

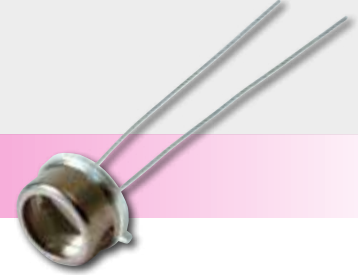
# Blue-Enhanced Silicon Photodiodes

For Industrial & Commercial Applications

## SILICON PN PHOTODIODES ■

Silicon Photodiodes – VTB Series  
Ultra High Dark Resistance

## Silicon Photodiodes – VTB Series – Ultra High Dark Resistance



### Applications

- Ambient light sensing
- UV and blue light sensing
- Flame monitoring
- Light meters
- Photometry

### Features and Benefits

- UV to IR spectral range
- Integral IR rejection filters available
- Response @ 365 nm, 0.14A/W typical
- Response @ 220 nm, 0.06A/W typical with UV window
- 1 to 2 % linearity over 7 to 9 decades
- Very low dark current
- High shunt resistance
- RoHs compliant

### Product Description

This series of P on N silicon planar photodiodes have been designed for optimum response through the visible part of the spectrum. Units with UV transmitting windows also exhibit excellent response in the UV. "B" series units have a built-in infrared rejection filter for applications requiring a response approximating the human eye. Photodiodes made with the VTB process are primarily intended to be used in 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 used in high gain transimpedance op-amps circuits.

#### VTB1012



Small area planar silicon photodiode in flat window TO-46 package

#### VTB6061



Large area planar silicon photodiode in a flat window TO-8 package

#### VTB4051



Planar silicon photodiode mounted on a ceramic substrate and coated with a layer of clear epoxy

#### VTB8341



Planar silicon photodiode mounted on a ceramic substrate and coated with a layer of clear epoxy

