





SD160-24-21-021

Segmented Bi-Cell Position Sensitive Silicon Photodiode

The SD160-24-21-021 is a position sensitive bi-cell silicon photodiode used for nulling, centering, or measuring small positional changes packaged in a hermetic TO-5 metal package. The two 4.5×0.51 mm active areas are separated with a gap of 20µm between the elements. The device exhibits low crosstalk, low capacitance, and low dark current.

Applications

Emitter Alignment

Position Sensing

Medical

Industrial

Features

Low Dark Current

Low Crosstalk

High Shunt Resistance

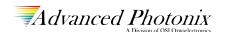
20µm Gap

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DS SD160-24-21-021 Rev. A

/ Germany and Other Countries LASER COMPONENTS Germany GmbH Tel +49 8142 2864 - 0 info@lasercomponents.com www.lasercomponents.com / France LASER COMPONENTS S.A.S. Tel +33 1 39 59 52 25 info@lasercomponents.fr www.lasercomponents.fr / United Kingdom LASER COMPONENTS (UK) Ltd. Tel +44 1245 491 499 info@lasercomponents.co.uk www.lasercomponents.co.uk







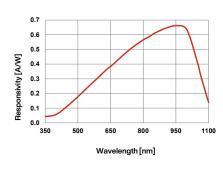
Absolute Maximum Ratings at T_A=23 °C

Parameter	Symbol	Min	Max	Unit
Reverse Voltage	$V_{_{\rm R}}$	-	50	V
Operation Temperature	T _{OP}	-40	+125	°C
Storage Temperature	T _{STG}	-55	+150	°C
Package		тс		

Typical Electro-Optical Specifications Per Element at T_A=23 °C

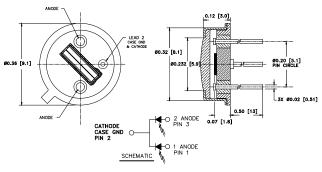
Parameter	Test Conditions	Symbol	Min	Тур	Max	Unit
Active Area Dimensions	-	A.A. _D	-	4.5 x 0.5	-	mm
Gap Between Elements	-	-	-	0.02	-	mm
Spectral Range	Spot Scan	Δλ	350	-	1100	nm
Reponsivity	λ=633nm, V _R =0V	R_{λ}	0.33	0.37	-	A/W
	λ=900nm, V _R =0V	R_{λ}	0.60	0.64	-	A/W
Capacitance	V _R =0V; f=1MHz	C _J	-	30	-	pF
	V _R =10V; f=1MHz	C _J	-	8	-	pF
Shunt Resistance	V _R =10mV	R _{SH}	300	-	-	МΩ
Dark Current	V _R =5V	I _D	-	0.5	2.5	nA
Noise Equivalent Power	V _R =0V @λ=950nm	NEP	-	2.5x10 ⁻¹⁴	-	W/√Hz
Rise Time	RL=50Ω, V _R =0V	T _R	-	13	-	μs
	RL=50Ω, V _R =10V	T _R	-	7.4	-	μs

Typical Spectral Response



Mechanical Specifications

Units are in inches [mm]

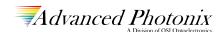


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General Care and Handling Instructions

Photodiodes

- Handling and Storage
 Handle Photodiodes gently to prevent damage.
- Avoid exposing Photodiodes to temperatures exceeding the storage temperature rating of the device.
- Maintain a non-condensing environment for optimum performance and lifetime.

Cleaning

Gently clean the glass (borosilicate or quartz window) using a 50/50 mixture of Methanol and isopropyl alcohol and a soft, optical-grade pad.

Special Considerations for Plastic or Epoxy Encapsulated

- · Protect from intense light sources such as direct sunlight.
- Avoid exposure to harsh chemicals like THINNERS, ACETONE, and TRICHLOROETHYLENE.
- Cleaning with a 50/50 mixture of Methanol and isopropyl alcohol (IPA) is recommended. Cleaning in an ultrasonic bath is generally not recommended.

CdS Photocells:

Handling and Storage

- Handle CdS Photocells gently to prevent damage.
- Avoid exposing CdS Photocells to temperatures exceeding the storage temperature rating of the device.
- Maintain a non-condensing environment for optimum performance and lifetime.

Cleaning

. Gently clean the glass or plastic covering using a 50/50 mixture of Methanol and isopropyl alcohol and a soft, optical-grade pad.

Special Considerations

DO NOT use Vapor Phase Soldering or Reflow Soldering for CdS components.

Optocouplers and LEDs:

Handling and Storage

- Handle Optocouplers and LEDs gently to prevent damage.
- Avoid exposing the devices to temperatures exceeding the storage temperature rating of the device.
- · Maintain a non-condensing environment for optimum performance and lifetime.

Cleaning

 For plastic molded devices, cleaning with a 50/50 mixture of Methanol and isopropyl alcohol is recommended Cleaning in an ultrasonic bath is generally not recommended

Special Considerations

 Avoid exposing plastic molded devices or epoxy glob top devices to harsh chemicals like THINNERS, ACETONE, and TRICHLOROETHYLENE.

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.



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

Electrostatic Discharge (ESD) Sensitivity:
 All devices are considered ESD-sensitive. They are shipped in ESD protective packaging. When unpacking and using these products, anti-ESD precautions should be observed.

Lead Trimming and Bending:

Standard lead trimming after soldering is an acceptable practice; however, do not attempt to bend or modify the leads incorrectly, as it can damage the glass feed-through or the plastic encapsulant.

Soldering Instructions:

- Use a soldering iron with a tip temperature of 300°C max.
- Consult with your preferred solder manufacturer to determine a solder alloy and flux combination, as well as the reflow profile appropriate for your application.

General Precautions for all Devices

. Moisture Prevention: Ensure devices are stored in a dry environment to prevent moisture ingress, which can cause damage during soldering. Refer to J-STD-20 for guidance on proper

baking procedures to prevent moisture related damage. Lead Splaying: If required, carefully splay the leads of the devices according to the specific application needs. Be cautious when splaying leads, as improper techniques may damage the device. Consult technical support or device datasheets for guidance on lead splaying.

3. Mechanical Stress:

Handle devices with care throughout the installation process to prevent damage.
Circuit Protection and Layout:

Optimize the circuit design and layout to ensure proper functioning and prevent damage to the devices. Include appropriate protection measures like ESD protection diodes, current-limiting resistors, and voltage regulation. 5. After-Sale Support:

For troubleshooting and device-specific inquiries, please consult with our technical support team. They can offer valuable guidance and suggestions on handling, operation, and application-related questions. To reach them, please contact the Advanced Photonix Applications group at Techsupport@advancedphotonix.com



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