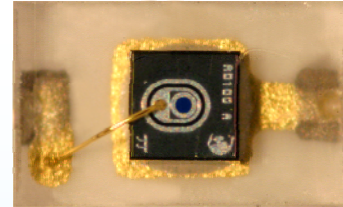


# AD100-8 SMD0805 K

## Avalanche Photodiode

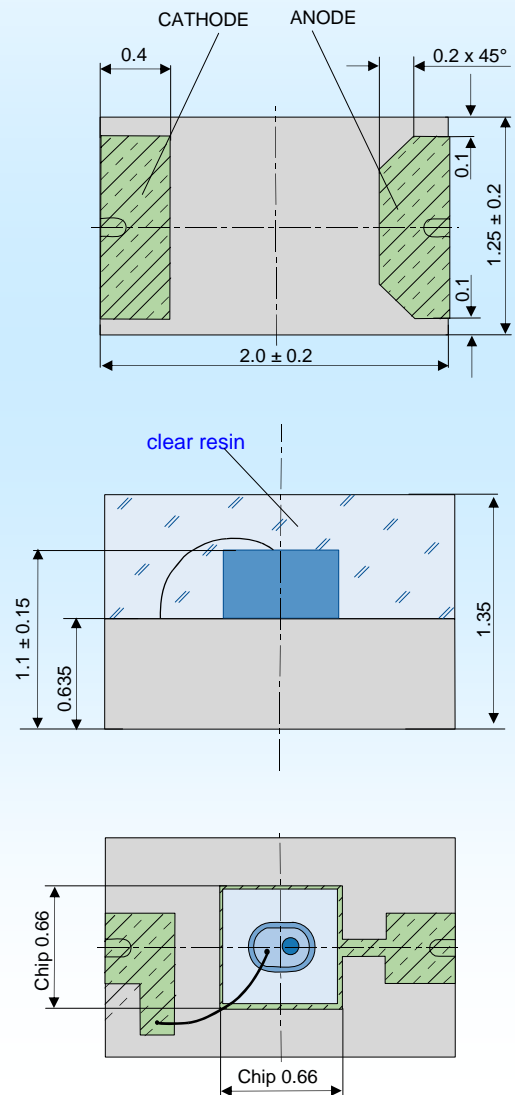
### Special characteristics:

high gain at low bias voltage  
fast rise time  
100  $\mu\text{m}$  diameter active area  
low capacitance



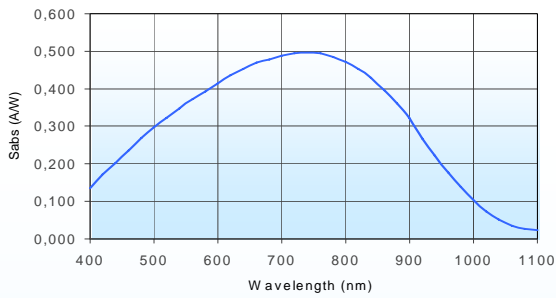
| Parameters: (at 20 $\pm$ 2°C)   |  |
|---|--|
| Active Area   | 0.00785 mm <sup>2</sup><br>Ø 100 $\mu\text{m}$ |
| Dark Current <sup>1)</sup><br>(M=100)   | max. 0.2 nA<br>typ. 50 pA                      |
| Total Capacitance <sup>1)</sup><br>(M=100)  | min. 0.45 pF<br>typ. 0.5 pF<br>max. 0.56 pF    |
| Breakdown Voltage U <sub>BR</sub><br>(at I <sub>D</sub> =2 $\mu$ A)   | 80 - 140 V                                     |
| Temperature Coefficient of U <sub>BR</sub>  | 0.35 ... 0.55 V/K<br>typ. 0.45 V/K             |
| Spectral Responsivity<br>(at 800 nm, at M=100)  | min. 45 A/W<br>typ. 50 A/W                     |
| Cut-off Frequency<br>(-3dB)   | > 2 GHz  |
| Rise Time   | < 180 ps                                       |
| Optimum Gain  | 50 - 60  |
| Max. Gain   | > 200  |
| "Excess Noise" factor<br>(M=100)  | typ. 2.2                                       |
| "Excess Noise" index<br>(M=100)   | typ. 0.2                                       |
| Noise Current<br>(M=100)  | typ. 0.15 pA/Hz <sup>1/2</sup>                 |
| N.E.P.<br>(M=100, 800 nm)   | typ. 3 * 10 <sup>-15</sup> W/Hz <sup>1/2</sup> |
| Operating Temperature   | -20 ... +70 °C                                 |
| Storage Temperature   | -40 ... +100 °C                                |
| <p><b>1) measurement conditions:</b><br/>Setup of photo current 50 pA at M = 1 and irradiation by a LED (680 nm, 60 nm bandwidth).<br/>Increase the photo current up to 5.0 nA, (M = 100) by internal multiplication due to an increasing bias voltage.</p> <p>RoHS compliant</p> |  |