## Product Table

## Silicon Photodiodes – VTB Series – Ultra High Dark Resistance

Symbol Unit	Package	Active Area (mm <sup>2</sup> )	Short Circuit Current @ 100 fc, 2850 K		Dark Current max I <sub>D</sub> VR = 2V (nA)	Typical Junction Capacitance @ VR = 0V (nF)	Typical Radiometric Sensitivity @ λ <sub>peak</sub> (AW)	Spectral Range (nm)	Typical Peak Wavelength (nm)	Typical Noise
			min I <sub>SC</sub> μA	max						Equivalent Power W/√Hz
<b>VTB100AH</b>	Flat sidelooper	7.1	50		0.5 @VR = 10V	0.1	0.55	320-1100	925	9 X 10 <sup>-14</sup>
<b>VTB1012H</b>	TO-46	1.6	8		0.1	0.31	0.5	320-1100	920	3 X 10 <sup>-14</sup>
<b>VTB1012BH</b>	TO-46	1.6	0.8		0.1	0.31	0.29	330-720	580	5.3 X 10 <sup>-14</sup>
<b>VTB1013H</b>	TO-46	1.6	8		0.02	0.31	0.5	320-1100	920	5.9 X 10 <sup>-15</sup>
<b>VTB1013BH</b>	TO-46	1.6	0.8		0.02	0.31	0.29	330-720	580	1.1 X 10 <sup>-14</sup>
<b>VTB1112H</b>	TO-46 lensed	1.6	30		0.1	0.31	0.5	320-1100	920	3 X 10 <sup>-14</sup>
<b>VTB1112BH</b>	TO-46 lensed	1.6	3		0.1	0.31	0.29	330-720	580	5.3 X 10 <sup>-14</sup>
<b>VTB1113H</b>	TO-46 lensed	1.6	30		0.02	0.31	0.5	320-1100	920	5.9 X 10 <sup>-15</sup>
<b>VTB1113BH</b>	TO-46 lensed	1.6	3		0.02	0.31	0.29	330-720	580	1.1 X 10 <sup>-14</sup>
<b>VTB4051H</b>	Ceramic	14.8	100		0.25	3	0.5	320-1100	920	2.1 X 10 <sup>-14</sup>
<b>VTB5051H</b>	TO-5	14.8	85		0.25	3	0.5	320-1100	920	2.1 X 10 <sup>-14</sup>
<b>VTB5051BH</b>	TO-5	14.8	8		0.25	3	0.29	330-720	580	3.7 X 10 <sup>-14</sup>
<b>VTB5051JH</b>	TO-5 with 3 pins	14.8	85		0.25	3	0.5	320-1100	920	2.1 X 10 <sup>-14</sup>
<b>VTB5051UVH</b>	TO-5	14.8	85		0.25	3	0.1 @ 365 nm	200-1100	920	2.1 X 10 <sup>-14</sup>
<b>VTB5051UVJH</b>	TO-5 with 3 pins	14.8	85		0.25	3	0.1 @ 365 nm	200-1100	920	2.1 X 10 <sup>-14</sup>
<b>VTB6061H</b>	TO-8	37.7	260		2	8	0.5	320-1100	920	5.7 X 10 <sup>-14</sup>
<b>VTB6061BH</b>	TO-8	37.7	26		2	8	0.29	330-720	580	1 X 10 <sup>-13</sup>
<b>VTB6061CIEH</b>	TO-8	37.7			2	8		460-675	555	1.3 X 10 <sup>-13</sup>
<b>VTB6061JH</b>	TO-8 with 3 pins	37.7	260		2	8	0.5	320-1100	920	5.7 X 10 <sup>-14</sup>
<b>VTB6061UVH</b>	TO-8	37.7	260		2	8	0.1 @ 365 nm	200-1100	920	5.7 X 10 <sup>-14</sup>
<b>VTB6061UVJH</b>	TO-8 with 3 pins	37.7	260		2	8	0.1 @ 365 nm	200-1100	920	5.7 X 10 <sup>-14</sup>
<b>VTB8341H</b>	Ceramic	5.16	35		0.1	1	0.5	320-1100	920	2.4 X 10 <sup>-14</sup>
<b>VTB8440H</b>	8 mm Ceramic	5.16	35		2	1	0.5	320-1100	920	5.9 X 10 <sup>-14</sup>
<b>VTB8440BH</b>	8 mm Ceramic	5.16	4		2	1	0.29	330-720	580	1.1 X 10 <sup>-13</sup>
<b>VTB8441H</b>	8 mm Ceramic	5.16	35		0.1	1	0.5	320-1100	920	1.3 X 10 <sup>-14</sup>
<b>VTB8441BH</b>	8 mm Ceramic	5.16	4		0.1	1	0.29	330-720	580	2.4 X 10 <sup>-14</sup>

