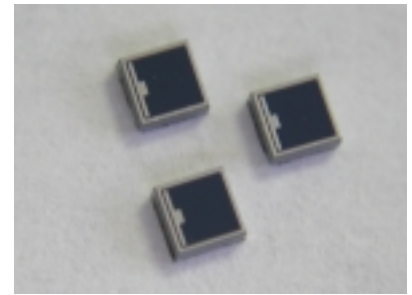


## SD150-14-006

### 16/32Mbps Si PIN Photodiode Chip



The SD150-14-006 chip is a silicon pin photodiode that has been specifically developed for the price-sensitive OEM optical communication applications, including IrDA-compatible transceivers, fiber-optic LAN, VCSEL-based IR links, and instrumentation. Designed to be fully depleted at low voltages, the device offers exceptionally low capacitance and fast response. The rise and fall times have been optimized for digital transmission, and the signal tailing, a common problem for photodiodes operating at low bias, have been greatly reduced. Typical data transfer speeds are 16Mbps and up to 32Mbps on selected devices.

The device features excellent quantum efficiency, exceeding 80% between 500 and 850nm, offering higher sensitivity than many comparable devices, thus extending the effective operating range of the IrDA-enabled peripherals.

The SD150-14-006 is ideally suited for such demanding applications as Very Fast IR (VFIR) links for high-resolution digital cameras, scanners, portable storage devices, personal computers and PDAs, and infrared LAN access nodes. The device can match the speeds of USB ports, thus offering attractive alternative of transferring large amounts of data to and from a computer at high rates without a cable connection and making peripheral devices truly portable. Low operating voltage makes it also a perfect choice for battery-powered applications.

Advanced Photonix can custom assemble the SD150-14-006 into OEM IrDA transceiver modules. Contact factory for details.

### Features

- 2.3mm<sup>2</sup> active area
- High speed
- Reduced turn-off tail
- Excellent QE
- Low bias voltage (2.5V)
- Low noise
- Low capacitance
- Wide operating temp. range
- Low cost

### Applications

- Very Fast IR links up to 16/32 Mbps
- Portable peripherals
- Portable instrumentation
- IR transceiver modules

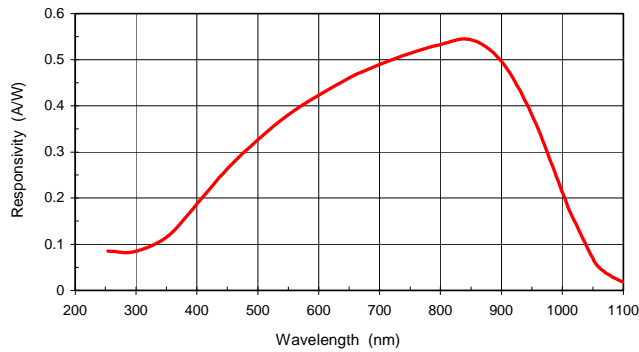
## Electro-Optical Characteristics

@ +23°, V<sub>r</sub> = 2.5V, unless otherwise noted

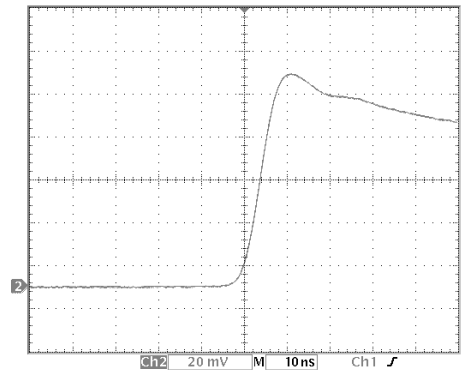
Parameter	Min	Typ.	Max.	Conditions
Dark Current		1 nA	3 nA	V <sub>r</sub> = 2.5V
		1.5 nA	5 nA	V <sub>r</sub> = 5.0V
Forward Voltage		0.65 V	0.85 V	I <sub>p</sub> = 3mA
Breakdown Voltage	15 V	25 V	NA	I <sub>r</sub> = 10μA
Capacitance		8 pF	9.5 pF	V <sub>r</sub> = 2.5V, f = 4MHz
Rise Time		7.5 ns	10 ns	10-90%, λ = 850nm, R <sub>L</sub> = 50Ω
Fall Time		7.5 ns	19 ns	90-10%, λ = 850nm, R <sub>L</sub> = 50Ω
Responsivity	0.50A/W	0.55A/W		λ = 850nm

# Typical Performance Graphs

Spectral Responsivity @  $V_b = 2.5V$ ,  $T_a = 23^\circ C$



Small signal response  
 $R_i = 50\Omega$ . source: 850nm VCSEL



## Mechanical Characteristics

Die Size	0.070 x 0.070 in. (1.77 x 1.77 mm)
Active Area	0.060 x 0.060 in. (1.53 x 1.53 mm)
Die Thickness	0.015 in. (0.38 mm)
Front Anode Contact	0.014 x 0.010 in., Al
Front Cathode Ring Width	0.005 in., Al
Cathode Backside Contact	Au
A/R Coating	Thermal SiO <sub>2</sub> , $\lambda = 1465 \pm 50 \text{\AA}$

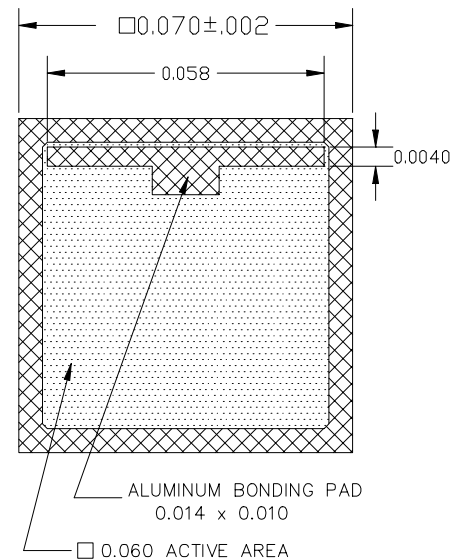
### Recommendations

Attachment method	conductive epoxy
Wire bonding	aluminum, gold

### Absolute Maximum Ratings\*

Storage Temperature	-55°C to +150°C
Operating Temperature	-40°C to +125°C
Reverse Bias Voltage	25V

\*Operating beyond these limits may cause permanent damage to the device.



API reserves the right to change specifications without notification.