### Package (SMD0805 K):



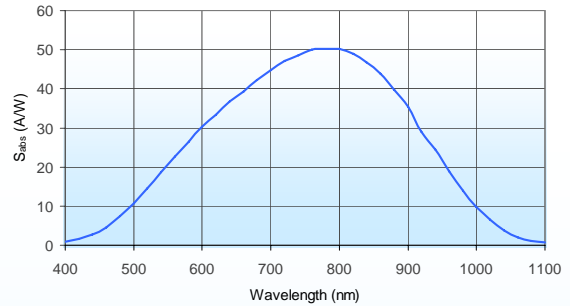
### Spectral Responsivity at M=1

Series - 8



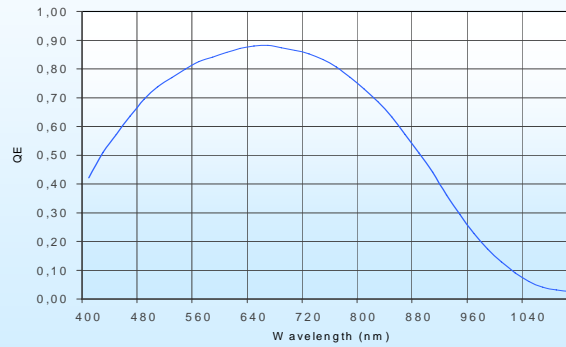
### Spectral Responsivity at M=100

Series - 8



### Quantum efficiency for M=1

Series - 8



#### Maximum Ratings:

- max. electrical power dissipation
- max. optical peak value, once
- max. continuous optical operation

100 mW at 22°C  
 200 mW for 1 s  
 $I_{Ph} (DC) \leq 250 \mu A$   
 $\leq 1 \text{ mA}$  for signal 50  $\mu s$  "on" / 1 ms "off"

$$(P_{electr.} = P_{opt.} * S_{abs} * M * U_R)$$

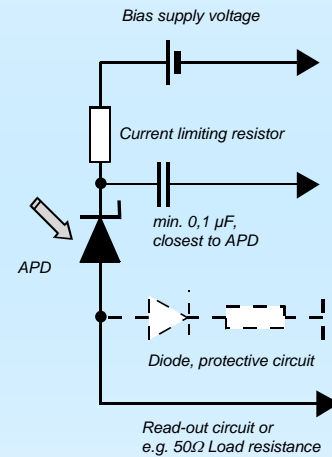
#### Application Hints:

- 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:

- Assembly with conductive adhesive, silver filled epoxy recommended.
- ESD - protection Standard precautionary measures are sufficient.
- Storage Store parts in original packing in a dry and clean area.

Use only appropriate tools for handling and assembly of optoelectronic SMDs. Avoid contamination and damaging of the upper part surface, especially skin contact and scratching. Mechanical cleaning and use of any cleaning agents is not recommended.



GmbH

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