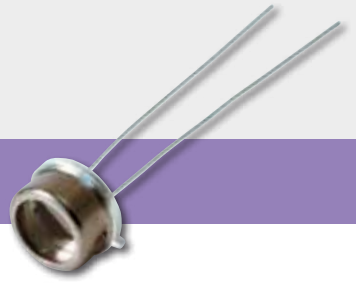
BLUE-ENHANCED SILICON PHOTODIODES FOR INDUSTRIAL AND COMMERCIAL APPLICATIONS

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, 0.14 A/W typical
- Response @ 220 nm, 0.06 A/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

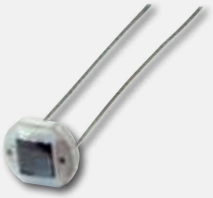
VTB6061

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

VTB4051

Planar silicon photo-diode mounted on a ceramic substrate and coated with a layer of clear epoxy

VTB8341



Planar silicon photo-diode mounted on a ceramic substrate and coated with a layer of clear epoxy

Product Table

Silicon Photodiodes – VTB Series – Ultra High Dark Resistance

	Package	Active Area	Short Circuit Current @100 fc, 2850 K	Dark Current	Junction Capacitance	Radiometric Sensitivity @365 nm	Spectral Range	Peak Wavelength	Noise Equivalent Power
			min	max	typ	typ			typ
Symbol			I_{SC}	I_D	C_J	S_R	λ_{RANGE}	λ_P	NEP
Unit		mm^2	µA	nA	nF	A/W	nm	nm	$W/\sqrt{Hz}$
VTB100AH	Flat sidelooker	7.1	50	0.50	0.10	0.55 @ 925 nm	400 - 1150	925	9.0×10^{-14}
VTB1012H	TO-46	1.6	8.0	0.10	0.31	0.09	320 - 1100	920	3.0×10^{-14}
VTB1012BH	TO-46	1.6	0.80	0.10	0.31	0.28 @ 540 nm	330 - 720	580	5.3×10^{-14}
VTB1013H	TO-46	1.6	8.0	0.02	0.31	0.09	320 - 1100	920	5.9×10^{-15}
VTB1013BH	TO-46	1.6	0.80	0.02	0.31	0.28 @ 540 nm	330 - 720	580	1.1×10^{-14}
VTB1112H	TO-46 lensed	1.6	30.0	0.10	0.31	0.19	320 - 1100	920	3.0×10^{-14}
VTB1112BH	TO-46 lensed	1.6	3.0	0.10	0.31	0.28 @ 540 nm	330 - 720	580	5.3×10^{-14}
VTB1113H	TO-46 lensed	1.6	30.0	0.02	0.31	0.19	320 - 1100	920	5.9×10^{-15}
