

SSO-AD-500-TO52

Avalanche Photodiode

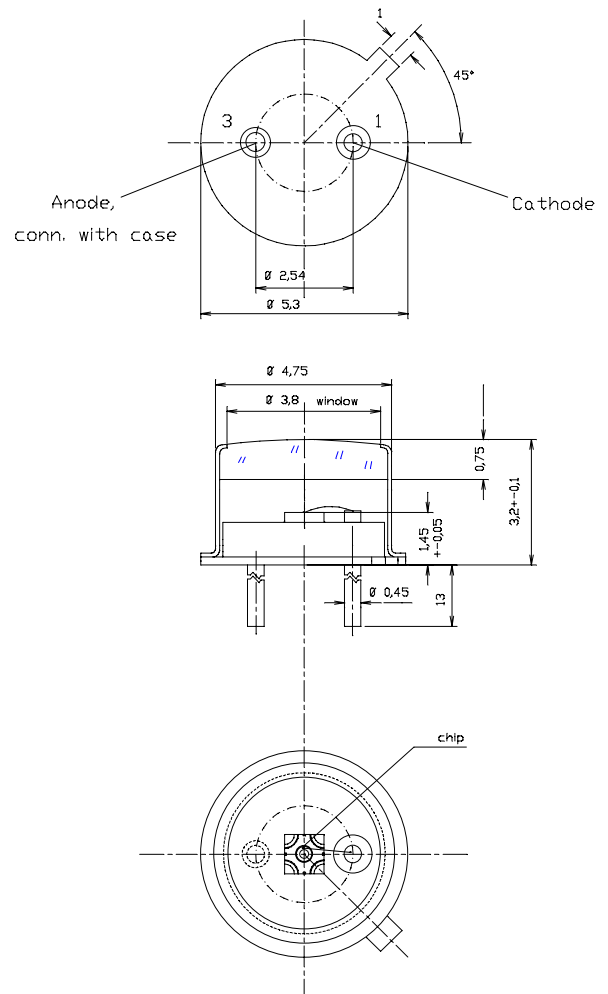
Special characteristics:

High gain at low bias voltage
Fast rise time
500 μm diameter active area
low capacitance

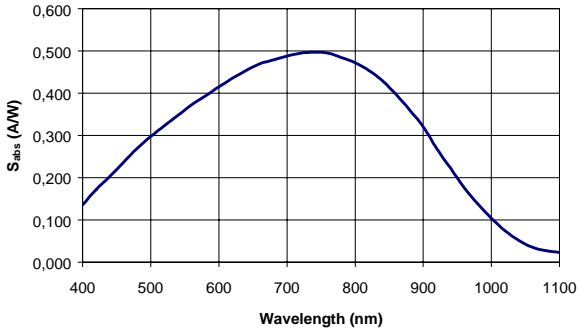


Parameters:	
Active area	0,196 mm ² Ø 500 μm
dark current ¹⁾ (M=100)	max. 5 nA typ. 0,5 - 1 nA
Total capacitance ¹⁾ (M=100)	typ. 2,5 pF
Break-down voltage U _{BR} (at I _D =2 μA)	120 - 190 V
Temperature coefficient of U _{BR}	typ. 0,4 %/°C
Spectral responsivity (at 780 nm)	min. 0,40 A/W typ. 0,45 A/W
Cut-off frequency (-3dB)	typ. 1,3 GHz
Rise time	typ. 280 ps
Optimum gain	50 - 60
Gain M	min 200
"Excess Noise" factor (M=100)	typ. 2,2
"Excess Noise" index (M=100)	typ. 0,2
Noise current (M=100)	typ. 10 pA/Hz ^{1/2}
N.E.P. (M=100, 880 nm)	typ. 2 * 10 ⁻¹³ W/Hz ^{1/2}
Operating temperature	-20 ... +70°C
Storage temperature	-60 ... +100°C
1) measurement conditions: Setup of photo current 10nA at M=1 and irradiation by a NIR-LED (880 nm, 80 nm bandwidth). Rise of the photo current up to 1 μA , (M=100) by internal multiplication due to an increasing bias voltage	

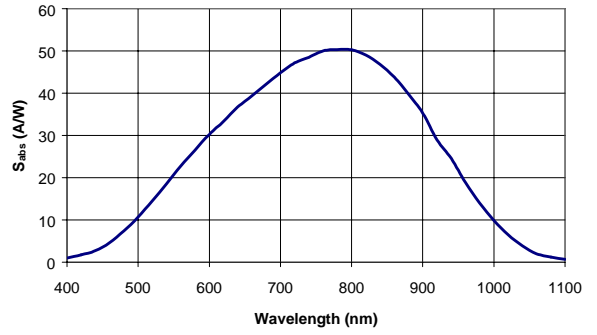
Package 1 (TO52) :



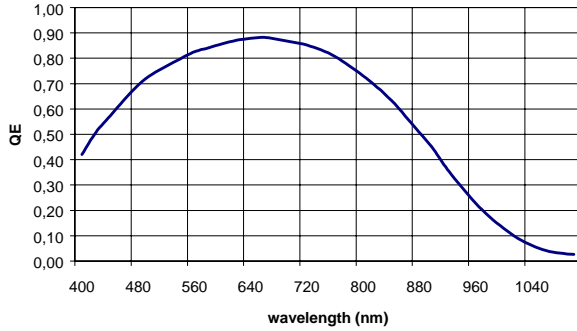
SSO - AD - serie
Spectral Responsivity at M=1



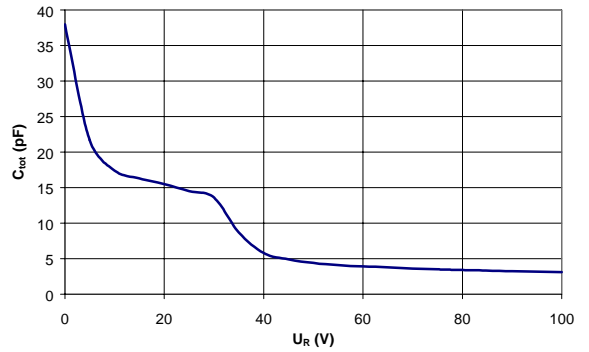
SSO - AD - serie
Spectral Responsivity at M=100



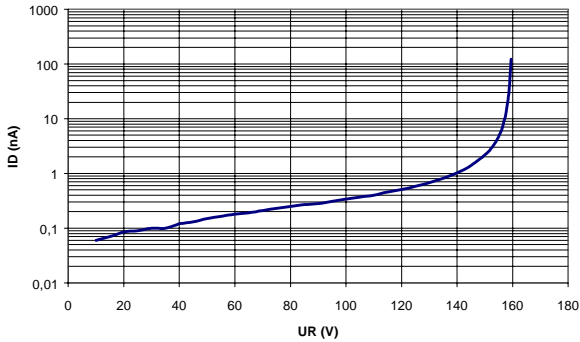
SSO - AD - serie
quantum efficiency for M=1



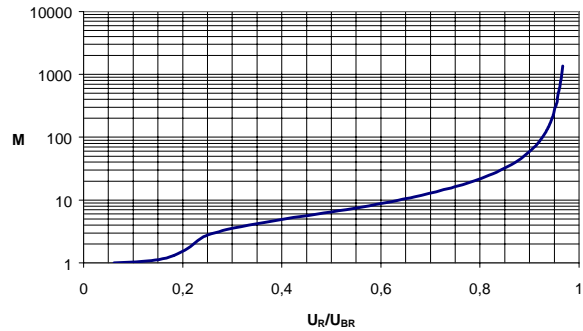
SSO-AD 500
 $C_{tot} = f(U_R)$ at $f=100\text{kHz}$



SSO-AD 500 LC
dark current = $f(U_R)$



SSO - AD - serie (versions 500, 800, 1100, 2500)
gain = $f(U_R/U_{BR})$ at $\lambda=880\text{nm}$



Maximum Ratings:

- max. electrical power dissipation 100 mW at 22°C
- max. optical peak value, once 200 mW for 1 s
- max. continuous optical operation $I_{Ph} (DC) \leq 250 \mu A$
 $\leq 1\text{ mA}$ for signal 50 μs "on" / 1 ms "out"
- ($P_{electr.} = P_{opt.} * S_{abs} * M * U_R$)

Application hints:

- Current limit is to be realized via protecting resistor or current limiting - IC inside the supply voltage.
- Use of low noise read-out - IC.
- For higher gain a regulation of bias voltage due to the temperature is to be realized.
- For very small signals stray light (noise source) is to be excluded by filters in order to improve the signal-noise relation.
- Avoid touching the window with fingers!
- Careful cleaning with Ethyl alcohol possible.
- Avoid use of pointed and scratching tools!

Handling precautions:

- Soldering temperature 260°C for max. 10 s. The device must be protected against solder flux vapour!
- min. Pin - length 2mm
- ESD - protection Only small danger for the device. Standard precautionary measures are sufficient.
- Storage Store devices in conductive foam.

