

AD500-9 SMD

Description

Circular active area APD chip with NIR enhanced sensitivity. Ceramic carrier type non-hermetic SMD package with filter window. Reflow solderable.

Features

- APD with 0.2 mm² active area
- Slow multiplication curve
- QE > 80% @ 750 nm-910 nm
- Fast rise time, low noise
- Optimum gain: 50-60

Applications

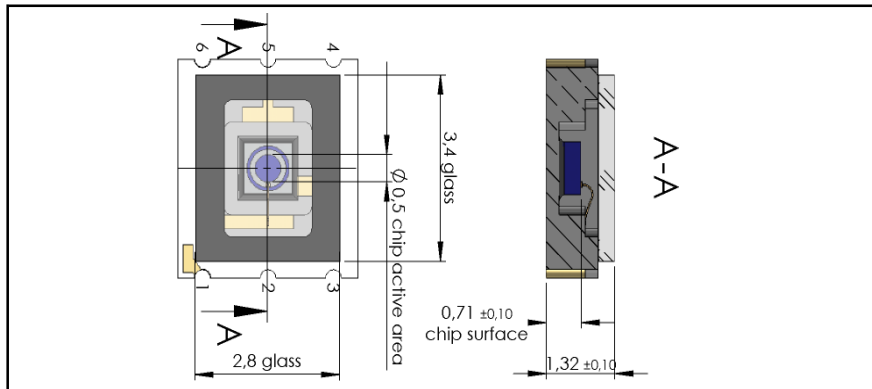
- Laser range finder
- High speed photometry
- High speed optical communications
- Medical equipment
- LIDAR

RoHS

2011/65/EU

2015/863/EU

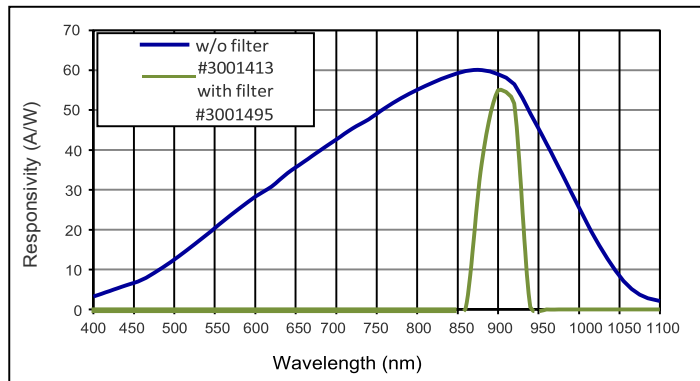
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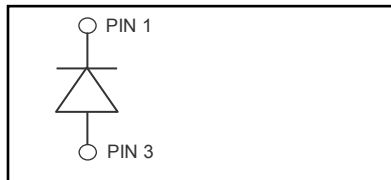
Absolute maximum rating

| Symbol | Parameter | Min | Max | Unit |
|-------------------|-------------------------------|-----|------|------|
| T _{STG} | Storage temp | -40 | 100 | °C |
| T _{OP} | Operating temp | -20 | 70 | °C |
| M _{max} | Gain (I _{P0} = 1 nA) | 200 | | |
| I _{PEAK} | Peak DC current | | 0.25 | mA |

Spectral response (M = 100)



