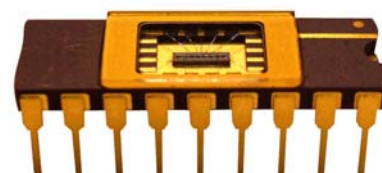


AA16-9 DIL18

16 Element Avalanche Photodiode Array

Special characteristics:

quantum efficiency >80% at λ 760-910 nm
high speed, low noise
good uniformity between elements
low cross talk



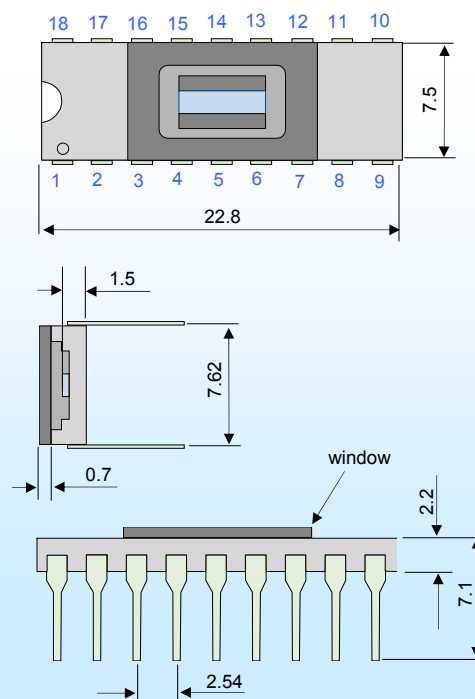
Parameters:	AA16-9 DIL18
no. of Elements	16
Active Area / Element [μm]	648 * 208
Gap / Separation [μm]	112
Pitch [μm]	320
Spectral Range	450 ... 1050
Spectral Responsivity ¹⁾ (at 905 nm, M = 100)	min. 55 A/W typ. 60 A/W
Max. Gain (I _{po} = 1nA)	typ. 100
Dark Current ¹⁾ (M = 100)	typ. 5 nA
Capacitance ¹⁾ /Element (M=100)	typ. 2 pF
Breakdown Voltage U _{BR} (at I _D = 2 μA)	100 ... 300 V
Rise Time at 905 nm, 50 Ω	typ. 2 ns
Cross-talk (at 905 nm)	typ. 50 dB
Photo Current Uniformity (at M= 50)	\pm 20 % typ. \pm 5 %
Dark Current Uniformity (at M= 50)	\pm 20 % typ. \pm 5 %
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).

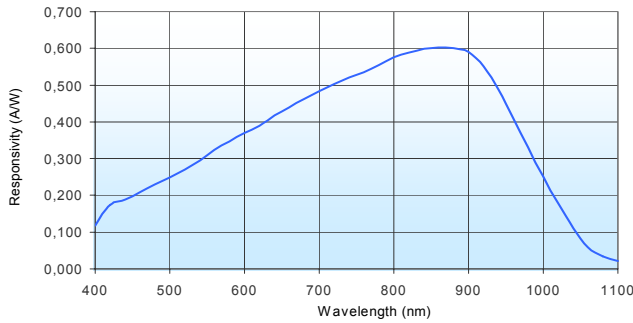
Increase the photo current up to 100 nA, (M = 100) by internal multiplication
due to an increasing bias voltage.

Package DIL18:

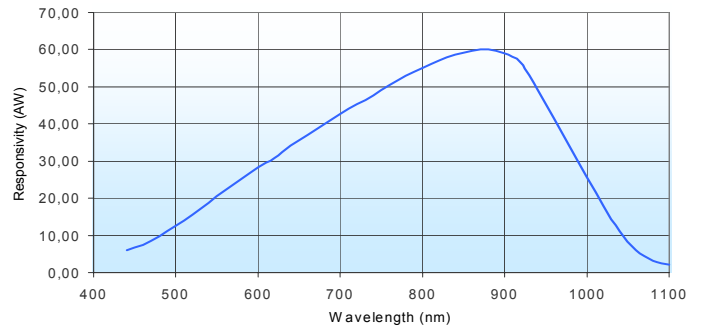


Pin no.	Function
1	Element 1
2	Element 3
3	Element 5
4	Element 7
5	Element 9
6	Element 11
7	Element 13
8	Element 15
9	Guard Ring
10	Element 16
11	Element 14
12	Element 12
13	Element 10
14	Common Anode
15	Element 8
16	Element 6
17	Element 4
18	Element 2

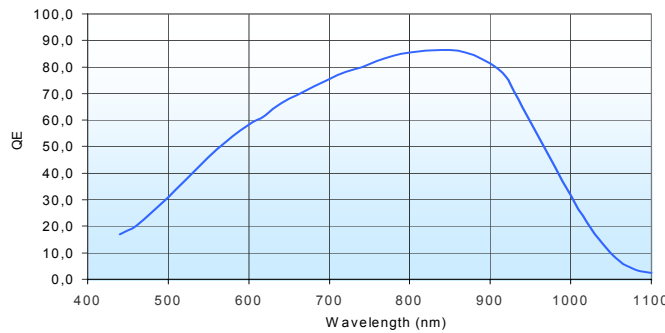
Spectral Responsivity at M = 1
series - 9



Spectral Responsivity at M = 100
series - 9



Quantum Efficiency for M = 100
series - 9



Maximum Ratings:

- max. electrical power dissipation 400 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.

Example of DC-Operating Circuit:

