
Features

- APD with 0.04 mm² active area
- 230 μm diameter active area
- High gain at low bias voltage
- Fast rise time, low capacitance
- Optimum gain: 50-60

Description

Circular active area APD chip with 230 μm diameter. Clear QFN package with very compact design. Lead-free reflow solderable (MSL3).

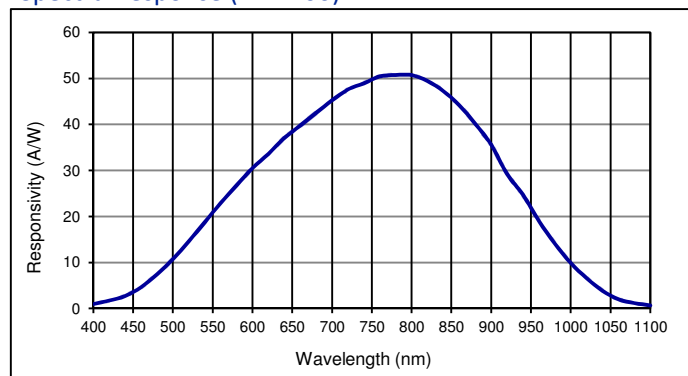
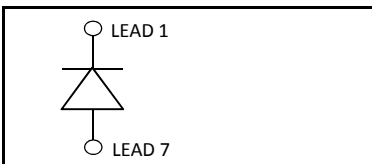
Application

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

RoHS
2002/95/EC

Absolute maximum ratings

Symbol	Parameter	Min	Max	Unit
T _{STG}	Storage temp	-40	125	°C
T _{OP}	Operating temp	-25	85	°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 230			μm
	Active area		0.04			mm ²
I _D	Dark current	M = 100		0.2	0.5	nA
C	Capacitance	M = 100		0.6		pF
	Responsivity	M = 100; λ = 800 nm	45	50		A/W
t _R	Rise time	M = 100; λ = 905 nm; R _L = 50 Ω		0.18		ns
	Cut-off frequency	-3dB		2		GHz
V _{BR}	Breakdown voltage	I _R = 2 μA, V _{BR} - binning available*	80		160	V
	Temperature coefficient	Change of V _{BR} with temperature		0.45		V/K
	Excess noise factor	M = 100		2.2		
	Excess noise index	M = 100		0.2		
*V _{BR} -classes	Order number	V _{BR} range	Order number	V _{BR} range	Order number	V _{BR} range
	50149605	80 V-120 V	50149601	80 V-100 V	50149604	140 V-160 V
	50149607	100 V-140 V	50149602	100 V-120 V		
	50149606	120 V-160 V	50149603	120 V-140 V		

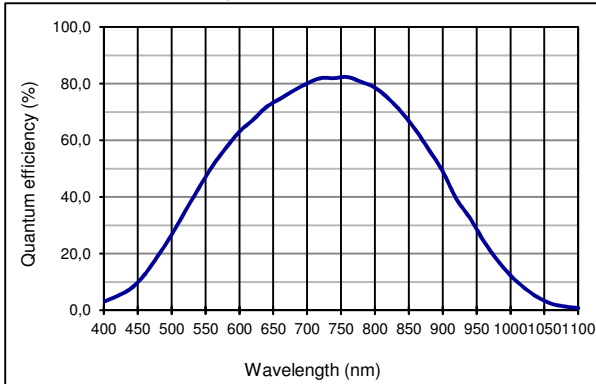
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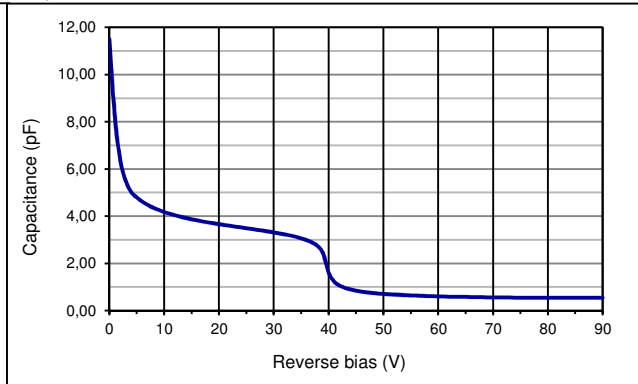
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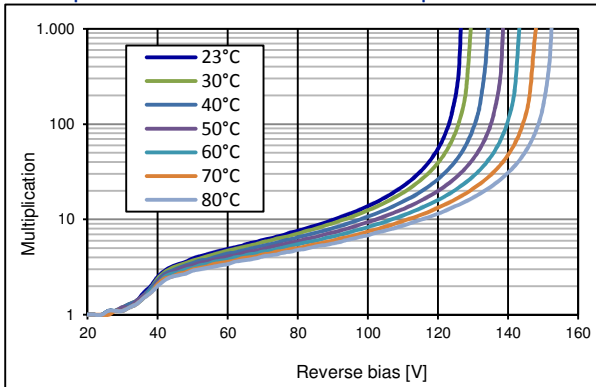
Quantum efficiency (23 °C)