VTB1113BH	TO-46 lensed	1.6	3.0	0.02	0.31	0.28 @ 540 nm	330 - 720	580	1.1×10^{-14}
VTB4051H	Ceramic	14.8	100	0.25	3.0	0.10	320 - 1100	920	2.1×10^{-14}
VTB5051H	TO-5	14.8	85	0.25	3.0	0.10	320 - 1100	920	2.1×10^{-14}
VTB5051BH	TO-5	14.8	8	0.25	3.0	0.28 @ 540 nm	330 - 720	580	3.7×10^{-14}
VTB5051JH	TO-5 with 3 pins	14.8	85	0.25	3.0	0.10	320 - 1100	920	2.1×10^{-14}
VTB5051UVH	TO-5	14.8	85	0.25	3.0	0.038 @ 220 nm	200 - 1100	920	2.1×10^{-14}
VTB5051UVJH	TO-5 with 3 pins	14.8	85	0.25	3.0	0.038 @ 220 nm	200 - 1100	920	2.1×10^{-14}
VTB6061H	TO-5	37.7	260	2.0	8.0	0.10	320 - 1100	920	5.7×10^{-14}
VTB6061BH	TO-5	37.7	26	2.0	8.0	0.28 @ 540 nm	330 - 720	580	1.0×10^{-13}
VTB6060CIEH	TO-5	37.7		2.0	8.0		460 - 675	555	1.0×10^{-13}
VTB6061JH	TO-5 with 3 pins	37.7	260	2.0	8.0	0.10	320 - 1100	920	5.7×10^{-14}
VTB6061UVH	TO-5	37.7	260	2.0	8.0	0.04 @ 220 nm	200 - 1100	920	5.7×10^{-14}
VTB6061UVJH	TO-5 with 3 pins	37.7	260	2.0	8.0	0.04 @ 220 nm	200 - 1100	920	5.7×10^{-14}
VTB8341H	Ceramic	5.16	35	0.10	1.0	0.10	320 - 1100	920	2.4×10^{-14}
VTB8440H	8 mm ceramic	5.16	35	2.0	1.0	0.10	320 - 1100	920	5.9×10^{-14}
VTB8440BH	8 mm ceramic	5.16	4	2.0	1.0	0.28 @ 540 nm	330 - 720	580	1.1×10^{-13}
VTB8441H	8 mm ceramic	5.16	35	0.10	1.0	0.10	320 - 1100	920	1.3×10^{-14}
VTB8441BH	8 mm ceramic	5.16	4	0.10	1.0	0.28 @ 540 nm	330 - 720	580	2.4×10^{-14}
VTB9412H	6 mm ceramic	1.6	8	0.10	0.31	0.09	320 - 1100	920	3.0×10^{-14}
VTB9412BH	6 mm ceramic	1.6	0.8	0.10	0.31	0.28 @ 540 nm	330 - 720	580	5.3×10^{-14}
VTB9413H	6 mm ceramic	1.6	8	0.02	0.31	0.09	320 - 1100	920	5.9×10^{-15}
VTB9413BH	6 mm ceramic	1.6	0.8	0.02	0.31	0.28 @ 540 nm	330 - 720	580	1.1×10^{-14}