Figure 1

## Package Drawing – VTB Series – Flat Sidelooper Package

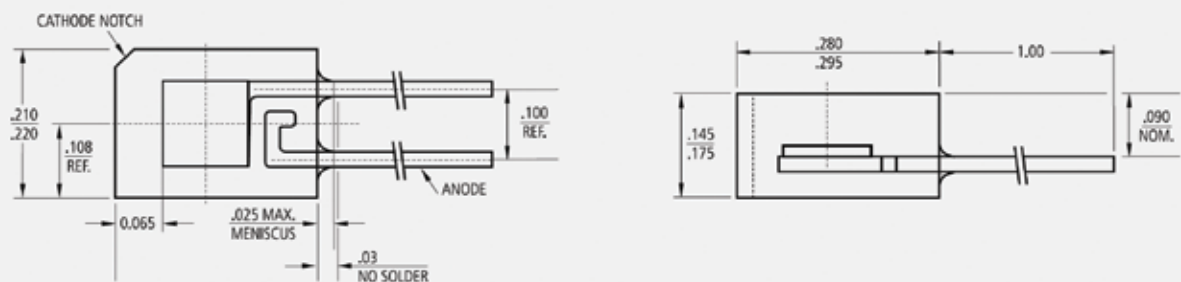


Figure 2

Package Drawing – VTB Series – TO-46 Package

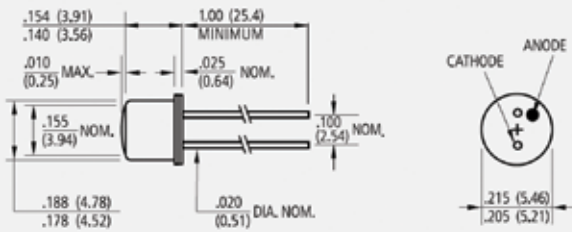


Figure 3

Package Drawing – VTB Series – TO-5 Package

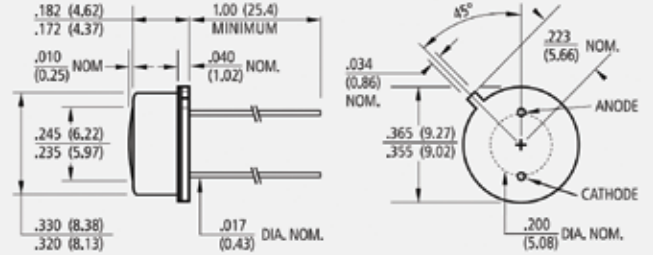


Figure 4

Package Drawing – VTB Series - TO-46 Lensed

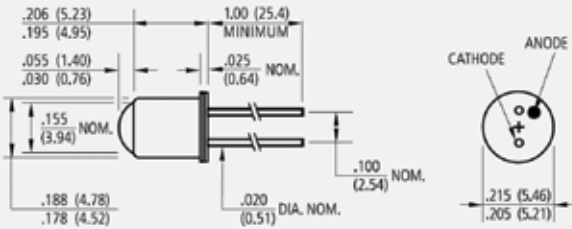


Figure 5

Package Drawing – VTB Series - Ceramic Package

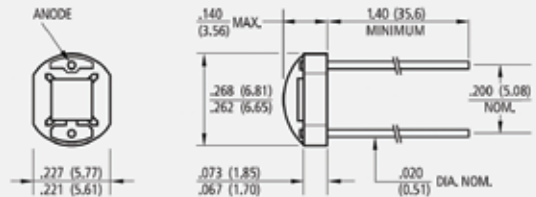


Figure 6

Package Drawing – VTB Series- 8mm Ceramic Package

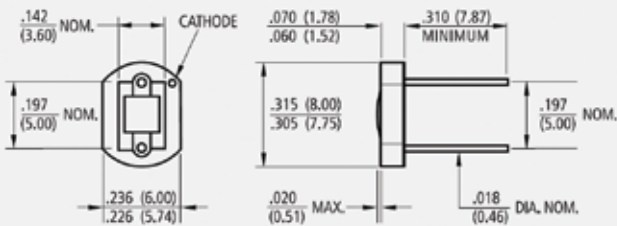
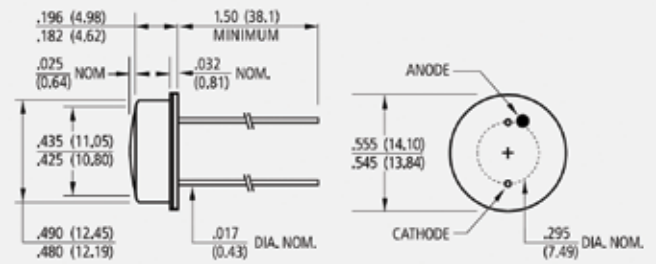


