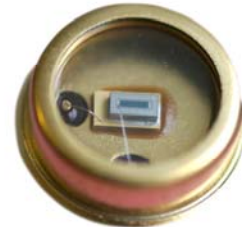


AD003B-9 TO5i

Avalanche Photodiode

Special characteristics:

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



| Parameters: | AD003B-9 TO5i |
|---|---|
| Active Area | 0.30 x 1.10 mm ² 0.33 mm ² |
| Dark Current ¹⁾ (M = 100) | max. 6 nA typ. 2 nA |
| Total Capacitance ¹⁾ (V _R = 100 V) | typ. 2.0 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 ¹⁾ (at 905 nm, M = 100) | min. 55 A/W typ. 60 A/W |
| Cut-off Frequency (-3dB) | typ. 0.35 GHz |
| Rise Time | typ. 1.0 ns |
| Optimum Gain | 50 - 60 |
| Max. Gain | > 200 |
| "Excess Noise" factor (M = 100) | typ. 2.5 |
| "Excess Noise" index (M = 100) | typ. 0.2 |
| N.E.P. (M = 100, 905 nm) | typ. 3* 10 ⁻¹⁴ W/Hz ^{1/2} |
| Operating Temperature | -20 ... +70 °C |
| Storage Temperature | -60 ... +100 °C |

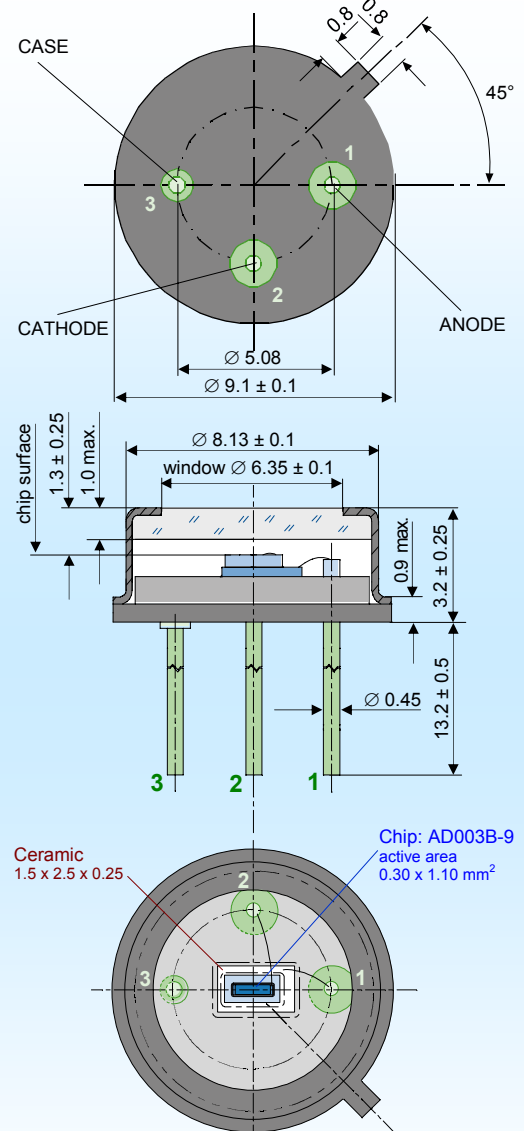
1) measurement conditions:

Setup of photo current 10 nA at M = 1 and irradiation by an IRED
(880 nm, 80 nm bandwidth).

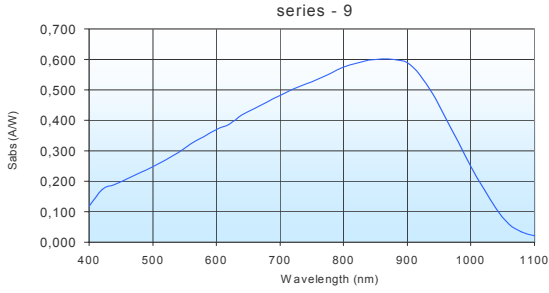
Increase the photo current up to 1 μA, (M = 100) by internal multiplication
due to an increasing bias voltage.

