, V = 10 mV		-8.0		%/°C
C_J	Junction Capacitance	H = 0, V = 0			2.0	nF
S_R	Sensitivity	365 nm		.1		A/W
λ_{range}	Spectral Application Range		320		1100	nm
λ_p	Spectral Response - Peak			920		nm
V_{BR}	Breakdown Voltage		30	40		V
$\theta_{1/2}$	Angular Resp. - 50% Resp. Pt.			±70		Degrees
NEP	Noise Equivalent Power			2.6×10^{-14} (Typ.)		$W/\sqrt{Hz}$
D*	Specific Detectivity			1.05×10^{13} (Typ.)		$cm\sqrt{Hz}/W$

VTB Process Photodiodes

VTB1012, 1013



PACKAGE DIMENSIONS inch (mm)



CASE 17 TO-46 HERMETIC
CHIP ACTIVE AREA: .0025 in^2 (1.60 mm^2)

PRODUCT DESCRIPTION

Small area planar silicon photodiode in a "flat" window, dual lead TO-46 package. Cathode is common to the case. These diodes have very high shunt resistance and have good blue response.

ABSOLUTE MAXIMUM RATINGS

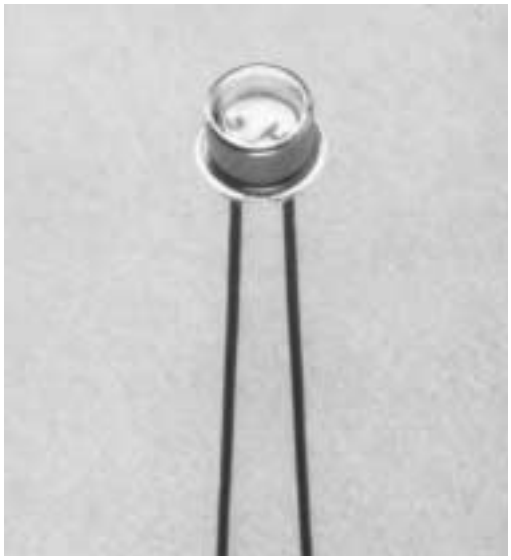
Storage Temperature:	-40°C to 110°C
Operating Temperature:	-40°C to 110°C

ELECTRO-OPTICAL CHARACTERISTICS @ 25°C (See also VTB curves, pages 21-22)

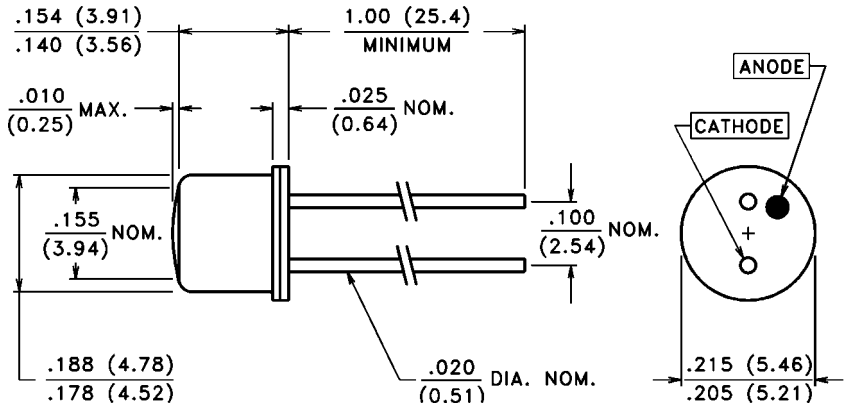
SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VTB1012			VTB1013			UNITS
			Min.	Typ.	Max.	Min.	Typ.	Max.	
I_{SC}	Short Circuit Current	H = 100 fc, 2850 K	8	13		8	13		µA
TC I_{SC}	I_{SC} Temperature Coefficient	2850 K		.12	.23		.12	.23	%/°C
V_{OC}	Open Circuit Voltage	H = 100 fc, 2850 K		490			490		mV
TC V_{OC}	V_{OC} Temperature Coefficient	2850 K		-2.0			-2.0		mV/°C
I_D	Dark Current	H = 0, VR = 2.0 V			100			20	pA
R_{SH}	Shunt Resistance	H = 0, V = 10 mV		.25			7.0		GΩ
TC R_{SH}	R_{SH} Temperature Coefficient	H = O, V = 10 mV		-8.0			-8.0		%/°C
C_J	Junction Capacitance	H = 0, V = 0		.31			.31		nF
S_R	Sensitivity	365 nm		.09			.09		A/W
λrange	Spectral Application Range		320		1100	320		1100	nm
λp	Spectral Response - Peak			920			920		nm
V_{BR}	Breakdown Voltage		2	40		2	40		V
θ1/2	Angular Resp. - 50% Resp. Pt.			±35			±35		Degrees
NEP	Noise Equivalent Power		3.0 x 10^{-14} (Typ.)			5.9 x 10^{-15} (Typ.)			$W/\sqrt{Hz}$
D*	Specific Detectivity		4.2 x 10^{12} (Typ.)			2.1 x 10^{13} (Typ.)			$cm\sqrt{Hz/W}$

VTB Process Photodiodes

VTB1012B, 1013B



PACKAGE DIMENSIONS inch (mm)



CASE 17 TO-46 HERMETIC
CHIP ACTIVE AREA: .0025 in^2 (1.60 mm^2)

PRODUCT DESCRIPTION

Small area planar silicon photodiode in a "flat" window, dual lead TO-46 package. The package incorporates an infrared rejection filter. Cathode is common to the case. These diodes have very high shunt resistance and have good blue response.

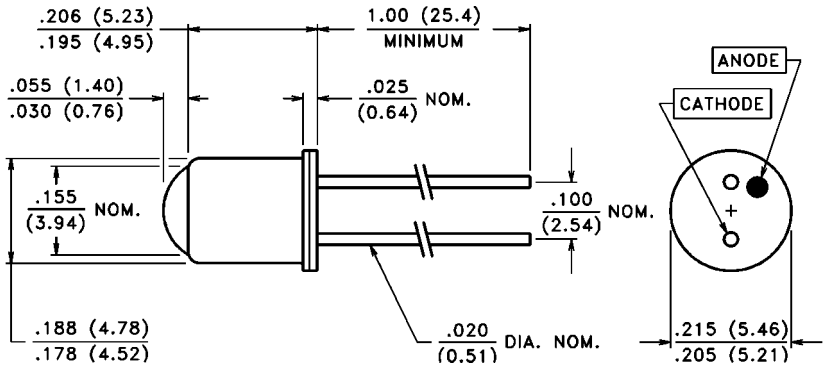
ABSOLUTE MAXIMUM RATINGS

Storage Temperature:	-40°C to 110°C
Operating Temperature:	-40°C to 110°C

ELECTRO-OPTICAL CHARACTERISTICS @ 25°C (See also VTB curves, pages 21-22)

SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VTB1012B			VTB1013B			UNITS
			Min.	Typ.	Max.	Min.	Typ.	Max.	
I_{SC}	Short Circuit Current	H = 100 fc, 2850 K	0.8	1.3		0.8	1.3		µA
TC I_{SC}	I_{SC} Temperature Coefficient	2850 K		.02	.08		.02	.08	%/°C
V_{OC}	Open Circuit Voltage	H = 100 fc, 2850 K		420			420		mV
TC V_{OC}	V_{OC} Temperature Coefficient	2850 K		-2.0			-2.0		mV/°C
I_D	Dark Current	H = 0, VR = 2.0 V			100			20	pA
R_{SH}	Shunt Resistance	H = 0, V = 10 mV		.25			7.0		GΩ
TC R_{SH}	R_{SH} Temperature Coefficient	H = 0, V = 10 mV		-8.0			-8.0		%/°C
C_J	Junction Capacitance	H = 0, V = 0		.31			.31		nF
λ_{range}	Spectral Application Range		330		720	330		720	nm
λ_p	Spectral Response - Peak			580			580		nm
V_{BR}	Breakdown Voltage		2	40		2	40		V
$\theta_{1/2}$	Angular Resp. - 50% Resp. Pt.			±35			±35		Degrees
NEP	Noise Equivalent Power		5.3 x 10^{-14} (Typ.)			1.1 x 10^{-14} (Typ.)			$W/\sqrt{Hz}$
D*	Specific Detectivity		2.4 x 10^{12} (Typ.)			1.2 x 10^{13} (Typ.)			$cm\sqrt{Hz}/W$

PACKAGE DIMENSIONS inch (mm)



CASE 19 TO-46 LENSED HERMETIC
CHIP ACTIVE AREA: .0025 in^2 (1.60 mm^2)

PRODUCT DESCRIPTION

Small area planar silicon photodiode in a lensed, dual lead TO-46 package. Cathode is common to the case. These diodes have very high shunt resistance and have good blue response.

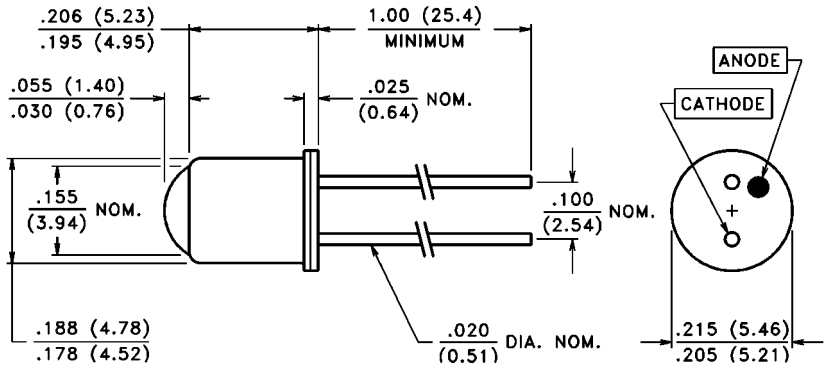
ABSOLUTE MAXIMUM RATINGS

Storage Temperature:	-40°C to 110°C
Operating Temperature:	-40°C to 110°C

ELECTRO-OPTICAL CHARACTERISTICS @ 25°C (See also VTB curves, pages 21-22)

SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VTB1112			VTB1113			UNITS
			Min.	Typ.	Max.	Min.	Typ.	Max.	
I_{SC}	Short Circuit Current	H = 100 fc, 2850 K	30	60		30	60		µA
TC I_{SC}	I_{SC} Temperature Coefficient	2850 K		.12	.23		.12	.23	%/°C
V_{OC}	Open Circuit Voltage	H = 100 fc, 2850 K		490			490		mV
TC V_{OC}	V_{OC} Temperature Coefficient	2850 K		-2.0			-2.0		mV/°C
I_D	Dark Current	H = 0, VR = 2.0 V			100			20	pA
R_{SH}	Shunt Resistance	H = 0, V = 10 mV		.25			7.0		GΩ
TC R_{SH}	R_{SH} Temperature Coefficient	H = 0, V = 10 mV		-8.0			-8.0		%/°C
C_J	Junction Capacitance	H = 0, V = 0		.31			.31		nF
S_R	Sensitivity	365 nm		.19			.19		A/W
λ_{range}	Spectral Application Range		320		1100	320		1100	nm
λ_p	Spectral Response - Peak			920			920		nm
V_{BR}	Breakdown Voltage		2	40		2	40		V
$\theta_{1/2}$	Angular Resp. - 50% Resp. Pt.			±15			±15		Degrees
NEP	Noise Equivalent Power		3.0 x 10^{-14} (Typ.)			5.9 x 10^{-15} (Typ.)			$W/\sqrt{Hz}$
D*	Specific Detectivity		4.2 x 10^{12} (Typ.)			2.1 x 10^{13} (Typ.)			$cm\sqrt{Hz}/W$

PACKAGE DIMENSIONS inch (mm)



CASE 19 TO-46 LENSED HERMETIC
CHIP ACTIVE AREA: .0025 in^2 (1.60 mm^2)

PRODUCT DESCRIPTION

Small area planar silicon photodiode in a lensed, dual lead TO-46 package. The package incorporates an infrared rejection filter. Cathode is common to the case. These diodes have very high shunt resistance and have good blue response.

ABSOLUTE MAXIMUM RATINGS

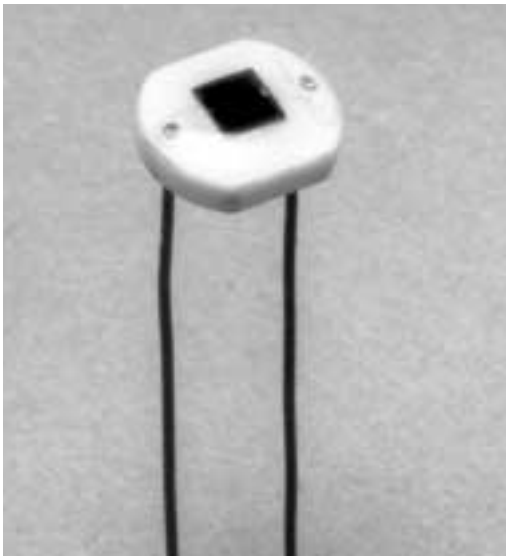
Storage Temperature:	-40°C to 110°C
Operating Temperature:	-40°C to 110°C

ELECTRO-OPTICAL CHARACTERISTICS @ 25°C (See also VTB curves, pages 21-22)

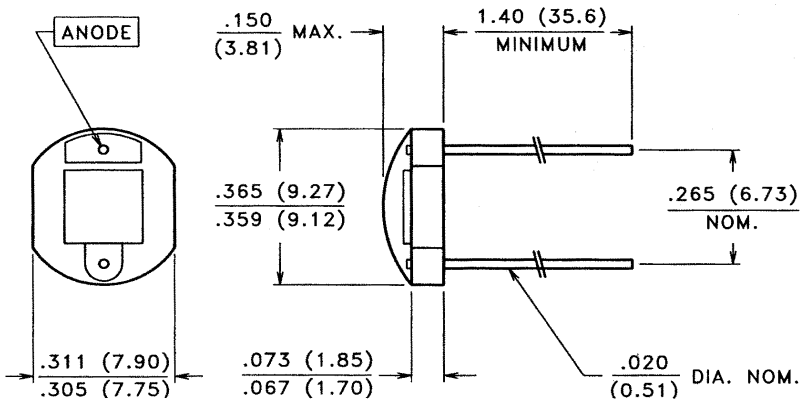
SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VTB1112B			VTB1113B			UNITS
			Min.	Typ.	Max.	Min.	Typ.	Max.	
I_{SC}	Short Circuit Current	H = 100 fc, 2850 K	3.0	6.0		3.0	6.0		µA
TC I_{SC}	I_{SC} Temperature Coefficient	2850 K		.02	.08		.02	.08	%/°C
V_{OC}	Open Circuit Voltage	H = 100 fc, 2850 K		420			420		mV
TC V_{OC}	V_{OC} Temperature Coefficient	2850 K		-2.0			-2.0		mV/°C
I_D	Dark Current	H = 0, VR = 2.0 V			100			20	pA
R_{SH}	Shunt Resistance	H = 0, V = 10 mV		.25			7.0		GΩ
TC R_{SH}	R_{SH} Temperature Coefficient	H = 0, V = 10 mV		-8.0			-8.0		%/°C
C_J	Junction Capacitance	H = 0, V = 0		.31			.31		nF
λ_{range}	Spectral Application Range		330		720	330		720	nm
λ_p	Spectral Response - Peak			580			580		nm
V_{BR}	Breakdown Voltage		2	40		2	40		V
$\theta_{1/2}$	Angular Resp. - 50% Resp. Pt.			±15			±15		Degrees
NEP	Noise Equivalent Power		5.3 x 10^{-14} (Typ.)			1.1 x 10^{-14} (Typ.)			$W/\sqrt{Hz}$
D*	Specific Detectivity		2.4 x 10^{12} (Typ.)			1.2 x 10^{13} (Typ.)			$cm\sqrt{Hz}/W$

VTB Process Photodiodes

VTB4051



PACKAGE DIMENSIONS inch (mm)



CASE 13 CERAMIC
CHIP ACTIVE AREA: .023 in^2 (14.8 mm^2)

PRODUCT DESCRIPTION

Planar silicon photodiode mounted on a two lead ceramic substrate and coated with a layer of clear epoxy. These diodes have very high shunt resistance and have good blue response.

ABSOLUTE MAXIMUM RATINGS

Storage Temperature:	-20°C to 75°C
Operating Temperature:	-20°C to 75°C

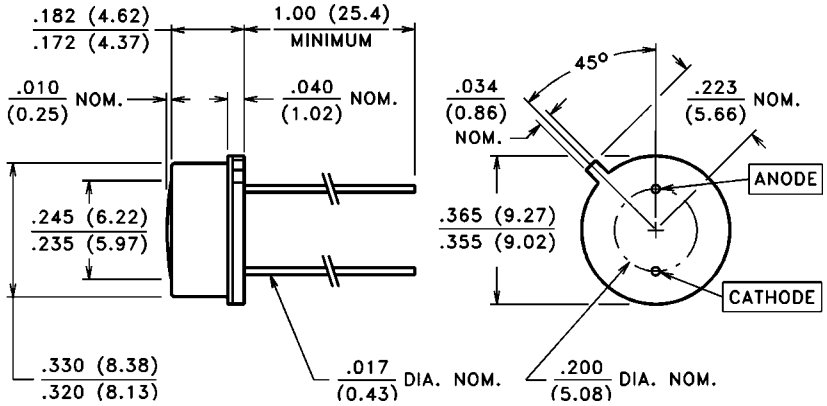
ELECTRO-OPTICAL CHARACTERISTICS @ 25°C (See also VTB curves, pages 21-22)

SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VTB4051			UNITS
			Min.	Typ.	Max.	
I_{SC}	Short Circuit Current	H = 100 fc, 2850 K	100	200		µA
TC I_{SC}	I_{SC} Temperature Coefficient	2850 K		.12	.23	%/°C
V_{OC}	Open Circuit Voltage	H = 100 fc, 2850 K		490		mV
TC V_{OC}	V_{OC} Temperature Coefficient	2850 K		-2.0		mV/°C
I_D	Dark Current	H = 0, VR = 2.0 V			250	pA
R_{SH}	Shunt Resistance	H = 0, V = 10 mV		.56		GΩ
TC R_{SH}	R_{SH} Temperature Coefficient	H = 0, V = 10 mV		-8.0		%/°C
C_J	Junction Capacitance	H = 0, V = 0		3.0		nF
S_R	Sensitivity	365 nm		.10		A/W
λ_{range}	Spectral Application Range		320		1100	nm
λ_p	Spectral Response - Peak			920		nm
V_{BR}	Breakdown Voltage		2	40		V
$\theta_{1/2}$	Angular Resp. - 50% Resp. Pt.			±60		Degrees
NEP	Noise Equivalent Power		2.1 x 10^{-14} (Typ.)			$W/\sqrt{Hz}$
D*	Specific Detectivity		1.8 x 10^{13} (Typ.)			$cm\sqrt{Hz}/W$

VTB Process Photodiodes

VTB5051

PACKAGE DIMENSIONS inch (mm)



CASE 14 TO-5 HERMETIC
CHIP ACTIVE AREA: .023 in^2 (14.8 mm^2)

PRODUCT DESCRIPTION

Planar silicon photodiode in a "flat" window, dual lead TO-5 package. Cathode is common to the case. These diodes have very high shunt resistance and have good blue response.

ABSOLUTE MAXIMUM RATINGS

Storage Temperature:	-40°C to 110°C
Operating Temperature:	-40°C to 110°C

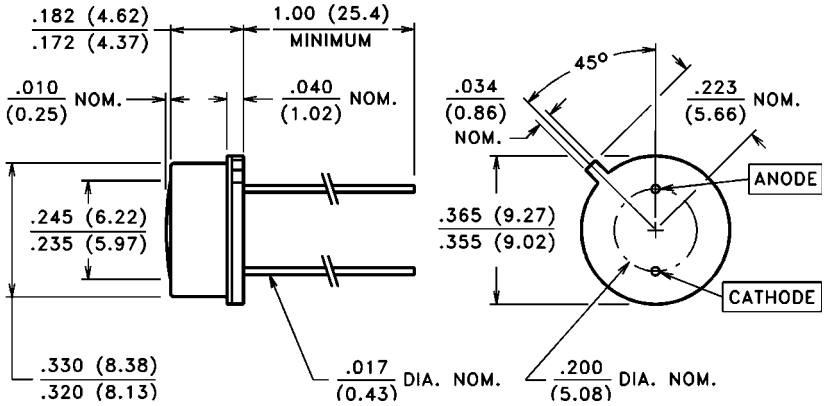
ELECTRO-OPTICAL CHARACTERISTICS @ 25°C (See also VTB curves, pages 21-22)

SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VTB5051			UNITS
			Min.	Typ.	Max.	
I_{SC}	Short Circuit Current	H = 100 fc, 2850 K	85	130		µA
TC I_{SC}	I_{SC} Temperature Coefficient	2850 K		.12	.23	%/°C
V_{OC}	Open Circuit Voltage	H = 100 fc, 2850 K		490		mV
TC V_{OC}	V_{OC} Temperature Coefficient	2850 K		-2.0		mV/°C
I_D	Dark Current	H = 0, VR = 2.0 V			250	pA
R_{SH}	Shunt Resistance	H = 0, V = 10 mV		.56		GΩ
TC R_{SH}	R_{SH} Temperature Coefficient	H = 0, V = 10 mV		-8.0		%/°C
C_J	Junction Capacitance	H = 0, V = 0		3.0		nF
S_R	Sensitivity	365 nm		.10		A/W
λ_{range}	Spectral Application Range		320		1100	nm
λ_p	Spectral Response - Peak			920		nm
V_{BR}	Breakdown Voltage		2	40		V
$\theta_{1/2}$	Angular Resp. - 50% Resp. Pt.			±50		Degrees
NEP	Noise Equivalent Power		2.1 x 10^{-14} (Typ.)			$W/\sqrt{Hz}$
D*	Specific Detectivity		1.8 x 10^{13} (Typ.)			$cm\sqrt{Hz}/W$

VTB Process Photodiodes

VTB5051B

PACKAGE DIMENSIONS inch (mm)



CASE 14 TO-5 HERMETIC
CHIP ACTIVE AREA: .023 in^2 (14.8 mm^2)

PRODUCT DESCRIPTION

Planar silicon photodiode in a "flat" window, dual lead TO-5 package. The package incorporates an infrared rejection filter. Cathode is common to the case. These diodes have very high shunt resistance and have good blue response.

ABSOLUTE MAXIMUM RATINGS

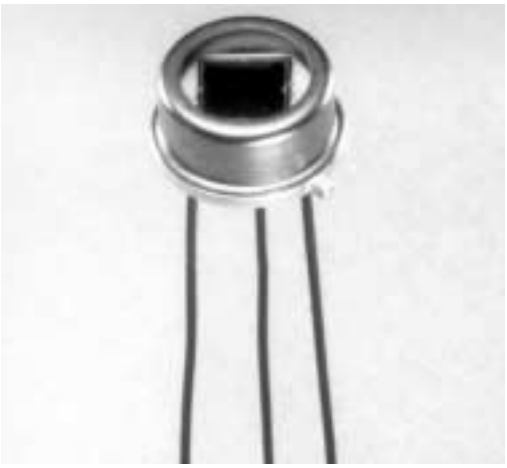
Storage Temperature:	-40°C to 110°C
Operating Temperature:	-40°C to 110°C

ELECTRO-OPTICAL CHARACTERISTICS @ 25°C (See also VTB curves, pages 21-22)

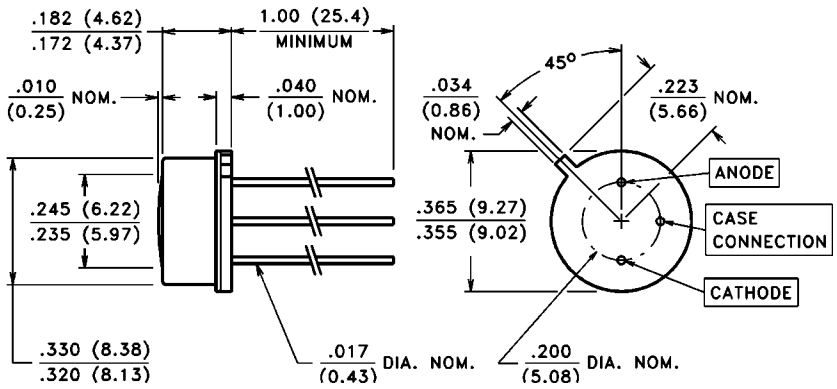
SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VTB5051B			UNITS
			Min.	Typ.	Max.	
I_{SC}	Short Circuit Current	H = 100 fc, 2850 K	8	13		µA
TC I_{SC}	I_{SC} Temperature Coefficient	2850 K		.02	.08	%/°C
V_{OC}	Open Circuit Voltage	H = 100 fc, 2850 K		420		mV
TC V_{OC}	V_{OC} Temperature Coefficient	2850 K		-2.0		mV/°C
I_D	Dark Current	H = 0, VR = 2.0 V			250	pA
R_{SH}	Shunt Resistance	H = 0, V = 10 mV		.56		GΩ
TC R_{SH}	R_{SH} Temperature Coefficient	H = 0, V = 10 mV		-8.0		%/°C
C_J	Junction Capacitance	H = 0, V = 0		3.0		nF
λ_{range}	Spectral Application Range		330		720	nm
λ_p	Spectral Response - Peak			580		nm
V_{BR}	Breakdown Voltage		2	40		V
$\theta_{1/2}$	Angular Resp. - 50% Resp. Pt.			±50		Degrees
NEP	Noise Equivalent Power			3.7×10^{-14} (Typ.)		$W/\sqrt{Hz}$
D*	Specific Detectivity			1.0×10^{13} (Typ.)		$cm\sqrt{Hz}/W$

VTB Process Photodiodes

VTB5051J



PACKAGE DIMENSIONS inch (mm)



CASE 14A TO-5 HERMETIC
CHIP ACTIVE AREA: .023 in^2 (14.8 mm^2)

PRODUCT DESCRIPTION

Planar silicon photodiode in a "flat" window, three lead TO-5 package. Chip is isolated from the case. The third lead allows the case to be grounded. These diodes have very high shunt resistance and have good blue response.

ABSOLUTE MAXIMUM RATINGS

Storage Temperature:	-40°C to 110°C
Operating Temperature:	-40°C to 110°C

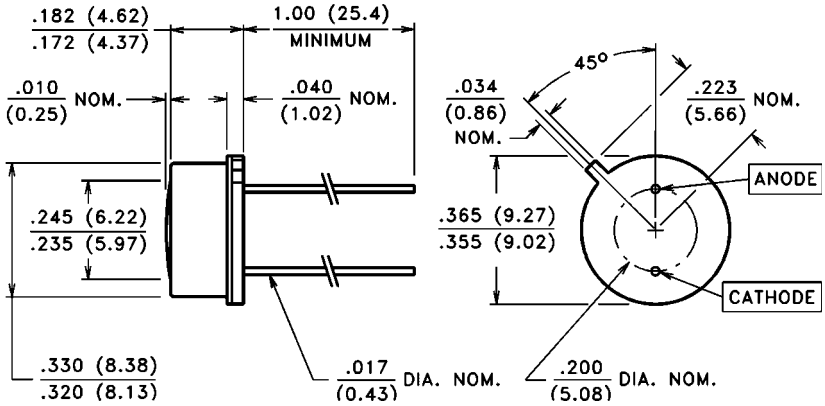
ELECTRO-OPTICAL CHARACTERISTICS @ 25°C (See also VTB curves, pages 21-22)

SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VTB5051J			UNITS
			Min.	Typ.	Max.	
I_{SC}	Short Circuit Current	H = 100 fc, 2850 K	85	130		µA
TC I_{SC}	I_{SC} Temperature Coefficient	2850 K		.12	.23	%/°C
V_{OC}	Open Circuit Voltage	H = 100 fc, 2850 K		490		mV
TC V_{OC}	V_{OC} Temperature Coefficient	2850 K		-2.0		mV/°C
I_D	Dark Current	H = 0, VR = 2.0 V			250	pA
R_{SH}	Shunt Resistance	H = 0, V = 10 mV		.56		GΩ
TC R_{SH}	R_{SH} Temperature Coefficient	H = 0, V = 10 mV		-8.0		%/°C
C_J	Junction Capacitance	H = 0, V = 0		3.0		nF
S_R	Sensitivity	365 nm		.10		A/W
λ_{range}	Spectral Application Range		320		1100	nm
λ_p	Spectral Response - Peak			920		nm
V_{BR}	Breakdown Voltage		2	40		V
$\theta_{1/2}$	Angular Resp. - 50% Resp. Pt.			±50		Degrees
NEP	Noise Equivalent Power		2.1 x 10^{-14} (Typ.)			$W/\sqrt{Hz}$
D*	Specific Detectivity		1.8 x 10^{13} (Typ.)			$cm\sqrt{Hz}/W$

VTB Process Photodiodes

VTB5051UV

PACKAGE DIMENSIONS inch (mm)



CASE 14 TO-5 HERMETIC
CHIP ACTIVE AREA: .023 in^2 (14.8 mm^2)

PRODUCT DESCRIPTION

Planar silicon photodiode in a dual lead TO-5 package with a UV transmitting "flat" window. Chip is common to the case. These diodes have very high shunt resistance and have good blue response.

ABSOLUTE MAXIMUM RATINGS

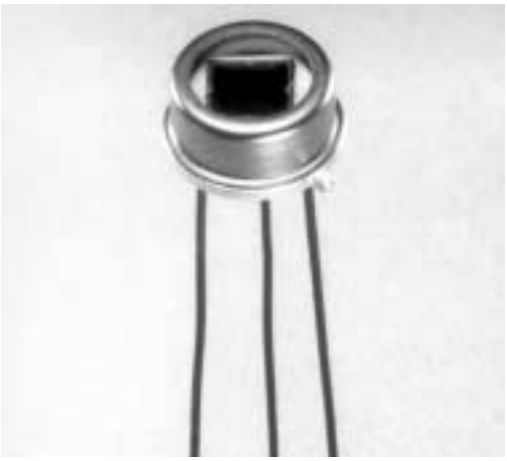
Storage Temperature:	-40°C to 110°C
Operating Temperature:	-40°C to 110°C

ELECTRO-OPTICAL CHARACTERISTICS @ 25°C (See also VTB curves, pages 21-22)

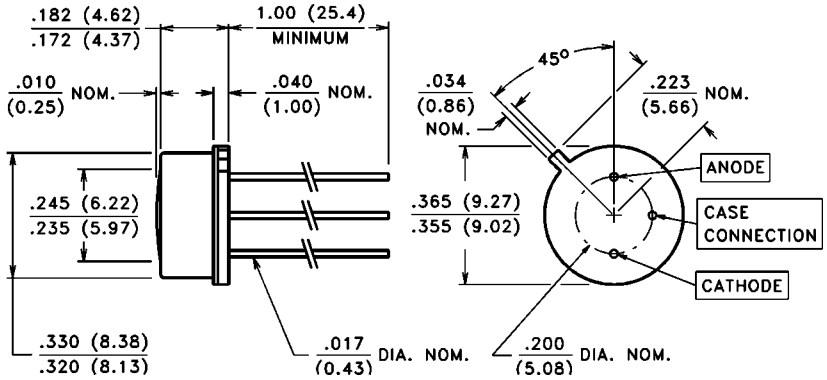
SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VTB5051UV			UNITS
			Min.	Typ.	Max.	
I_{SC}	Short Circuit Current	H = 100 fc, 2850 K	85	130		µA
TC I_{SC}	I_{SC} Temperature Coefficient	2850 K		.12	.23	%/°C
V_{OC}	Open Circuit Voltage	H = 100 fc, 2850 K		490		mV
TC V_{OC}	V_{OC} Temperature Coefficient	2850 K		-2.0		mV/°C
I_D	Dark Current	H = 0, VR = 2.0 V			250	pA
R_{SH}	Shunt Resistance	H = 0, V = 10 mV		.56		GΩ
TC R_{SH}	R_{SH} Temperature Coefficient	H = 0, V = 10 mV		-8.0		%/°C
C_J	Junction Capacitance	H = 0, V = 0		3.0		nF
S_R	Sensitivity	365 nm		0.1		A/W
S_R	Sensitivity	220 nm	.038			A/W
λ_{range}	Spectral Application Range		200		1100	nm
λ_p	Spectral Response - Peak			920		nm
V_{BR}	Breakdown Voltage		2	40		V
$\theta_{1/2}$	Angular Resp. - 50% Resp. Pt.			±50		Degrees
NEP	Noise Equivalent Power		2.1 x 10^{-14} (Typ.)			$W/\sqrt{Hz}$
D*	Specific Detectivity		1.8 x 10^{13} (Typ.)			$cm\sqrt{Hz}/W$

VTB Process Photodiodes

VTB5051UVJ



PACKAGE DIMENSIONS inch (mm)



CASE 14A TO-5 HERMETIC
CHIP ACTIVE AREA: .023 in^2 (14.8 mm^2)

PRODUCT DESCRIPTION

Planar silicon photodiode in a three lead TO-5 package with a UV transmitting "flat" window. Chip is isolated from the case. The third lead allows case to be grounded. These diodes have very high shunt resistance and have good blue response.

ABSOLUTE MAXIMUM RATINGS

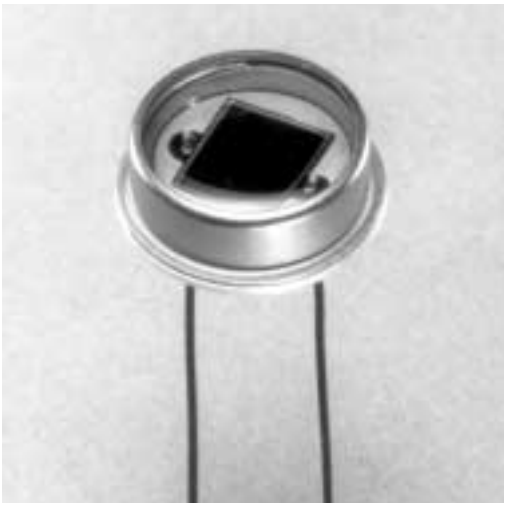
Storage Temperature:	-40°C to 110°C
Operating Temperature:	-40°C to 110°C

ELECTRO-OPTICAL CHARACTERISTICS @ 25°C (See also VTB curves, pages 21-22)

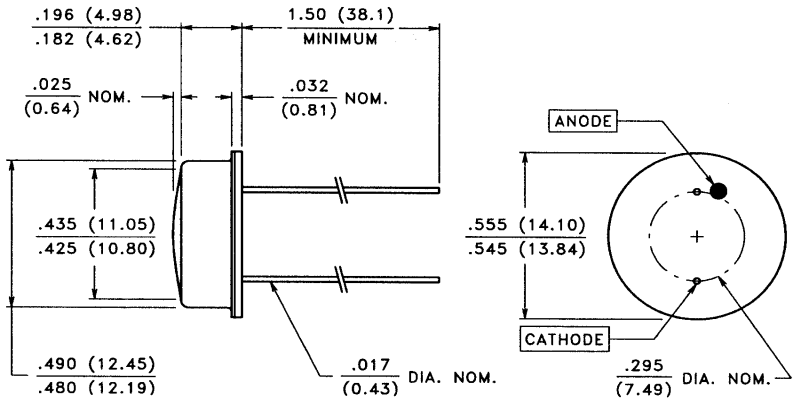
SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VTB5051UVJ			UNITS
			Min.	Typ.	Max.	
I_{SC}	Short Circuit Current	H = 100 fc, 2850 K	85	130		µA
TC I_{SC}	I_{SC} Temperature Coefficient	2850 K		.12	.23	%/°C
V_{OC}	Open Circuit Voltage	H = 100 fc, 2850 K		490		mV
TC V_{OC}	V_{OC} Temperature Coefficient	2850 K		-2.0		mV/°C
I_D	Dark Current	H = 0, VR = 2.0 V			250	pA
R_{SH}	Shunt Resistance	H = 0, V = -10 mV		.56		GΩ
TC R_{SH}	R_{SH} Temperature Coefficient	H = 0, V = -10 mV		-8.0		%/°C
C_J	Junction Capacitance	H = 0, V = 0		3.0		nF
S_R	Sensitivity	365 nm		0.1		A/W
S_R	Sensitivity	220 nm	.038			A/W
λ_{range}	Spectral Application Range		200		1100	nm
λ_p	Spectral Response - Peak			920		nm
V_{BR}	Breakdown Voltage		2	40		V
$\theta_{1/2}$	Angular Resp. - 50% Resp. Pt.			±50		Degrees
NEP	Noise Equivalent Power		2.1 x 10^{-14} (Typ.)			$W/\sqrt{Hz}$
D*	Specific Detectivity		1.8 x 10^{13} (Typ.)			$cm\sqrt{Hz}/W$

VTB Process Photodiodes

VTB6061



PACKAGE DIMENSIONS inch (mm)



CASE 15 TO-8 HERMETIC
CHIP ACTIVE AREA: .058 in^2 (37.7 mm^2)

PRODUCT DESCRIPTION

Large area planar silicon photodiode in a "flat" window, dual lead TO-8 package. Cathode is common to the case. These diodes have very high shunt resistance and have good blue response.

ABSOLUTE MAXIMUM RATINGS

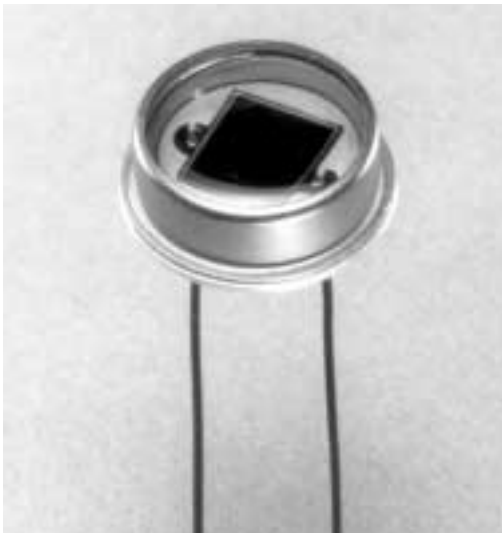
Storage Temperature:	-40°C to 110°C
Operating Temperature:	-40°C to 110°C

ELECTRO-OPTICAL CHARACTERISTICS @ 25°C (See also VTB curves, pages 21-22)

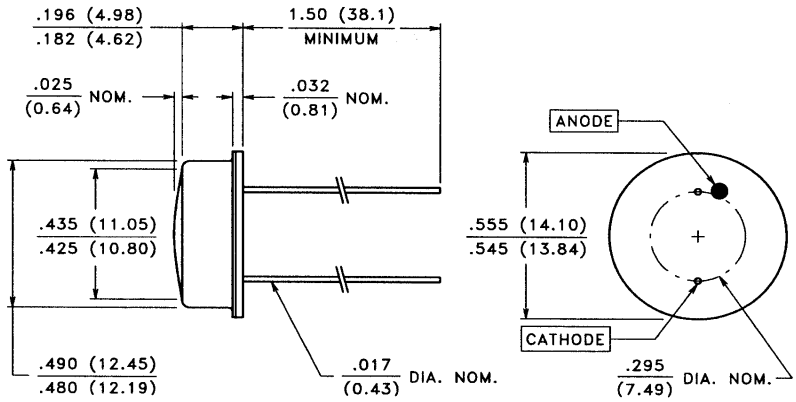
SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VTB6061			UNITS
			Min.	Typ.	Max.	
I_{SC}	Short Circuit Current	H = 100 fc, 2850 K	260	350		µA
TC I_{SC}	I_{SC} Temperature Coefficient	2850 K		.12	.23	%/°C
V_{OC}	Open Circuit Voltage	H = 100 fc, 2850 K		490		mV
TC V_{OC}	V_{OC} Temperature Coefficient	2850 K		-2.0		mV/°C
I_D	Dark Current	H = 0, VR = 2.0 V			2.0	pA
R_{SH}	Shunt Resistance	H = 0, V = 10 mV		.10		GΩ
TC R_{SH}	R_{SH} Temperature Coefficient	H = 0, V = 10 mV		-8.0		%/°C
C_J	Junction Capacitance	H = 0, V = 0		8.0		nF
S_R	Sensitivity	365 nm		0.1		A/W
λ_{range}	Spectral Application Range		320		1100	nm
λ_p	Spectral Response - Peak			920		nm
V_{BR}	Breakdown Voltage		2	40		V
$\theta_{1/2}$	Angular Resp. - 50% Resp. Pt.			±55		Degrees
NEP	Noise Equivalent Power			5.7×10^{-14} (Typ.)		$W/\sqrt{Hz}$
D*	Specific Detectivity			1.1×10^{13} (Typ.)		$cm\sqrt{Hz}/W$

VTB Process Photodiodes

VTB6061B



PACKAGE DIMENSIONS inch (mm)



CASE 15 TO-8 HERMETIC
CHIP ACTIVE AREA: .058 in^2 (37.7 mm^2)

PRODUCT DESCRIPTION

Large area planar silicon photodiode in a "flat" window, dual lead TO-8 package. The package incorporates an infrared rejection filter. Cathode is common to the case. These diodes have very high shunt resistance and have good blue response.

ABSOLUTE MAXIMUM RATINGS

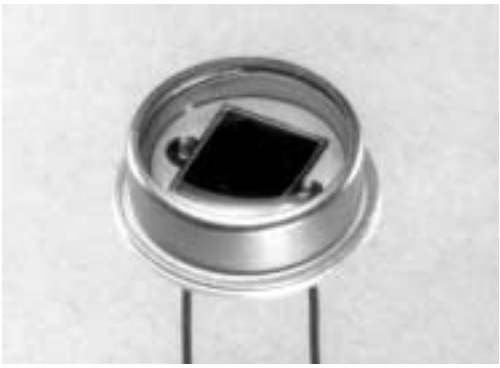
Storage Temperature:	-40°C to 110°C
Operating Temperature:	-40°C to 110°C

ELECTRO-OPTICAL CHARACTERISTICS @ 25°C (See also VTB curves, pages 21-22)

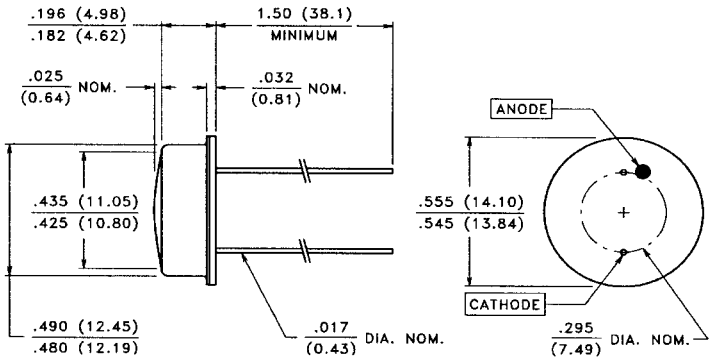
SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VTB6061B			UNITS
			Min.	Typ.	Max.	
I_{SC}	Short Circuit Current	H = 100 fc, 2850 K	26	35		µA
TC I_{SC}	I_{SC} Temperature Coefficient	2850 K		.02	.08	%/°C
V_{OC}	Open Circuit Voltage	H = 100 fc, 2850 K		420		mV
TC V_{OC}	V_{OC} Temperature Coefficient	2850 K		-2.0		mV/°C
I_D	Dark Current	H = 0, VR = 2.0 V			2.0	nA
R_{SH}	Shunt Resistance	H = 0, V = 10 mV		.10		GΩ
TC R_{SH}	R_{SH} Temperature Coefficient	H = 0, V = 10 mV		-8.0		%/°C
C_J	Junction Capacitance	H = 0, V = 0		8.0		nF
λ_{range}	Spectral Application Range		330		720	nm
λ_p	Spectral Response - Peak			580		nm
V_{BR}	Breakdown Voltage		2	40		V
$\theta_{1/2}$	Angular Resp. - 50% Resp. Pt.			±55		Degrees
NEP	Noise Equivalent Power			1.0×10^{-13} (Typ.)		$W/\sqrt{Hz}$
D*	Specific Detectivity			6.1×10^{12} (Typ.)		$cm\sqrt{Hz}/W$

VTB Process Photodiodes

VTB6061CIE



PACKAGE DIMENSIONS inch (mm)



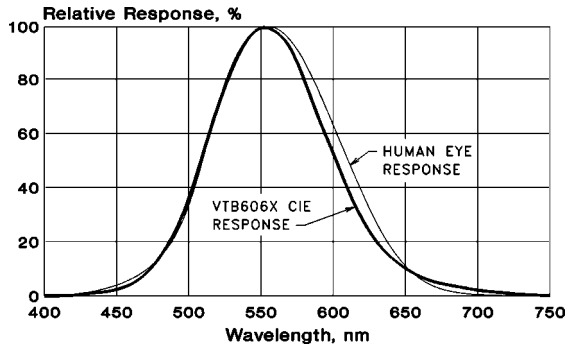
PRODUCT DESCRIPTION

Large area planar silicon photodiode in a "flat" window, dual lead TO-8 package. This photodiode is a spectrally modified VTB6061B with a spectral response closely resembling that of the human eye, making it an ideal choice for photometric calibrations. Its high shunt impedance permits accurate measurement of low illuminations.

ABSOLUTE MAXIMUM RATINGS

Storage Temperature: -55°C to 50°C
Operating Temperature: -55°C to 50°C

CASE 15 TO-8 HERMETIC
CHIP ACTIVE AREA: .058 in^2 (37.7 mm^2)
VTB6061CIE vs HUMAN EYE RESPONSE

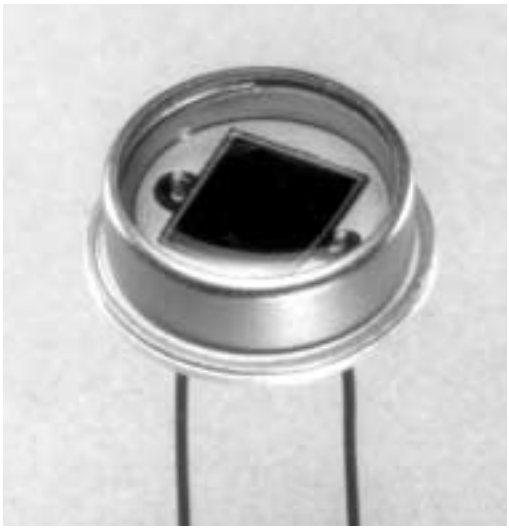


ELECTRO-OPTICAL CHARACTERISTICS @ 25°C (See also VTB curves, pages 21-22)

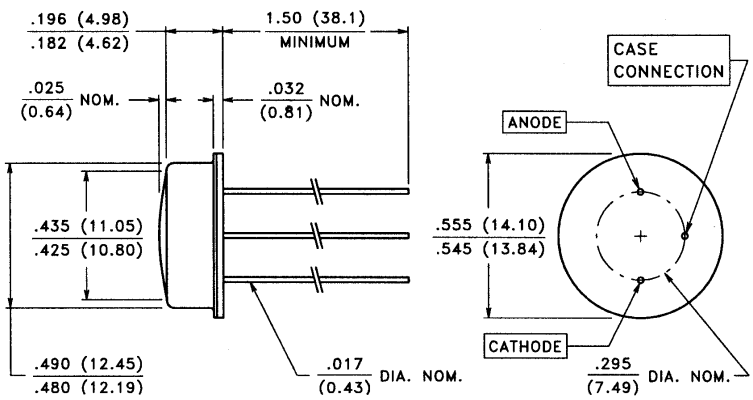
SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VTB6061CIE			UNITS
			Min.	Typ.	Max.	
S_P	Photometric Sensitivity	H = 1.0 fc	75	120		nA/fc
		H = 1.0 lux	7	11		nA/lux
R_{SH}	Shunt Resistance	H = 0, V -10 mV		.10		GΩ
TC R_{SH}	R_{SH} Temperature Coefficient	H = 0, V -10 mV		-8.0		%/°C
I_D	Dark Current	H = 0, VR = 2.0 V			2.0	nA
C_J	Junction Capacitance	H = 0, V = 0		8.0	11	nF
λ_p	Spectral Response - Peak			555		nm
$\theta_{1/2}$	Angular Resp. - 50% Resp. Pt.			±55		Degrees
NEP	Noise Equivalent Power			1.3×10^{-13} (Typ.)		$W/\sqrt{Hz}$

VTB Process Photodiodes

VTB6061J



PACKAGE DIMENSIONS inch (mm)



CASE 15 TO-8 HERMETIC
CHIP ACTIVE AREA: .058 in^2 (37.7 mm^2)

PRODUCT DESCRIPTION

Large area planar silicon photodiode in a "flat" window, three lead TO-8 package. Chip is isolated from case. The third lead allows case to be grounded. These diodes have very high shunt resistance and have good blue response.

ABSOLUTE MAXIMUM RATINGS

Storage Temperature:	-40°C to 110°C
Operating Temperature:	-40°C to 110°C

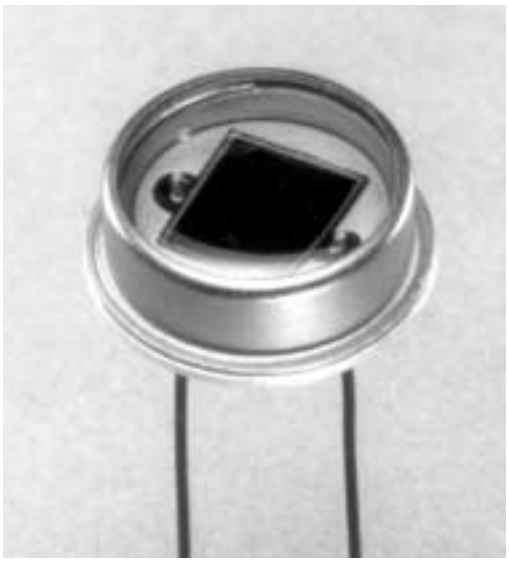
ELECTRO-OPTICAL CHARACTERISTICS @ 25°C (See also VTB curves, pages 21-22)

SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VTB6061J			UNITS
			Min.	Typ.	Max.	
I_{SC}	Short Circuit Current	H = 100 fc, 2850 K	260	350		µA
TC I_{SC}	I_{SC} Temperature Coefficient	2850 K		.12	.23	%/°C
V_{OC}	Open Circuit Voltage	H = 100 fc, 2850 K		490		mV
TC V_{OC}	V_{OC} Temperature Coefficient	2850 K		-2.0		mV/°C
I_D	Dark Current	H = 0, VR = 2.0 V			2.0	nA
R_{SH}	Shunt Resistance	H = 0, V = 10 mV		.10		GΩ
TC R_{SH}	R_{SH} Temperature Coefficient	H = 0, V = 10 mV		-8.0		%/°C
C_J	Junction Capacitance	H = 0, V = 0		8.0		nF
S_R	Sensitivity	365 nm		0.1		A/W
λ_{range}	Spectral Application Range		320		1100	nm
λ_p	Spectral Response - Peak			920		nm
V_{BR}	Breakdown Voltage		2	40		V
$\theta_{1/2}$	Angular Resp. - 50% Resp. Pt.			±55		Degrees
NEP	Noise Equivalent Power			5.7×10^{-14} (Typ.)		$W/\sqrt{Hz}$
D*	Specific Detectivity			1.1×10^{13} (Typ.)		$cm\sqrt{Hz}/W$

PerkinElmer Optoelectronics, 10900 Page Ave., St. Louis, MO 63132 USA Phone: 314-423-4900 Fax: 314-423-3956 Web: www.perkinelmer.com/opto

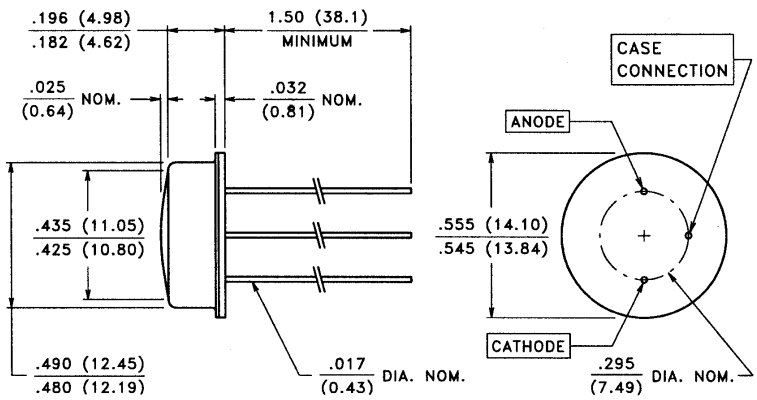
VTB Process Photodiodes

VTB6061UV



Large area planar silicon photodiode in a dual lead TO-8 package with a UV transmitting "flat" window. Cathode is common to the case. These diodes have very high shunt resistance and have good blue response.

PACKAGE DIMENSIONS inch (mm)



CASE 15 TO-8 HERMETIC
CHIP ACTIVE AREA: .058 in^2 (37.7 mm^2)

ABSOLUTE MAXIMUM RATINGS

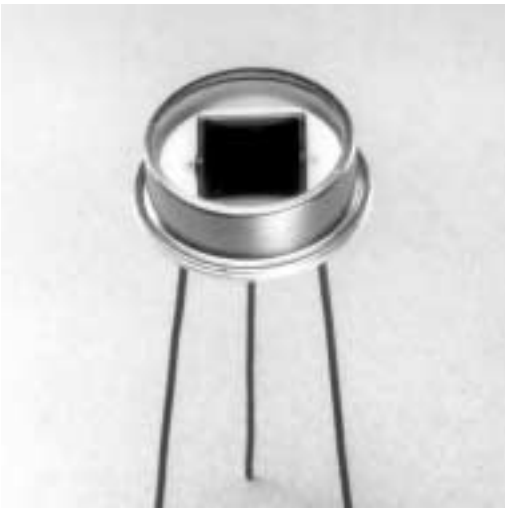
Storage Temperature:	-40°C to 110°C
Operating Temperature:	-40°C to 110°C

ELECTRO-OPTICAL CHARACTERISTICS @ 25°C (See also VTB curves, pages 21-22)

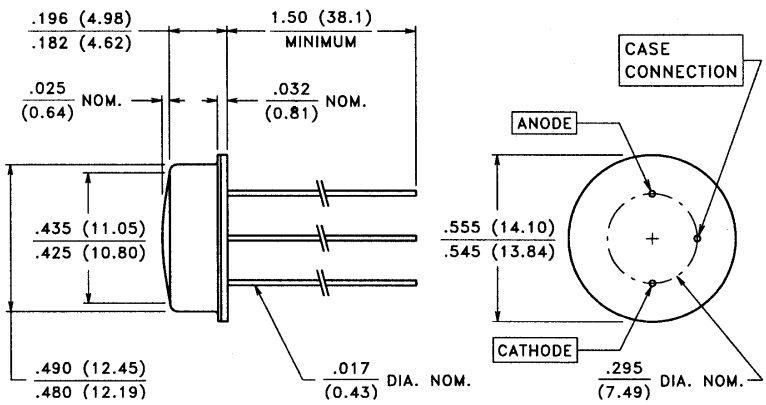
SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VTB6061UV			UNITS
			Min.	Typ.	Max.	
I_{SC}	Short Circuit Current	H = 100 fc, 2850 K	260	350		µA
TC I_{SC}	I_{SC} Temperature Coefficient	2850 K		.12	.23	%/°C
V_{OC}	Open Circuit Voltage	H = 100 fc, 2850 K		490		mV
TC V_{OC}	V_{OC} Temperature Coefficient	2850 K		-2.0		mV/°C
I_D	Dark Current	H = 0, VR = 2.0 V			2.0	nA
R_{SH}	Shunt Resistance	H = 0, V = 10 mV		.10		GΩ
TC R_{SH}	R_{SH} Temperature Coefficient	H = 0, V = 10 mV		-8.0		%/°C
C_J	Junction Capacitance	H = 0, V = 0		8.0		nF
S_R	Sensitivity	365 nm		.10		A/W
S_R	Sensitivity	220 nm	.04			A/W
λ_{range}	Spectral Application Range		200		1100	nm
λ_p	Spectral Response - Peak			920		nm
V_{BR}	Breakdown Voltage		2	40		V
$\theta_{1/2}$	Angular Resp. - 50% Resp. Pt.			±55		Degrees
NEP	Noise Equivalent Power		5.7×10^{-14} (Typ.)			$W/\sqrt{Hz}$
D*	Specific Detectivity		1.1×10^{13} (Typ.)			$cm\sqrt{Hz}/W$

VTB Process Photodiodes

VTB6061UVJ



PACKAGE DIMENSIONS inch (mm)



CASE 15A TO-8 HERMETIC
CHIP ACTIVE AREA: .058 in^2 (37.7 mm^2)

PRODUCT DESCRIPTION

Large area planar silicon photodiode in a three lead TO-8 package with a UV transmitting window. Chip is isolated from case. Third lead is grounded to case. These diodes have very high shunt resistance and have good blue response.

ABSOLUTE MAXIMUM RATINGS

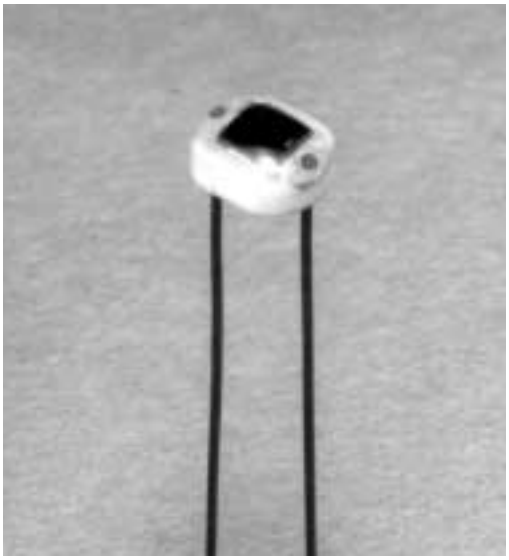
Storage Temperature:	-40°C to 110°C
Operating Temperature:	-40°C to 110°C

ELECTRO-OPTICAL CHARACTERISTICS @ 25°C (See also VTB curves, pages 21-22)