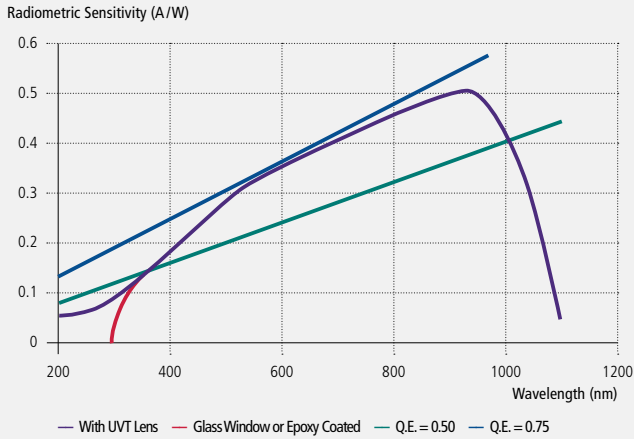
Figure 7

Package Drawing – VTB Series – TO-8 Package



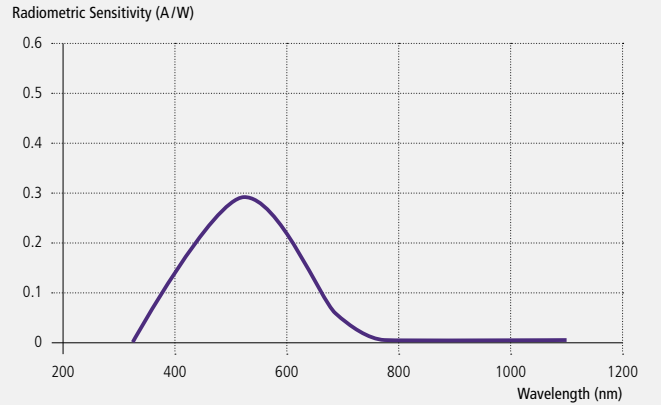
Graph 1

Absolute Spectral Response



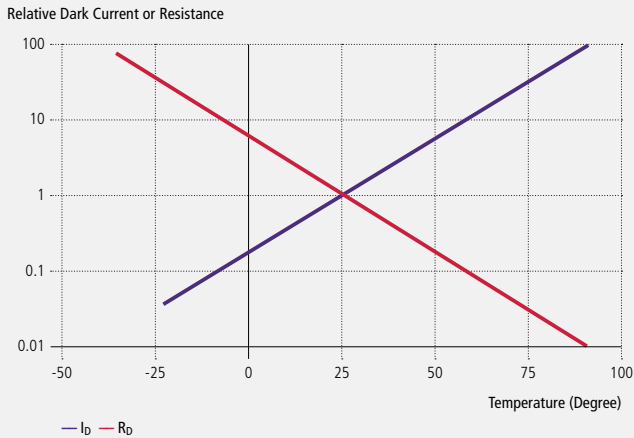
Graph 2

Absolute Spectral Response "B" Series (Filtered)



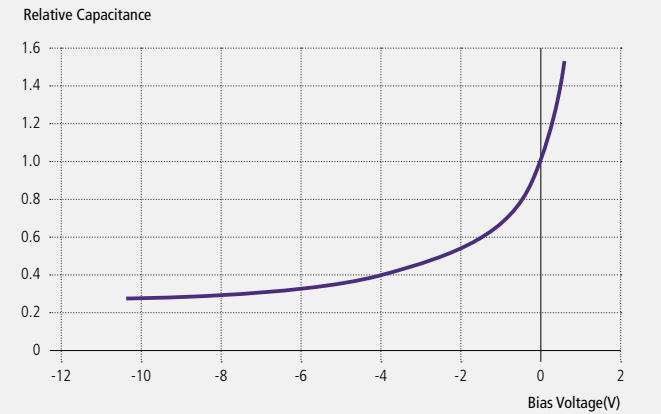
Graph 3

Rel. Current or Resistance vs. Temperature (Referred to 25°C)



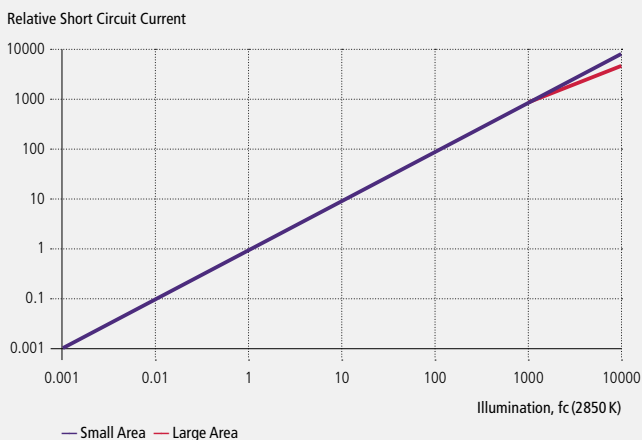
Graph 4

Relative Junction Capacitance vs. Voltage (Referred to Zero Bias)



Graph 5

Relative Short Circuit Current vs. Illumination



Graph 6

Rise/Fall Times – Non Standard

