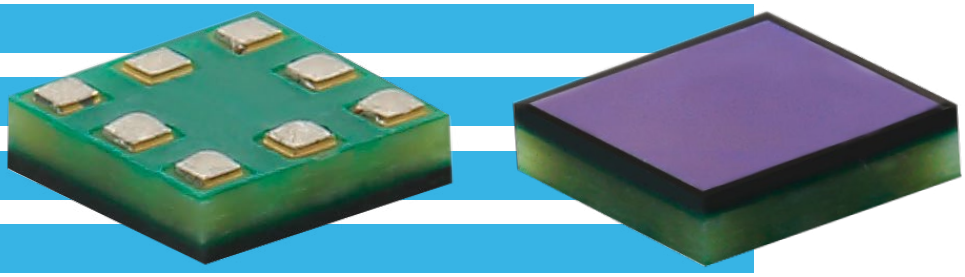


Back-Illuminated Silicon Photodiodes

Back Illuminated Silicon Photodiode in Chip-Scale Package

The (BI-SMT) series are single-channel back-illuminated silicon photodiodes designed to minimize dead areas at the edge of the device. Each device is designed on a package with dimensions close to the chip size itself. This design allows for multiple detectors to be arranged in a tiled format and offers ease of coupling to a scintillator if desired.

Applications

- X-Ray Inspection
- Computed Tomography
- General Industrial Use

Features

- Chip Size Package
- Ease of coupling to Scintillator
- Patterned Electrodes

Absolute Maximum Ratings

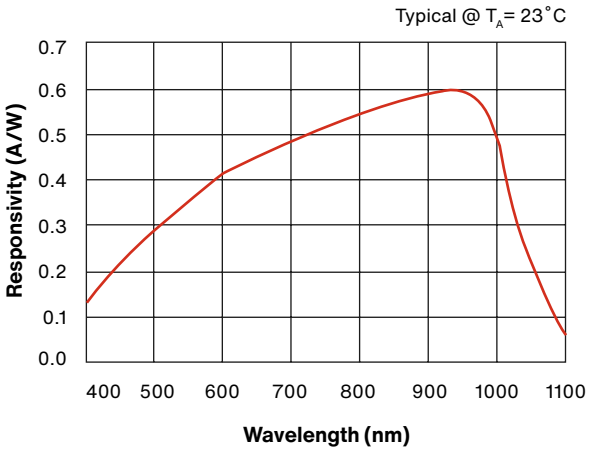
Parameter	Symbol	Min	Max	Unit
Reverse Voltage	V_R	-	10	V
Operating Temperature*	T_{OP}	-20	+60	°C
Storage Temperature*	T_{STG}	-20	+80	°C

*Non-Condensing

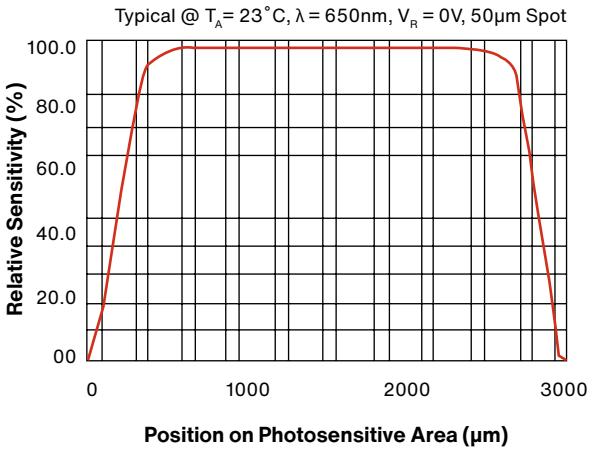
Typical Electro-Optical Specifications at TA=23 °C

Model	Active Area	Active Area Dimensions	Peak Wavelength	Responsivity		Responsivity		Capacitance	Shunt Resistance		Rise Time	Package
	mm^2	mm	nm	A/W		A/W		pF	MΩ		µs	
				540nm		920nm		0V	-10mV		0V /1KΩ / 650nm	
			typ	min	typ	min	typ	typ	min	typ	typ	
33BI SMT	5.76	2.4 x 2.4	920	0.30	0.35	0.53	0.59	4	20	500	10	SMT
55BI-SMT	19.36	4.4 x 4.4	920	0.30	0.35	0.53	0.59	200	5	250	20	SMT
1010BI-SMT	88.36	9.4 x 9.4	920	0.30	0.35	0.53	0.59	900	1	62.5	20	SMT

