

AD100-9 TO52S1

Avalanche Photodiode NIR

Special characteristics:

quantum efficiency >80% at λ 760-910 nm
 high speed, low noise
 100 μm diameter active area
 low slope multiplication curve



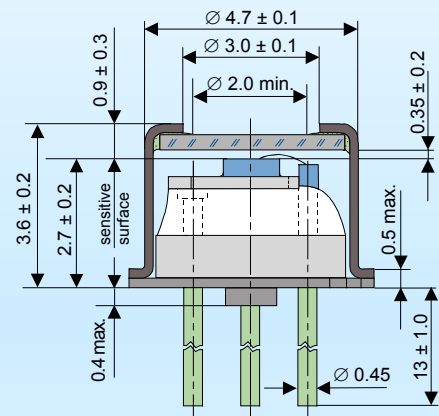
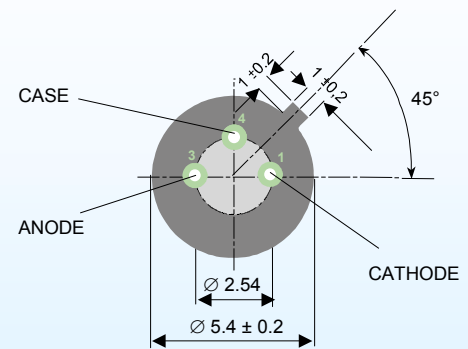
| Parameters: | |
|---|--|
| Active Area | 0.00785 mm ² Ø 100 μm |
| Dark Current ¹⁾ (M = 100) | max. 0.5 nA typ. 0.1 nA |
| Total Capacitance ¹⁾ (M = 100) | typ. 0.6 pF |
| Breakdown Voltage U _{BR} (at I _D = 2 μA) | 120 - 300 V typ. >200 V |
| Temperature Coefficient of U _{BR} | typ. 1.55 V/K |
| Spectral Responsivity (at 905 nm, at M = 100) | min. 55 A/W typ. 60 A/W |
| Cut-off Frequency (-3dB) | typ. 0.7 GHz |
| Rise Time | typ. 500 ps |
| Optimum Gain | 50 - 60 |
| Max. Gain | > 200 |
| "Excess Noise" factor (M = 100) | typ. 2.5 |
| "Excess Noise" index (M = 100) | typ. 0.2 |
| Noise Current (M = 100) | typ. 0.3 pA/Hz ^{1/2} |
| N.E.P. (M = 100, 905 nm) | typ. 6 * 10 ⁻¹⁵ W/Hz ^{1/2} |
| Operating Temperature | -20 ... +70 °C |
| Storage Temperature | -60 ... +100 °C |

1) **measurement conditions:**

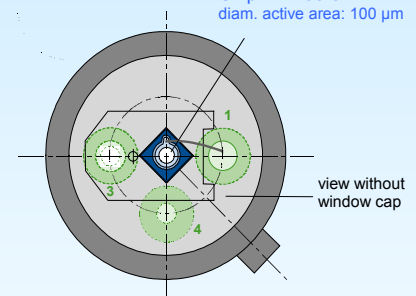
Setup of photo current 1.0 nA at M = 1 and irradiation by a IRED (880 nm, 80 nm bandwidth).

Increase the photo current up to 100 nA, (M=100) by internal multiplication due to an increasing bias voltage.

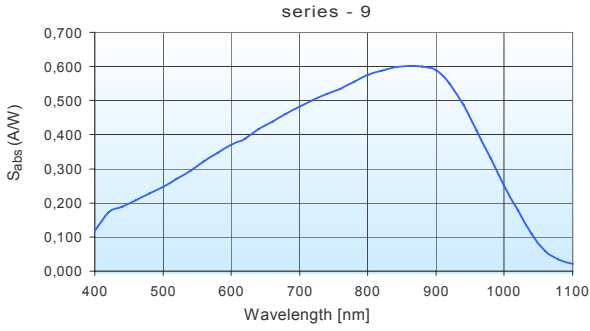
Package (TO52S1):



