

FEATURES

- \varnothing 230 μm active area
- Low slope multiplication curve
- High speed, low noise
- NIR enhanced

DESCRIPTION

0.042 mm² High Speed, Low Noise Avalanche Photodiode with N on P construction. Hermetically packaged in a TO-52-S1 with a clear borosilicate glass window cap.

APPLICATIONS

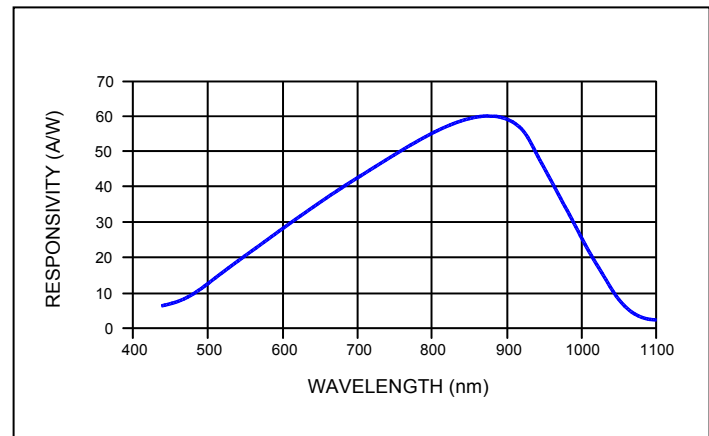
- High speed optical communications
- Laser range finder
- Medical equipment
- High speed photometry



ABSOLUTE MAXIMUM RATING

| SYMBOL | PARAMETER | MIN | MAX | UNITS |
|------------------------|---|-----|------|---------------|
| T _{STG} | Storage Temp | -55 | +125 | °C |
| T _{OP} | Operating Temp | -40 | +100 | °C |
| T _{SOLDERING} | Soldering Temp 10 seconds | | +260 | °C |
| | Electrical Power Dissipation @ 22°C | - | 100 | mW |
| | Optical Peak Value, once for 1 second | - | 200 | mW |
| I _{PH} (DC) | Continuous Optical Operation | - | 250 | μA |
| I _{PH} (AC) | Pulsed Signal Input 50 μs "on" / 1 ms "off" | - | 1 | mA |

SPECTRAL RESPONSE at M = 100



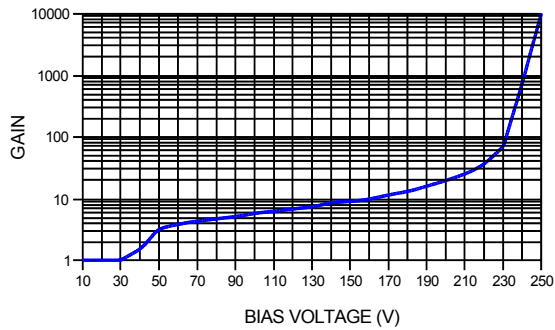
ELECTRO-OPTICAL CHARACTERISTICS @ 22 °C

| SYMBOL | CHARACTERISTIC | TEST CONDITIONS | MIN | TYP | MAX | UNITS |
|------------------|--|------------------------------------|-----|-------------------------|-----|----------------------|
| I _D | Dark Current | M = 100* | --- | 0.6 | 1.5 | nA |
| C | Capacitance | M = 100* | --- | 0.8 | --- | pF |
| V _{BR} | Breakdown Voltage | I _D = 2 μA | 160 | 240 | --- | V |
| | Temperature Coefficient of V _{BR} | | --- | 1.55 | --- | V/K |
| | Responsivity | M = 100; = 0 V; λ = 905 nm | 55 | 60 | --- | A/W |
| Δf_{3dB} | Bandwidth | | --- | 0.6 | --- | GHz |
| t _r | Rise Time | M = 100 | --- | 500 | --- | ps |
| | Optimum Gain | | 50 | 60 | --- | |
| | "Excess Noise" factor | M = 100 | --- | 2.5 | --- | |
| | "Excess Noise" index | M = 100 | --- | 0.2 | --- | |
| | Noise Current | M = 100 | --- | 0.5 | --- | pA/Hz ^{1/2} |
| | Max Gain | | 200 | --- | --- | |
| NEP | Noise Equivalent Power | M = 100; λ = 905 nm | --- | 1.0 X 10 ⁻¹⁴ | --- | W/Hz ^{1/2} |

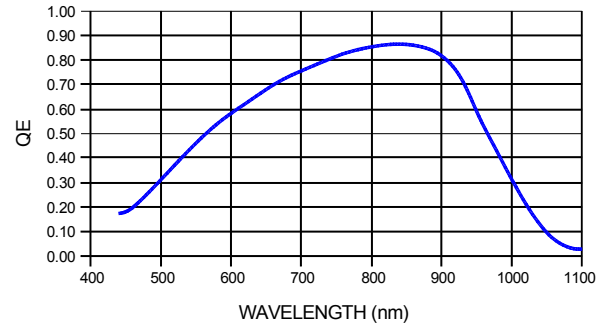
* Measurement conditions: Setup of photo current 1 nA at M = 1 and irradiated by a 880 nm, 80 nm bandwidth LED. Increase the photo current up to 100 nA, (M = 100) by internal multiplication due to an increasing bias voltage.

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

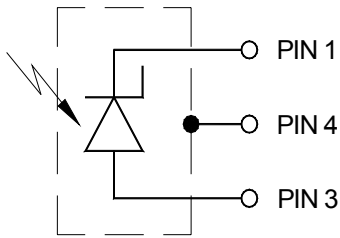
TYPICAL GAIN vs BIAS VOLTAGE



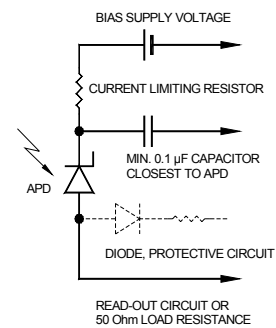
QUANTUM EFFICIENCY for M = 100



DEVICE SCHEMATIC



SUGGESTED CIRCUIT SCHEMATIC



APPLICATION NOTES

- 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 ($M > 50$) 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 10 seconds max. The device must be protected against solder flux vapor.
- Minimum 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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