Spectral Response

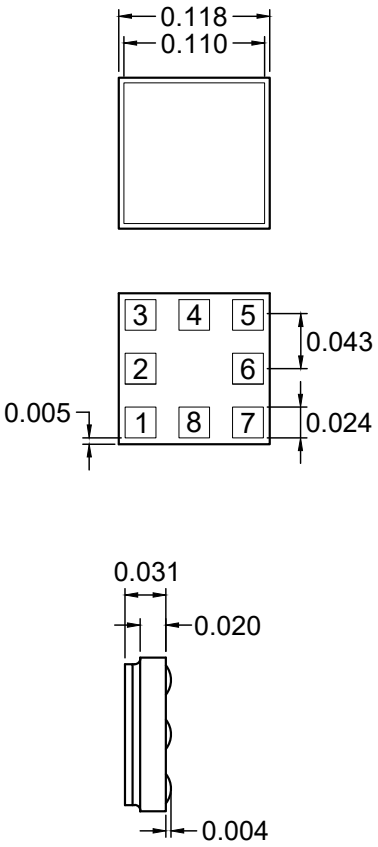


Sensitivity Uniformity

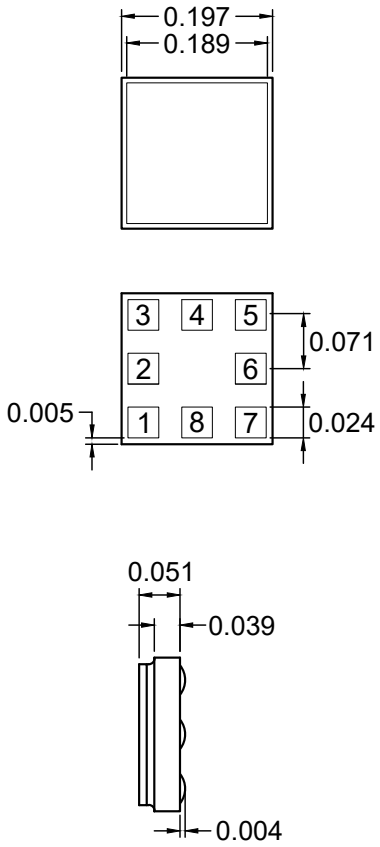


Mechanical Specifications

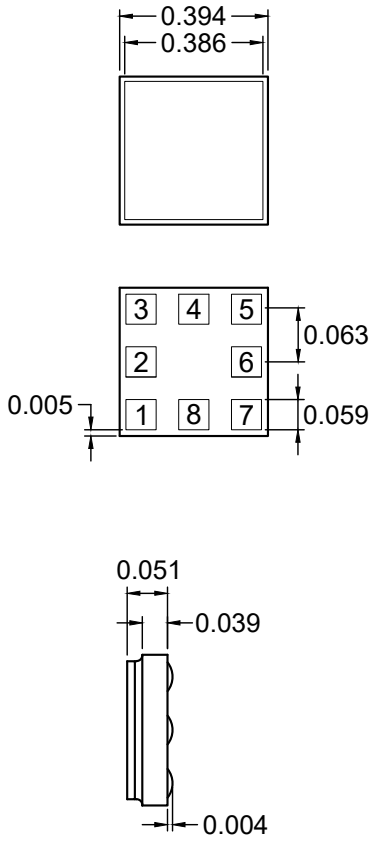
Units are in inches



33BI-SMT



55BI-SMT



1010BI-SMT

Tolerances (unless otherwise noted)

- General: 0.XX ±0.01", 0.XXX ±0.005"
- Chip Centering: ±0.010"

All Pad Assignments:

Cathode: 1, 3, 5, 7
Anode: 2, 4, 6, 8

Care and handling instructions

Your photodiodes are packaged and shipped in opaque, padded containers to avoid ambient light exposure and damage due to shock from dropping or jarring.

Care must be taken to avoid photodiode exposure to high ambient light levels, particularly from tungsten sources or sunlight.

- Photodiodes can be rendered inoperable if dropped or sharply jarred. The wire bonds are delicate and can become separated from the photodiode's bonding pads when the detector is dropped or otherwise receives a sharp physical blow.
- Most windows on photodiodes are either silicon or quartz. They should be cleaned with isopropyl alcohol and a soft (optical grade) pad.
- Photodiode exposure to extreme high or low storage temperatures can affect the subsequent performance. Maintain a non-condensing environment for optimum performance and lifetime.
- All devices are considered ESD sensitive. The photodiodes are shipped in ESD protective packaging. When unpacking and using these products, anti-ESD precautions should be observed.
- Photodiode packages and/or operation may be impaired if exposed to CHLOROETHENE, THINNER, ACETONE, TRICHLOROETHYLENE or any harsh chemicals.
- Photodiodes in plastic packages should be given special care. Clear plastic packages are more sensitive to environmental stress than those of black plastic. Storing devices in high humidity can present problems when soldering. Since the rapid heating during soldering stresses the wire bonds and can cause wire to bonding pad separation, it is recommended that devices in plastic packages to be baked for 24 hours at 85°C.
- The leads on the photodiode SHOULD NOT BE FORMED. If your application requires lead spacing modification, please contact OSI Optoelectronics Applications group at (310)978-0516 before forming a product's leads. Product warranties could be voided.
- Most devices are provided with wire or pin leads for installation in circuit boards or sockets. Observe the soldering temperatures and conditions specified below:
  - Soldering Iron: Soldering 30 W or less
  - Temperature at tip of iron 300°C or lower.
  - Dip Soldering: Bath Temperature: 260±5°C.
  - Immersion Time: within 5 Sec.
  - Soldering Time: within 3 Sec.
  - Vapor Phase Soldering, Reflow Soldering: DO NOT USE

Legal Disclaimer

Information in this data sheet is believed to be correct and reliable. However, no responsibility is assumed for possible inaccuracies or omission. Specifications are subject to change without notice.

RoHS COMPLIANT

Most of our standard catalog products are RoHS Compliant. Please contact us for details.