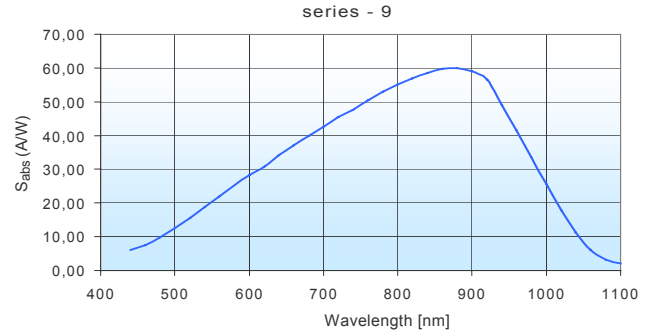
Chip: AD100-9
 diam. active area: 100 μm



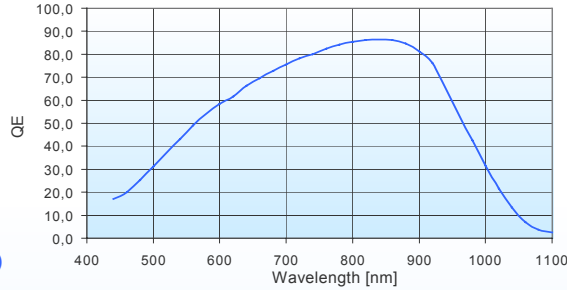
Spectral Responsivity at M=1



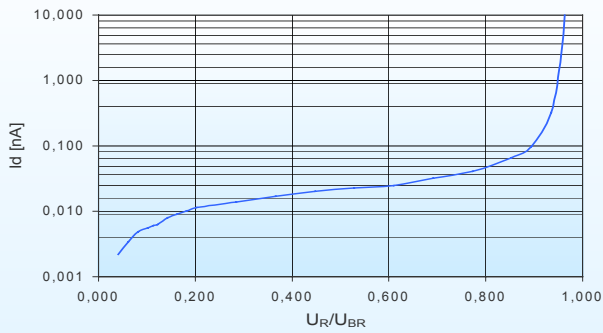
Spectral Responsivity at M=100



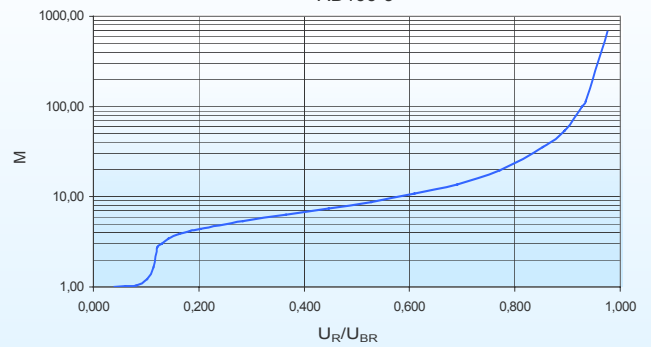
QE for M=100
series - 9



$I_D = f(U_R/U_{BR})$
AD100-9



gain = $f(U_R/U_{BR})$
AD100-9



Maximum Ratings:

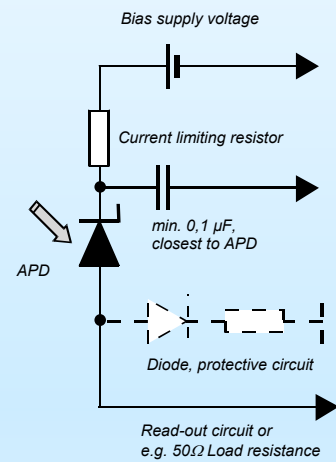
- max. electrical power dissipation 100 mW at 22°C
 - max. optical peak value, once 200 mW for 1 s
 - max. continuous optical operation $I_{Ph} (DC) \leq 250 \mu A$
 - $\leq 1 \text{ mA}$ for signal 50 μs "on" / 1 ms "off"
- ($P_{electr.} = P_{opt.} * S_{abs} * M * U_R$)

Application Hints:

- Current should be limited by a protecting resistor or current limiting - IC inside the power supply.
- Use of low noise read-out - IC.
- For high gain applications bias voltage should be temperature compensated.
- For low light level applications, blocking of ambient light should be used.

Handling Precautions:

- Soldering temperature 260 °C for max. 10 s. The device must be protected against solder flux vapour!
- min. Pin - length 2 mm
- ESD - protection Standard precautionary measures are sufficient.
- Storage Store devices in conductive foam.
- Avoid skin contact with window!
- Clean window with Ethyl alcohol if necessary.
- Do not scratch or abrade window.



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