Figure 1

Package Drawing – VTB Series – Flat Sidelooker Package

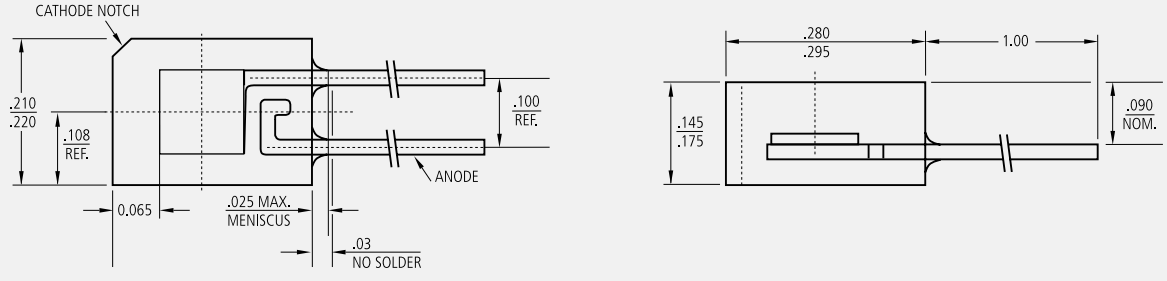


Figure 2

Package Drawing – VTB Series – TO-46 Package

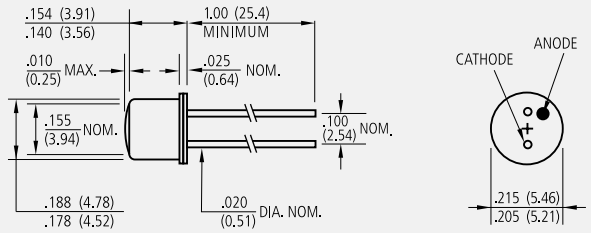


Figure 3

Package Drawing – VTB Series – TO-5 Package

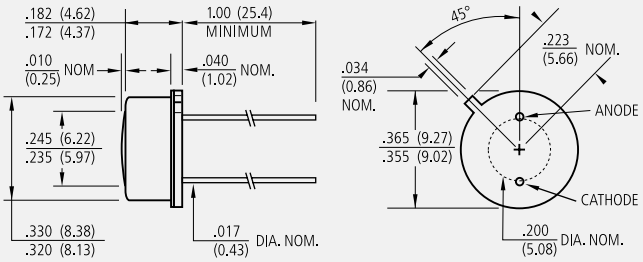


Figure 4

Package Drawing – VTB Series – 8mm Ceramic Package

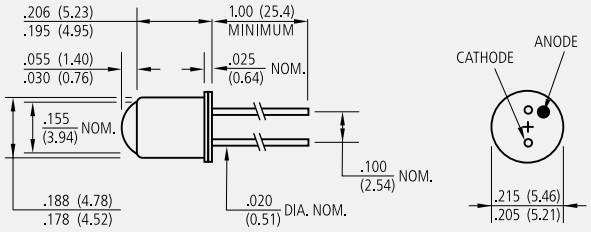


Figure 5

Package Drawing – VTB Series – TO-46 Lensed

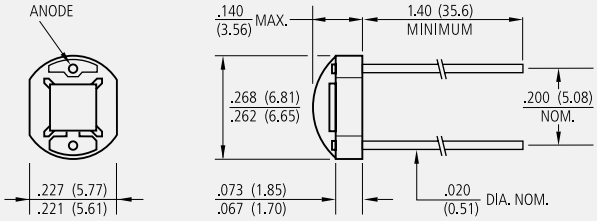


Figure 6

Package Drawing – VTB Series – Ceramic Package

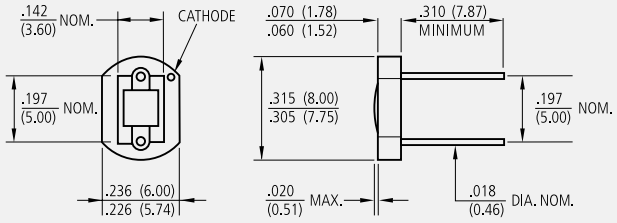
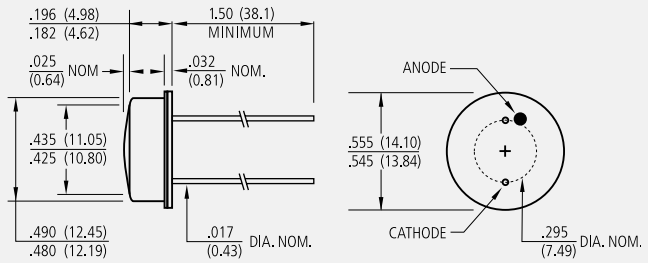