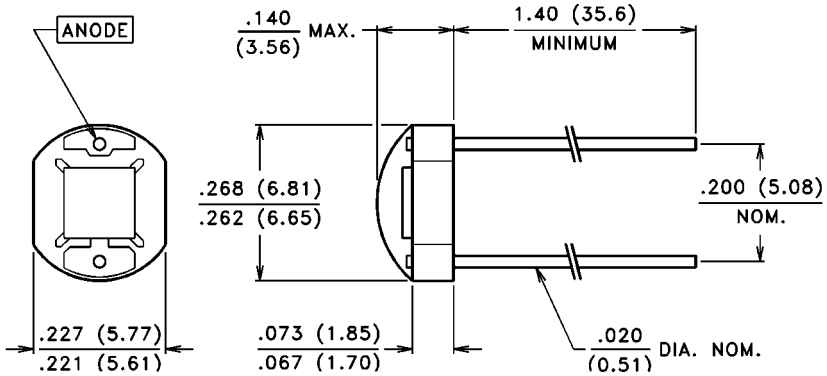
SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VTB6061UVJ			UNITS
			Min.	Typ.	Max.	
I_{SC}	Short Circuit Current	H = 100 fc, 2850 K	260	350		µA
TC I_{SC}	I_{SC} Temperature Coefficient	2850 K		.12	.23	%/°C
V_{OC}	Open Circuit Voltage	H = 100 fc, 2850 K		490		mV
TC V_{OC}	V_{OC} Temperature Coefficient	2850 K		-2.0		mV/°C
I_D	Dark Current	H = 0, VR = 2.0 V			2.0	nA
R_{SH}	Shunt Resistance	H = 0, V = 10 mV		.10		GΩ
TC R_{SH}	R_{SH} Temperature Coefficient	H = 0, V = 10 mV		-8.0		%/°C
C_J	Junction Capacitance	H = 0, V = 0		8.0		nF
S_R	Sensitivity	365 nm		.10		A/W
S_R	Sensitivity	220 nm	.04			A/W
λ_{range}	Spectral Application Range		200		1100	nm
λ_p	Spectral Response - Peak			920		nm
V_{BR}	Breakdown Voltage		2	40		V
$\theta_{1/2}$	Angular Resp. - 50% Resp. Pt.			±55		Degrees
NEP	Noise Equivalent Power		5.7 x 10^{-14} (Typ.)			$W/\sqrt{Hz}$
D*	Specific Detectivity		1.1 x 10^{13} (Typ.)			$cm\sqrt{Hz}/W$

VTB Process Photodiodes

VTB8341



PACKAGE DIMENSIONS inch (mm)



CASE 11 CERAMIC
CHIP ACTIVE AREA: .008 in^2 (5.16 mm^2)

PRODUCT DESCRIPTION

Planar silicon photodiode mounted on a two lead ceramic substrate and coated with a thick layer of clear epoxy. These diodes have very high shunt resistance and have good blue response.

ABSOLUTE MAXIMUM RATINGS

Storage Temperature:	-20°C to 75°C
Operating Temperature:	-20°C to 75°C

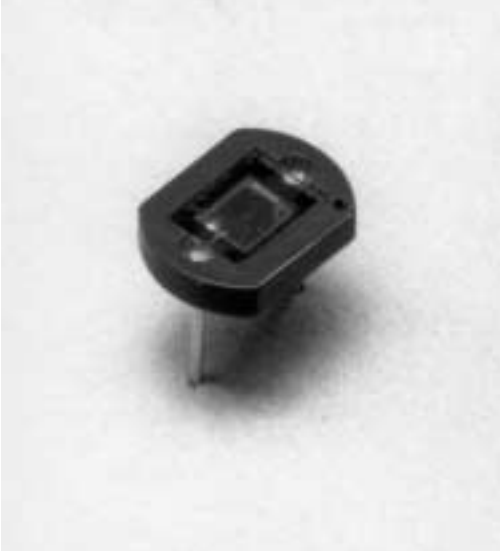
ELECTRO-OPTICAL CHARACTERISTICS @ 25°C (See also VTB curves, pages 21-22)

SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VTB8341			UNITS
			Min.	Typ.	Max.	
I_{SC}	Short Circuit Current	H = 100 fc, 2850 K	35	60		µA
TC I_{SC}	I_{SC} Temperature Coefficient	2850 K		.12	.23	%/°C
V_{OC}	Open Circuit Voltage	H = 100 fc, 2850 K		490		mV
TC V_{OC}	V_{OC} Temperature Coefficient	2850 K		-2.0		mV/°C
I_D	Dark Current	H = 0, VR = 2.0 V			100	pA
R_{SH}	Shunt Resistance	H = 0, V = 10 mV		1.4		GΩ
TC R_{SH}	R_{SH} Temperature Coefficient	H = 0, V = 10 mV		-8.0		%/°C
C_J	Junction Capacitance	H = 0, V = 0		1.0		nF
S_R	Sensitivity	365 nm		.10		A/W
λ_{range}	Spectral Application Range		320		1100	nm
λ_p	Spectral Response - Peak			920		nm
V_{BR}	Breakdown Voltage		2	40		V
$\theta_{1/2}$	Angular Resp. - 50% Resp. Pt.			±60		Degrees
NEP	Noise Equivalent Power			2.4×10^{-14} (Typ.)		$W/\sqrt{Hz}$
D*	Specific Detectivity			9.7×10^{12} (Typ.)		$cm\sqrt{Hz}/W$

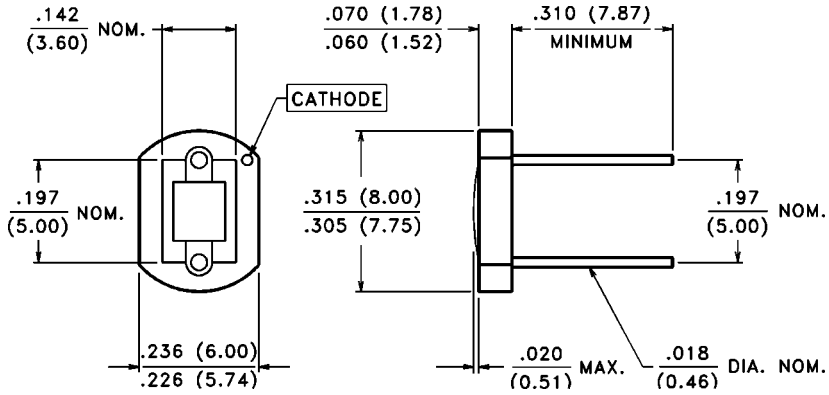
PerkinElmer Optoelectronics, 10900 Page Ave., St. Louis, MO 63132 USA Phone: 314-423-4900 Fax: 314-423-3956 Web: www.perkinelmer.com/opto

VTB Process Photodiodes

VTB8440, 8441



PACKAGE DIMENSIONS inch (mm)



CASE 21 8 mm CERAMIC
CHIP ACTIVE AREA: .008 in^2 (5.16 mm^2)

PRODUCT DESCRIPTION

Planar silicon photodiode in a recessed ceramic package. Chip is coated with a protective layer of epoxy. These diodes have very high shunt resistance and have good blue response.

ABSOLUTE MAXIMUM RATINGS

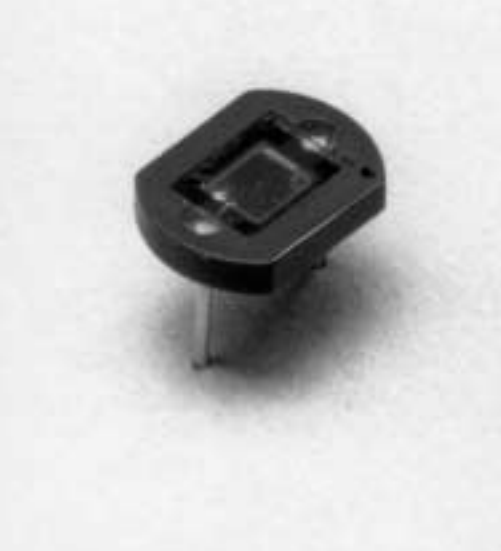
Storage Temperature:	-20°C to 75°C
Operating Temperature:	-20°C to 75°C

ELECTRO-OPTICAL CHARACTERISTICS @ 25°C (See also VTB curves, pages 21-22)

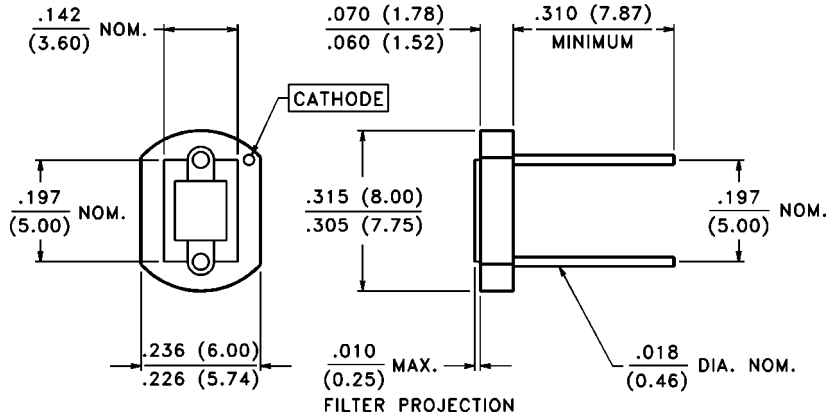
SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VTB8440			VTB8441			UNITS
			Min.	Typ.	Max.	Min.	Typ.	Max.	
I_{SC}	Short Circuit Current	H = 100 fc, 2850 K	35	45		35	45		µA
TC I_{SC}	I_{SC} Temperature Coefficient	2850 K		.12	.23		.12	.23	%/°C
V_{OC}	Open Circuit Voltage	H = 100 fc, 2850 K		490			490		mV
TC V_{OC}	V_{OC} Temperature Coefficient	2850 K		-2.0			-2.0		mV/°C
I_D	Dark Current	H = 0, VR = 2.0 V			2000			100	pA
R_{SH}	Shunt Resistance	H = 0, V = 10 mV		.07			1.4		GΩ
TC R_{SH}	R_{SH} Temperature Coefficient	H = 0, V = 10 mV		-8.0			-8.0		%/°C
C_J	Junction Capacitance	H = 0, V = 0		1.0			1.0		nF
S_R	Sensitivity	365 nm		.10			.10		A/W
λ_{range}	Spectral Application Range		320		1100	320		1100	nm
λ_p	Spectral Response - Peak			920			920		nm
V_{BR}	Breakdown Voltage		2	40		2	40		V
$\theta_{1/2}$	Angular Resp. - 50% Resp. Pt.			±50			±50		Degrees
NEP	Noise Equivalent Power		5.9 x 10^{-14} (Typ.)			1.3 x 10^{-14} (Typ.)			$W/\sqrt{Hz}$
D*	Specific Detectivity		3.9 x 10^{12} (Typ.)			1.7 x 10^{13} (Typ.)			$cm\sqrt{Hz}/W$

VTB Process Photodiodes

VTB8440B, 8441B



PACKAGE DIMENSIONS inch (mm)



CASE 21F 8 mm CERAMIC
CHIP ACTIVE AREA: .008 in^2 (5.16 mm^2)

PRODUCT DESCRIPTION

Planar silicon photodiode in recessed ceramic package. The package incorporates an infrared rejection filter. These diodes have very high shunt resistance and have good blue response.