Schematic

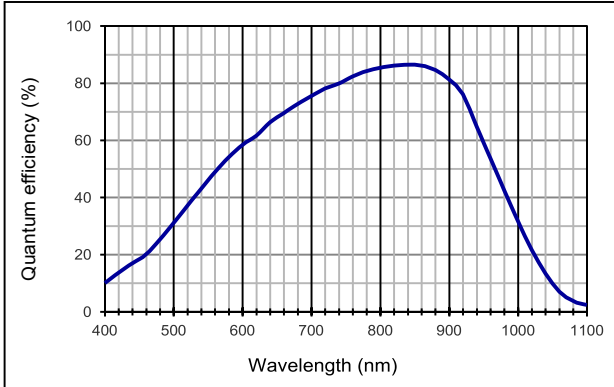


Electro-optical characteristics @ 23°C

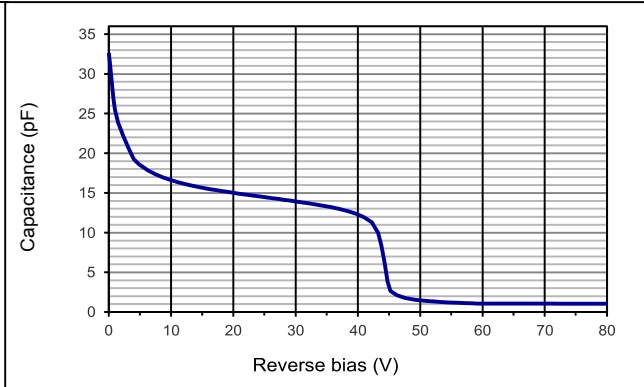
| Symbol | Characteristic | Test Condition | Min | Typ | Max | Unit |
|-----------------|--------------------------|--|--------------|------|------|-----------------|
| | Active area | | diameter 500 | | | µm |
| | Active area | | 0.196 | | | mm ² |
| I _D | Dark current | M = 100 | | 0.8 | 2.0 | nA |
| C | Capacitance | M = 100; f = 100 kHz | | 1.2 | | pF |
| | Responsivity with filter | M = 100; λ = 905 nm | 42 | 55 | | A/W |
| t _R | Rise time | M = 100; λ = 905 nm; R _L = 50 Ω | | 0.55 | | ns |
| | Cut-off frequency | -3dB | | 0.5 | | GHz |
| V _{BR} | Breakdown voltage* | I _R = 2 µA | 160 | | 200 | V |
| | Temperature coefficient | Change of V _{BR} with temperature | 1.25 | 1.45 | 1.55 | V/K |
| | Excess noise factor | M = 100; calculated | | 2.5 | | |
| | Excess noise index | M = 100; calculated | | 0.2 | | |

* ±2V measuring tolerance on upper and lower limits

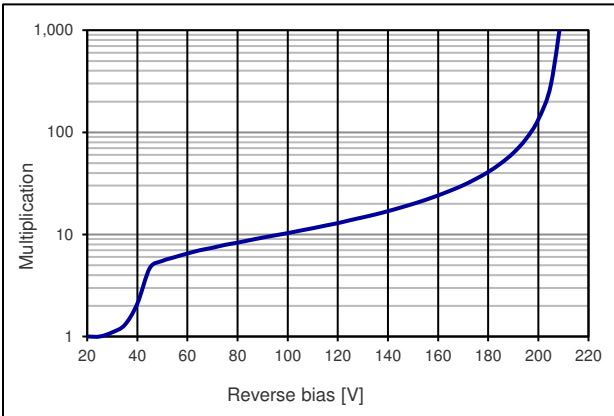
Quantum efficiency (23 °C)



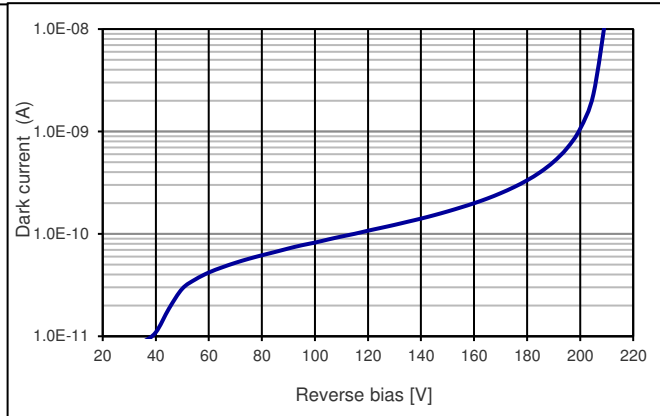
Capacitance as fct of reverse bias (23 °C)



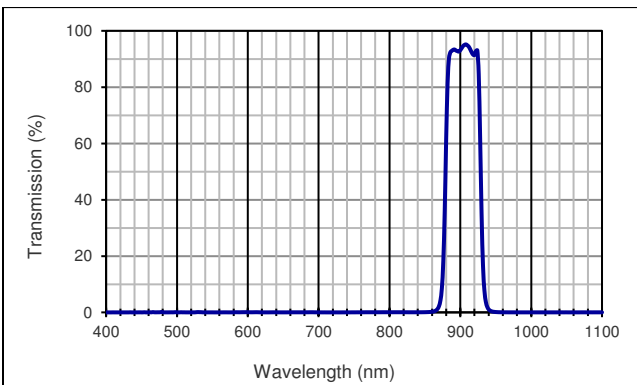
Multiplication as fct of bias (23 °C)



