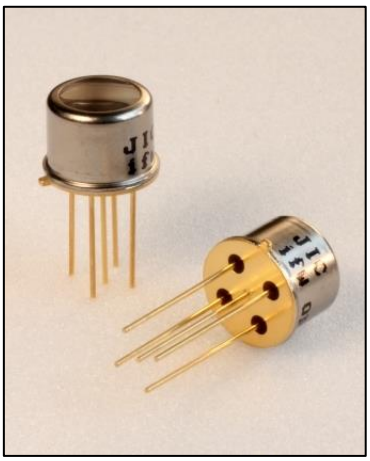
SiC-Photodiode 1,0 mm² with Voltage-Output
JIC267 · JIC268 · JIC269



Characteristics :

- SiC photodiode with built-in transimpedance-amplifier
- voltage output U_{out} up to 5 V
- spectral range: 215 … 358 nm
- active area: 1,0 mm²
- standard versions available in three transimpedance values: R_F = 10 MΩ / 100 MΩ / 1000 MΩ
- external adjustment of gain and bandwidth possible via sensor-pin
- dynamic range: 4 orders of magnitude
- single supply voltage
- sensor assembly isolated from case
- hermetically sealed TO5-package
- RoHS, REACH and WEEE conform

Applications :

- optical measurements in UV-range
- control of sterilization lamps
- flame control

Absolute Maximum Ratings :

♦ supply voltage U_S	5,5 V
♦ working temperature	- 25 °C ... 85 °C
♦ storage temperature	- 40 °C ... 100 °C
♦ soldering temperature (5s)	300 °C

Technical Specifications :

Parameter	Test-conditions	JIC267	JIC268	JIC269	Unit
transimpendance R_F		10	100	1.000	MΩ
dark offset voltage	E = 0 lx	± 1	± 2	± 3	mV
noise voltage	B = 1 kHz	1			mV_{rms}
max. spectral responsivity S_{max}	λ = 276 nm	1,7	17	170	mV/nW
min. irradiance (sensitivity)	U_{out} = 0,5 mV λ = 276nm	294	29,4	2,94	µW/m²
max. irradiance (saturation)	$U_{out, max}$ = 5 V λ = 276 nm	2.940	294	29,4	mW/m²
rise time	10% / 90%	30	200	1100	µs
bandwidth	- 3 dB	10	1,5	0,3	kHz
saturation voltage $U_{out, max}$	R_L = 2 kΩ	+ 4,95 (+ 4,8)			V
short circuit current $I_{out, max}$		± 50			mA
supply voltage U_S		+ 2,7 … + 5			V
current consumption I_S		750 (1100)			µA

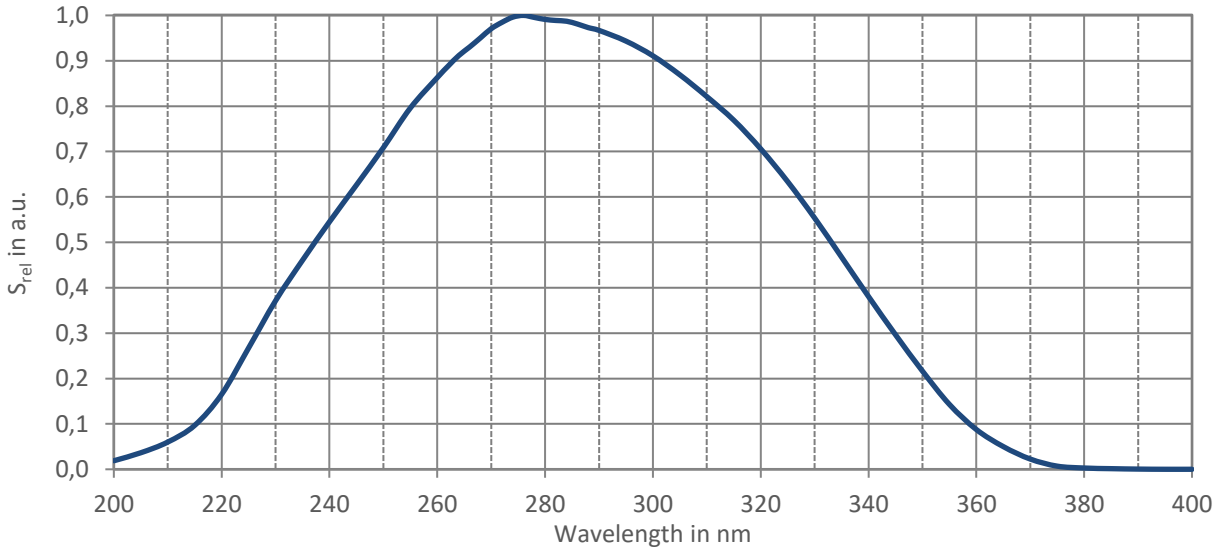
common test conditions, if not specified otherwise: T_A = 25 °C, U_S = +5 V
typical values, maximum values in brackets

ifw optronics GmbH
Ernst-Ruska-Ring 3
D-07745 Jena

www.ifw-optronics.com
info@ifw-optronics.com

Tel.: +49 (3641) 204-117
Fax: +49 (3641) 204-110

Relativ Spectral Responsivity S_{rel}:



Spectral Specifications :

Parameter	Test Conditions	JIC267	JIC268	JIC269	Unit
spectral range λ_{short} λ_{long}	S = 0,1 * S max	215 358			nm nm
wavelength of max. responsivity λ_{Smax}	S = S max	276			nm
max. spectral sensitivity S_{max}	λ = 276 nm	1,7	17	170	mV/nW
sensitivity for Hg-LP-lamps	λ = 254 nm	1,35	13,5	135	mV/nW
FOV	S = 0,5 * S max	±48			degree

common test conditions, if not specified otherwise: T_A = 25 °C, typical values

Further Available Version:

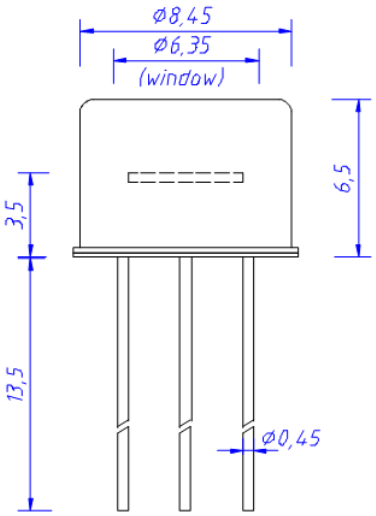
Feature	Specification	ifw optronics parts	datasheet
wavelength range limitation	UV-A, UV-B, UV-C, etc...	JIC26xA/B/C	on request
smaller active area, lower price	0,1 mm²	JIC227/228/229	on request
lens-caps (ball lens)	increased signal, reduced FOV	JIC269L	on request
diffusor optics	cosine-corrected signal reponse	JIC267D/268D/269D	on request

ifw optronics GmbH
Ernst-Ruska-Ring 3
D-07745 Jena

www.ifw-optronics.com
info@ifw-optronics.com

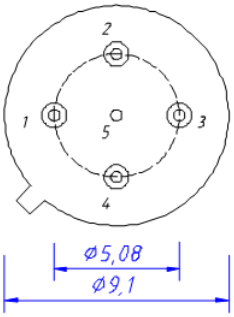
Tel.: +49 (3641) 204-117
Fax: +49 (3641) 204-110

Case Dimensions



Pin Configuration:

1 R_F
2 Out
3 U_S
4 GND
5 Case



bottom view

Application Notes:

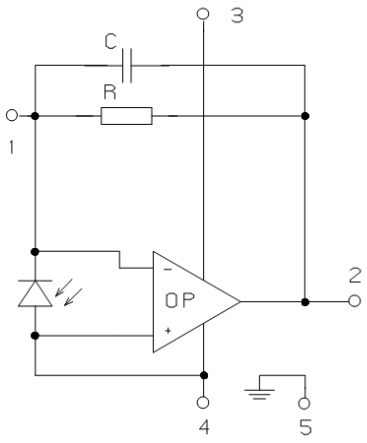
Gain and Bandwidth Adjustment

The transimpedance (voltage gain) can be reduced by paralleling the internal feedback resistor with external resistance over pin 1 "R_F" and pin 2 "Out"

In a similar way the bandwith of the amplifier can be decreased by paralleling additional feedback-capacitance over pin 1 "R_F" and pin 2 "Out". Bandwidth limitation can be usefull to decrease signal noise, or to guarantee amplifier stability when reducing the feedback resistance.

If an external resistor for gain reduction between pin 1 "R_F" and pin 2 "Out" is used, it is good practice to keep the connector-length as short as possible to reduce noise incoupling and capacative interference.

If the internally adjusted gain is used only, it is good practice to cut pin 1 to omit noise incoupling.



Schematic: Internal circuit with pinout

Power-Supply

A well regulated supply voltage U_S should be used. There is no internal protection to prevent damage from voltage spikes or overvoltage situations.

It is good practice to use a decoupling capacitor (ca. 100nF, ceramic-type) between pin 3 "U_S" and pin 4 "GND" in proximity to the photodiode package.

Grounding

Depending on the application, the case pin 5 can be connected to ground potential of the circuit or the shielding environment. It is good practice to connect pin 5 "Case" to pin 4 "GND" if in doubt. Pin 5 should not be left floating.

ifw optronics GmbH
Ernst-Ruska-Ring 3
D-07745 Jena

www.ifw-optronics.com
info@ifw-optronics.com

Tel.: +49 (3641) 204-117
Fax: +49 (3641) 204-110