RoHS compliant

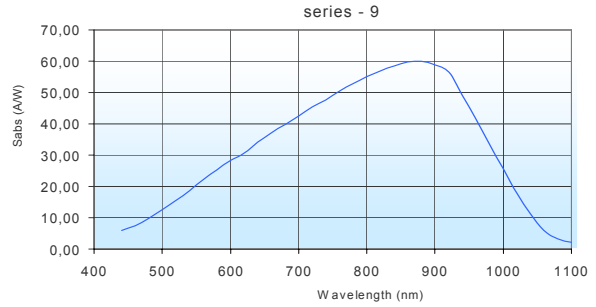
Package (TO5i)



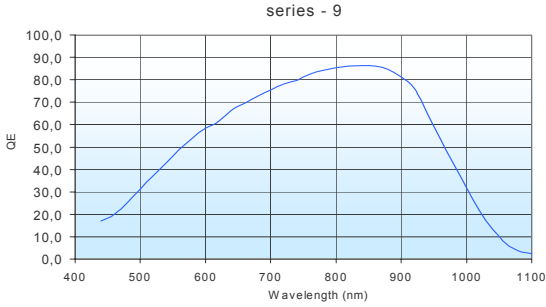
Spectral Responsivity at M = 1



Spectral Responsivity at M = 100

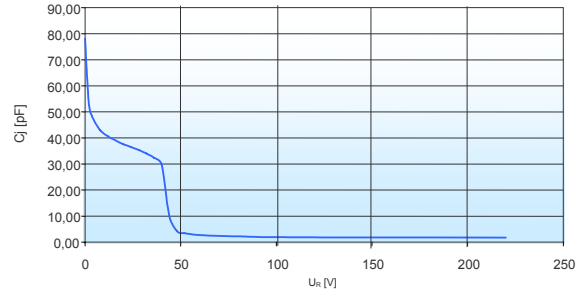


QE for M = 100



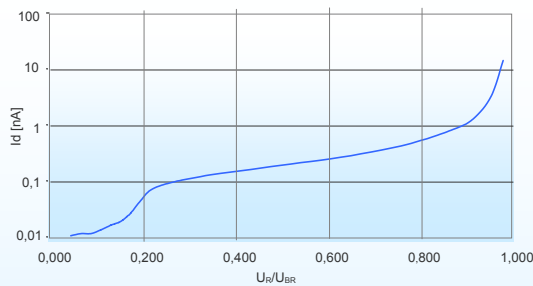
$C_{tot} = f(U_R)$

AD003B-9



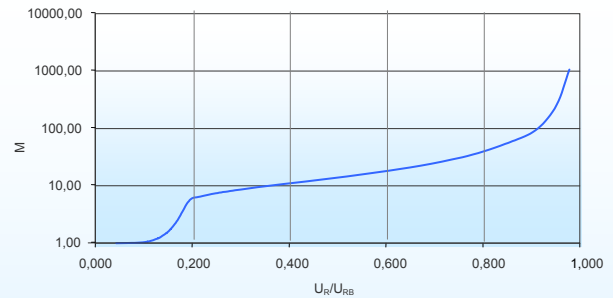
$I_D = f(U_R/U_{BR})$

AD003B-9



Gain = $f(U_R/U_{BR})$

AD003B-9



Maximum Ratings:

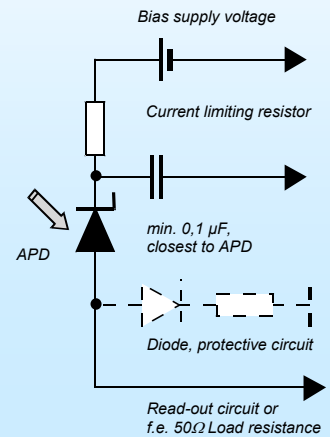
- max. electrical power dissipation 100 mW at 22 °C
- max. optical peak value, once 200 mW for 1 s
- max. continuous optical operation $I_{ph} (DC) \leq 250 \mu A$
 $\leq 1 \text{ mA}$ for signal 50 μs "on" / 1 ms "off"
- $(P_{electr.} = P_{opt.} * S_{abs} * M * U_R)$

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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