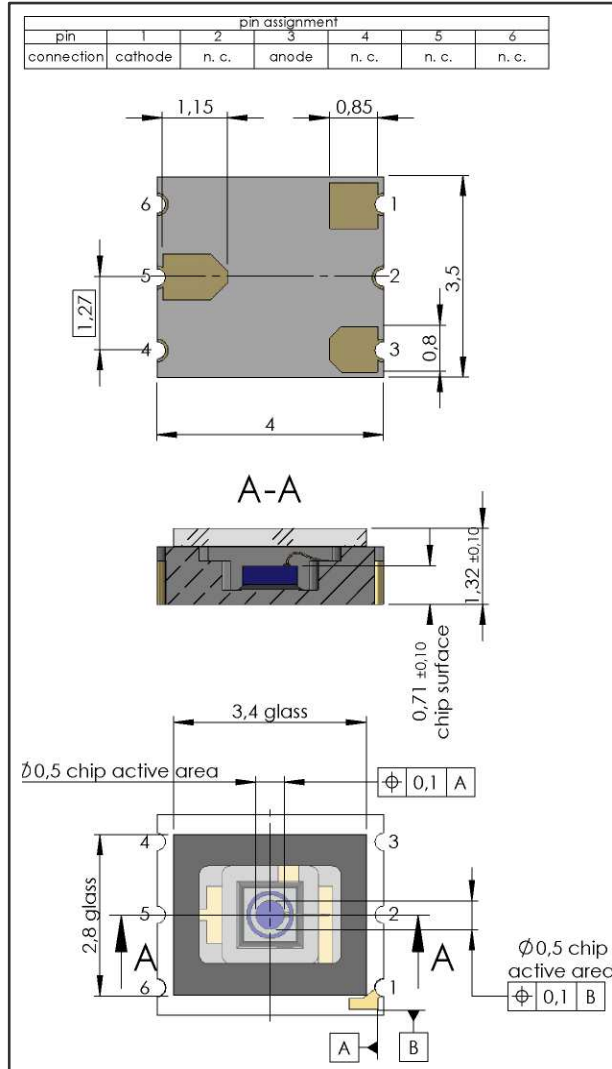
Dark current as fct of bias (23 °C)



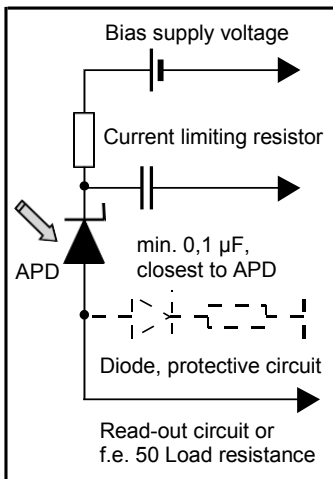
Filter characteristics 905 nm band pass



Technical Drawing, Package: LCC6.1

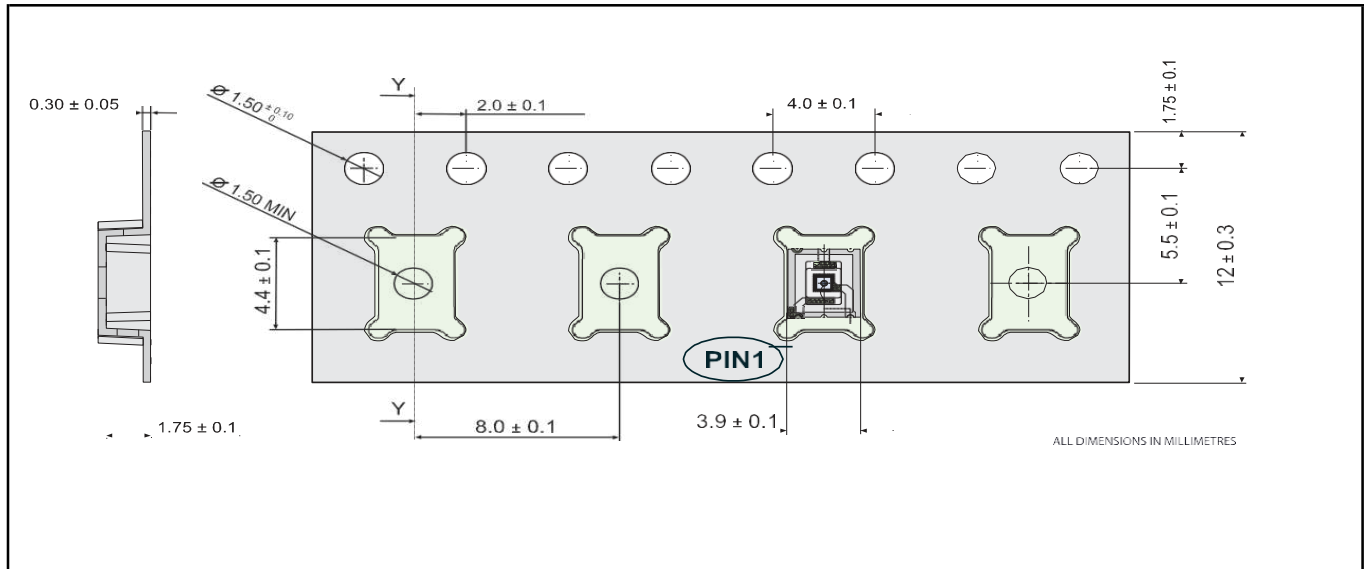


Application hints:

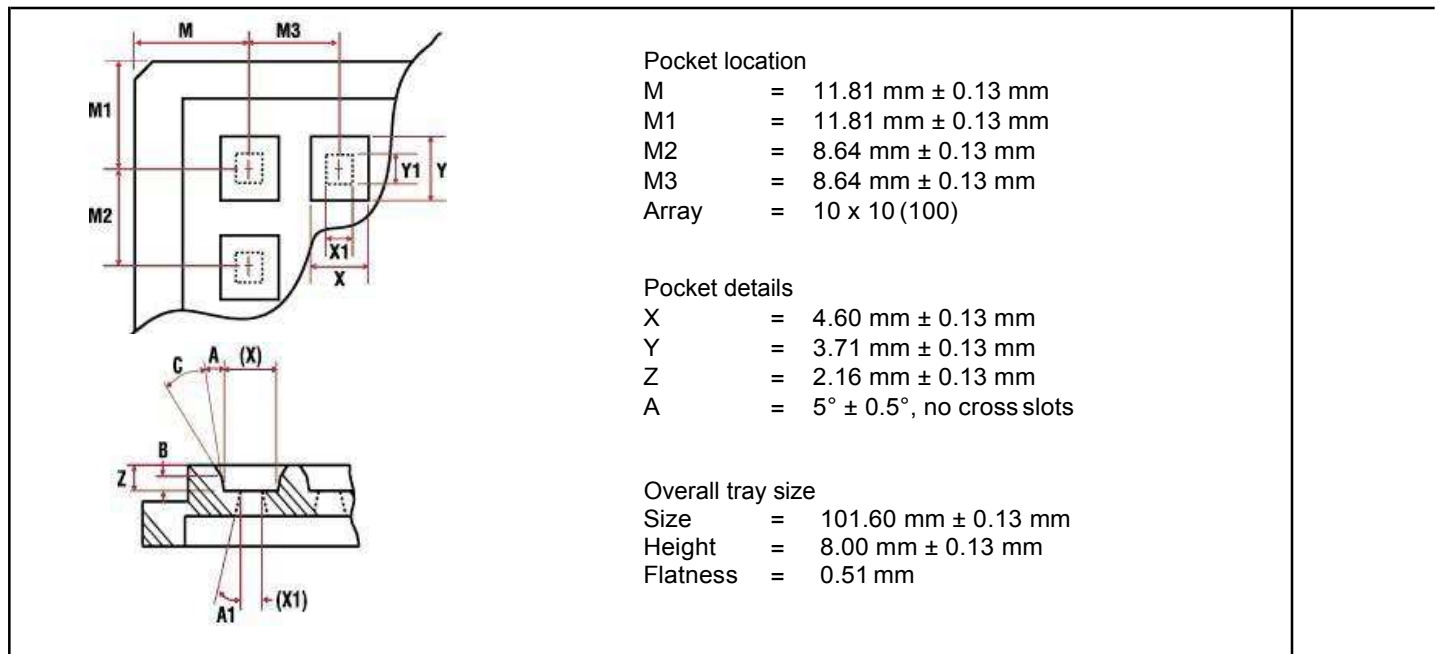


- Current should be limited by a protecting resistor or current limiting - IC inside the power supply
- For low light level applications blocking of ambient light should be used
- For high gain applications bias voltage should be temperature compensated
- Please consider basic ESD protection while handling
- Use low noise read-out - IC
- For further questions please refer to document "Instructions for handling and processing"
- Optimum gain: 50-60

Package dimension, large quantities on reel



Package dimension, small quantities in trays



Disclaimer: Due to our strive for continuous improvement, specifications are subject to change within our PCN policy according to JESD46C.

AD500-9 SMD

Optical inspection

Optical inspection according to failure catalogue for optical sensors FK INS 203.

Ordering Information

| Description | TE Part Number | MPQ |
|--------------------------------------|----------------|-----------|
| AD500-9 SMD (LCC6.1f;BP905;160-200V) | 3001495-F | 2,500 pcs |

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