

# AD500-9 TO52S3

## NIR Enhanced Response Avalanche Photodiode

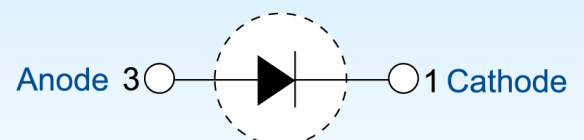
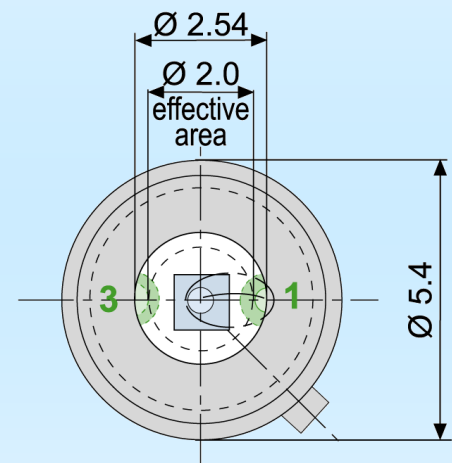
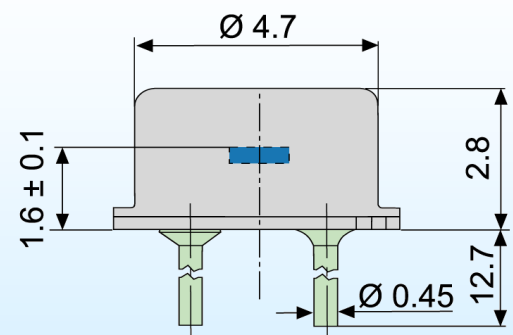
### Special characteristics:

quantum efficiency > 80% at  $\lambda$  760 - 910 nm  
 high speed, low noise  
 500  $\mu$ m diameter active area  
 low slope multiplication curve

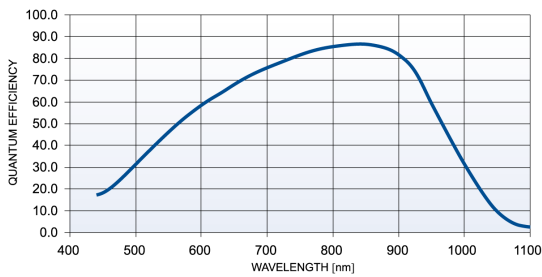


Parameters:	AD500-9 TO52S3
Active Area	0,2mm <sup>2</sup> Ø 0,5mm
Dimensional outline	
window material	clear glass
operating temperatur	-40 ..+100 °C
storage temperatur	-55 ..+125 °C
Spectral Responsivity (A/W) (905 nm, at M=100)	min. 55 typ. 60
Dark current (nA) (at M=100)	typ. 0,5 - 1 max. 5
Breakdown voltage (V) at I <sub>D</sub> = 2 $\mu$ A (V)	160 - 240 *
Capacitance (pF) at M=100	1,2
Rise time (ns) at M=100	0,55
Temp. coefficient U <sub>br</sub> (V/K)	typ. 1,55
Cut-off frequency (GHz) (-3 dB)	0,5
N.E.P (w/Hz <sup>1/2</sup> ) (at M=100)	2*10 <sup>-14</sup>
Optimum Gain	50 - 60
Max. Gain	> 200
Excess Noise factor at M=100	2,5
Excess Noise index at M=100	0,2
Noise current at M=100 (pA/Hz <sup>1/2</sup> )	typ. 1

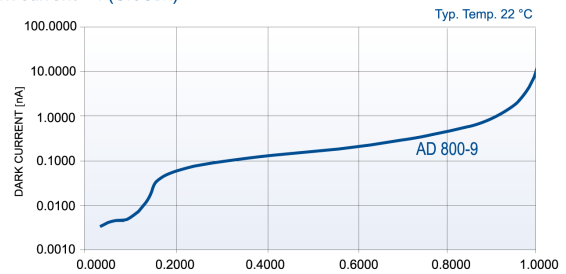
### Package (TO52S3):



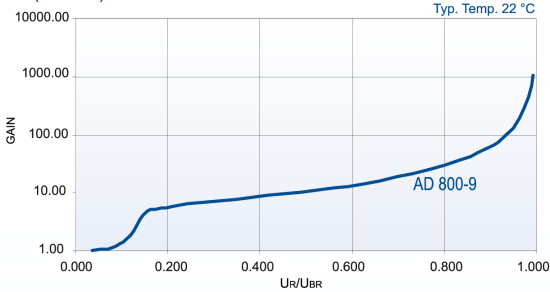
### Quantum efficiency for M = 100



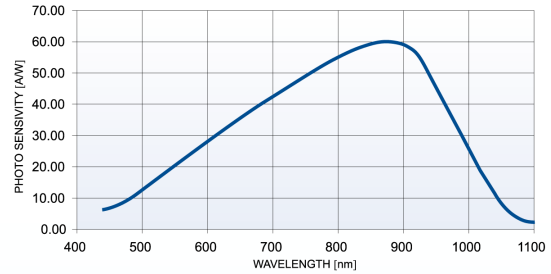
### Dark current = f (U<sub>R</sub>/U<sub>BR</sub>)



### Gain = f (U<sub>R</sub>/U<sub>BR</sub>)



### Spectral Responsivity at M = 100



Disclaimer: Due to our policy of continued development, specifications are subject to change without notice.

### measurement conditions:

Setup of photo current 10 nA at M = 1 and irradiation by a LED (880 nm, 80 nm bandwidth).  
Increase the photo current up to 1 μA, (M = 100) by internal multiplication due to an increasing bias voltage.

### Maximum Ratings:

max. electrical power dissipation: 100mW at 22 °C  
max. optical peak value, once: 200mW for 1s  
max. continuous optical operation: I<sub>ph</sub> (DC) ≤ 250 μA  
≤ 1 mA for signal 50μs 'on'/1ms 'off'  
(P<sub>electr.</sub> = P<sub>opt.</sub> \* S<sub>abs</sub> \* M \* U<sub>R</sub>)

### 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.

The following different breakdown voltages are available : (160 - 200 V), (200 - 240 V)

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