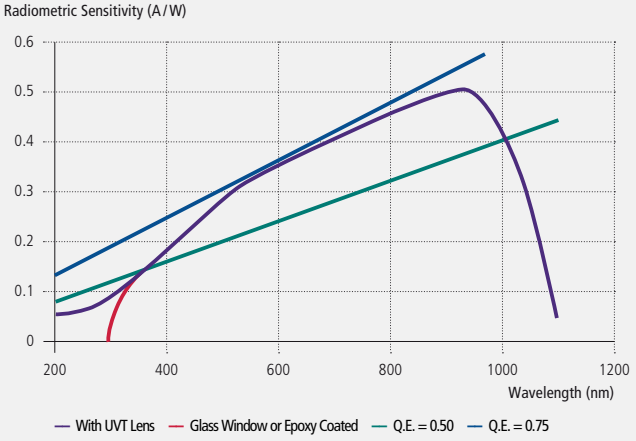
Figure 7

Package Drawing – VTB Series – TO-8 Package



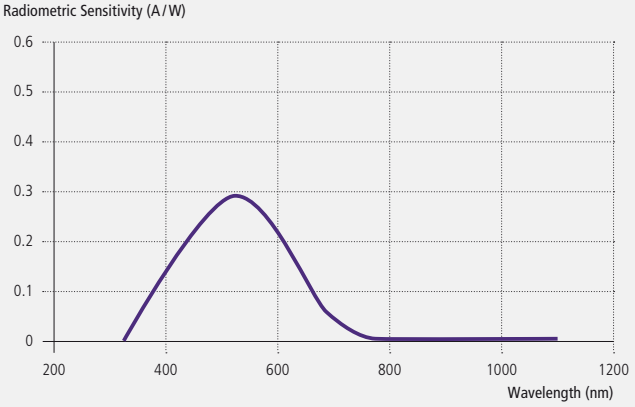
Graph 1

Absolute Spectral Response



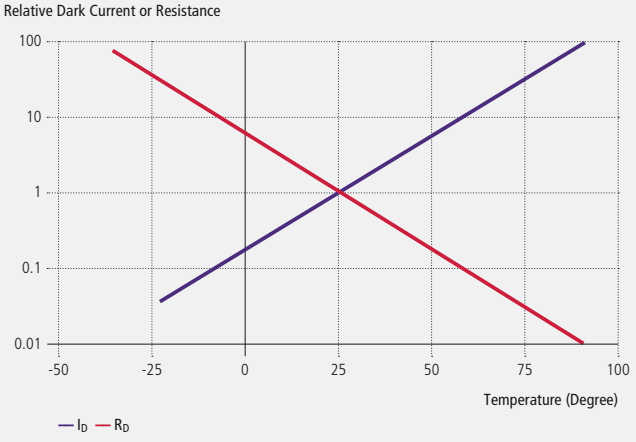
Graph 2

Absolute Spectral Response "B" Series (Filtered)



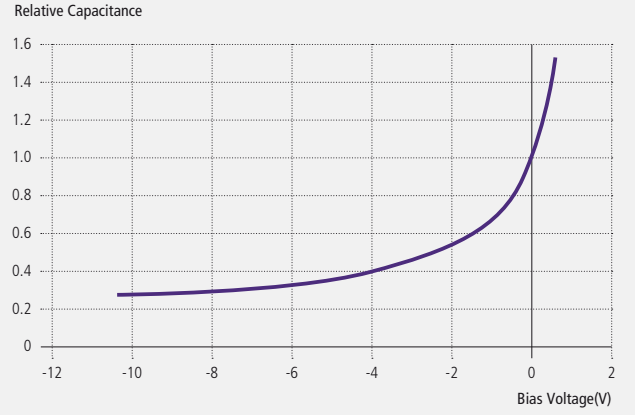
Graph 3

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



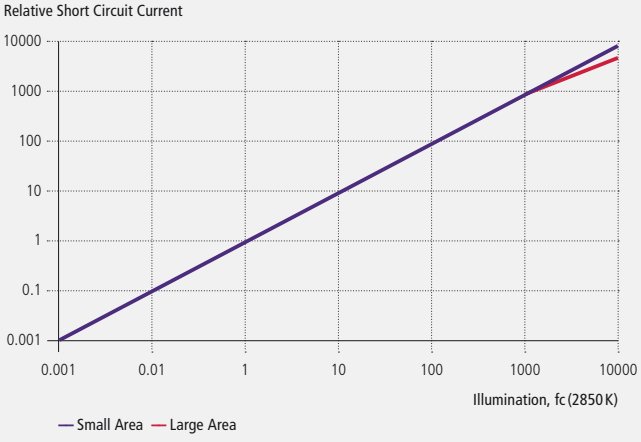
Graph 4

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



Graph 5

Relative Short Circuit Current vs. Illumination



Graph 6

Rise/Fall Times – Non Standard