ABSOLUTE MAXIMUM RATINGS

Storage Temperature:	-20°C to 75°C
Operating Temperature:	-20°C to 75°C

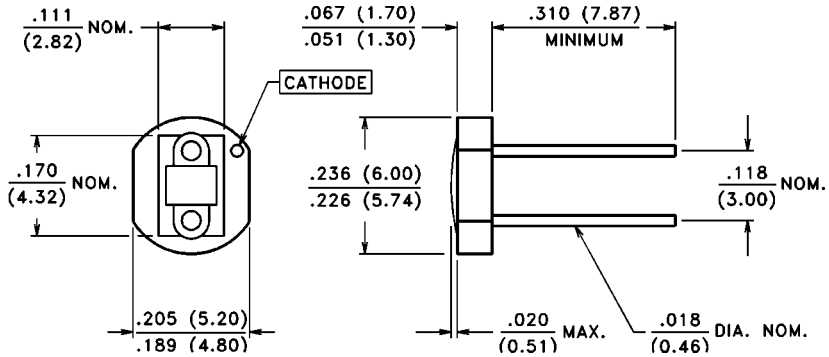
ELECTRO-OPTICAL CHARACTERISTICS @ 25°C (See also VTB curves, pages 21-22)

SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VTB8440B			VTB8441B			UNITS
			Min.	Typ.	Max.	Min.	Typ.	Max.	
I_{SC}	Short Circuit Current	H = 100 fc, 2850 K	4	5		4	5		µA
TC I_{SC}	I_{SC} Temperature Coefficient	2850 K		.02	.08		.02	.08	%/°C
V_{OC}	Open Circuit Voltage	H = 100 fc, 2850 K		420			420		mV
TC V_{OC}	V_{OC} Temperature Coefficient	2850 K		-2.0			-2.0		mV/°C
I_D	Dark Current	H = 0, VR = 2.0 V			2000			100	pA
R_{SH}	Shunt Resistance	H = 0, V = 10 mV		.07			1.4		GΩ
TC R_{SH}	R_{SH} Temperature Coefficient	H = 0, V = 10 mV		-8.0			-8.0		%/°C
C_J	Junction Capacitance	H = 0, V = 0		1.0			1.0		nF
λ_{range}	Spectral Application Range		330		720	330		720	nm
λ_p	Spectral Response - Peak			580			580		nm
V_{BR}	Breakdown Voltage		2	40		2	40		V
$\theta_{1/2}$	Angular Resp. - 50% Resp. Pt.			±50			±50		Degrees
NEP	Noise Equivalent Power		1.1×10^{-13} (Typ.)			2.4×10^{-14} (Typ.)			$W/\sqrt{Hz}$
D*	Specific Detectivity		2.2×10^{12} (Typ.)			9.7×10^{12} (Typ.)			$cm\sqrt{Hz}/W$

VTB Process Photodiodes

VTB9412, 9413

PACKAGE DIMENSIONS inch (mm)



CASE 20 6 mm CERAMIC
CHIP ACTIVE AREA: .0025 in^2 (1.60 mm^2)

PRODUCT DESCRIPTION

Small area planar silicon photodiode in a recessed ceramic package. The chip is coated with a protective layer of clear epoxy. These diodes have very high shunt resistance and have good blue response.

ABSOLUTE MAXIMUM RATINGS

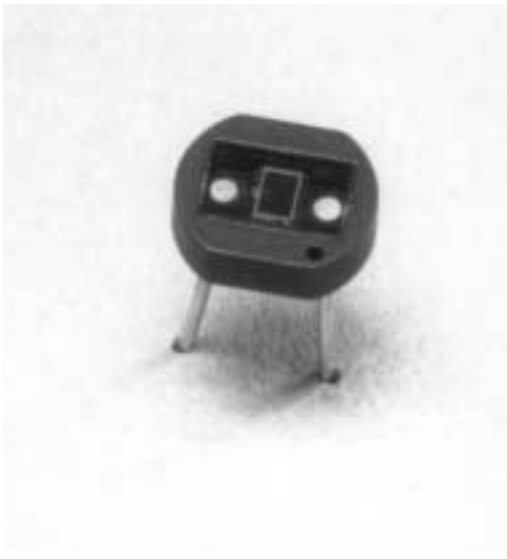
Storage Temperature:	-20°C to 75°C
Operating Temperature:	-20°C to 75°C

ELECTRO-OPTICAL CHARACTERISTICS @ 25°C (See also VTB curves, pages 21-22)

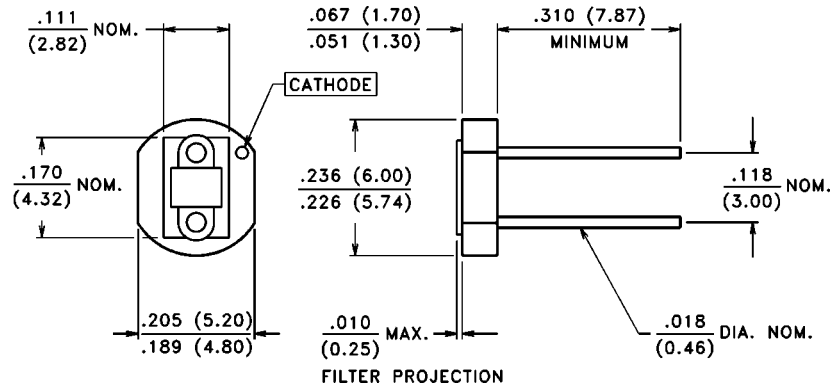
SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VTB9412			VTB9413			UNITS
			Min.	Typ.	**Max.**	Min.	Typ.	**Max.**	
I_{SC}	Short Circuit Current	H = 100 fc, 2850 K	8	13		8	13		µA
TC I_{SC}	I_{SC} Temperature Coefficient	2850 K		.12	.23		.12	.23	%/°C
V_{OC}	Open Circuit Voltage	H = 100 fc, 2850 K		490			490		mV
TC V_{OC}	V_{OC} Temperature Coefficient	2850 K		-2.0			-2.0		mV/°C
I_D	Dark Current	H = 0, VR = 2.0 V			100			20	pA
R_{SH}	Shunt Resistance	H = 0, V = 10 mV		.25			7.0		GΩ
TC R_{SH}	R_{SH} Temperature Coefficient	H = 0, V = 10 mV		-8.0			-8.0		%/°C
C_J	Junction Capacitance	H = 0, V = 0		.31			.31		nF
S_R	Sensitivity	365 nm		.09			.09		A/W
λ_{range}	Spectral Application Range		320		1100	320		1100	nm
λ_p	Spectral Response - Peak			920			920		nm
V_{BR}	Breakdown Voltage		2	40		2	40		V
$\theta_{1/2}$	Angular Resp. - 50% Resp. Pt.			±50			±50		Degrees
NEP	Noise Equivalent Power		3.0 x 10^{-14} (Typ.)			5.9 x 10^{-15} (Typ.)			$W/\sqrt{Hz}$
D*	Specific Detectivity		4.2 x 10^{12} (Typ.)			2.1 x 10^{13} (Typ.)			$cm\sqrt{Hz}/W$

VTB Process Photodiodes

VTB9412B, 9413B



PACKAGE DIMENSIONS inch (mm)



CASE 20F 6 mm CERAMIC
CHIP ACTIVE AREA: .0025 in^2 (1.60 mm^2)

PRODUCT DESCRIPTION

Small area planar silicon photodiode in a recessed ceramic package. The package incorporates an infrared rejection filter. These diodes have very high shunt resistance and have good blue response.

ABSOLUTE MAXIMUM RATINGS

Storage Temperature:	-20°C to 75°C
Operating Temperature:	-20°C to 75°C

ELECTRO-OPTICAL CHARACTERISTICS @ 25°C (See also VTB curves, pages 21-22)

SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VTB9412B			VTB9413B			UNITS
			Min.	Typ.	Max.	Min.	Typ.	Max.	
I_{SC}	Short Circuit Current	H = 100 fc, 2850 K	.8	1.3		.8	1.3		µA
TC I_{SC}	I_{SC} Temperature Coefficient	2850 K		.02	.08		.02	.08	%/°C
V_{OC}	Open Circuit Voltage	H = 100 fc, 2850 K		420			420		mV
TC V_{OC}	V_{OC} Temperature Coefficient	2850 K		-2.0			-2.0		mV/°C
I_D	Dark Current	H = 0, VR = 2.0 V			100			20	pA
R_{SH}	Shunt Resistance	H = 0, V = 10 mV		.25			7.0		GΩ
TC R_{SH}	R_{SH} Temperature Coefficient	H = 0, V = 10 mV		-8.0			-8.0		%/°C
C_J	Junction Capacitance	H = 0, V = 0		.31			.31		nF
λ_{range}	Spectral Application Range		330		720	330		720	nm
λ_p	Spectral Response - Peak			580			580		nm
V_{BR}	Breakdown Voltage		2	40		2	40		V
$\theta_{1/2}$	Angular Resp. - 50% Resp. Pt.			±50			±50		Degrees
NEP	Noise Equivalent Power		5.3 x 10^{-14} (Typ.)			1.1 x 10^{-14} (Typ.)			$W/\sqrt{Hz}$
D*	Specific Detectivity		2.4 x 10^{12} (Typ.)			1.2 x 10^{13} (Typ.)			$cm\sqrt{Hz}/W$