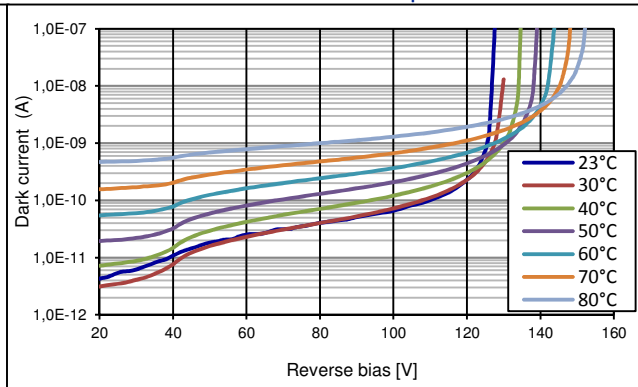
Capacitance as fct of reverse bias (23 °C)



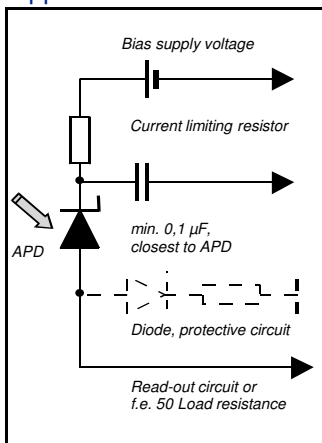
Multiplication as fct of bias and temperature



Dark current as fct of bias and temperature



Application hints APD:



- 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

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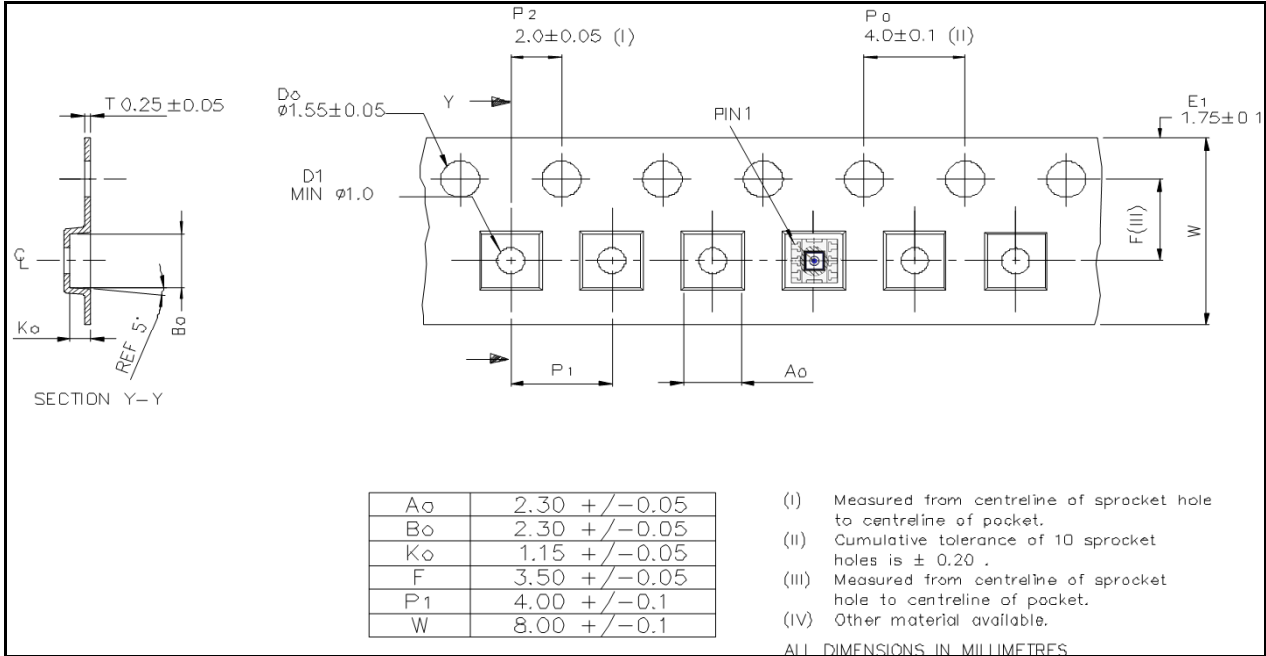
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Package dimension

Production quantities on reel (3000 pcs/ reel), sample quantities in tray



Application hints moisture sensitivity:

- This product has MSL 3 according to JEDEC, i.e. a floor life of 168h at 30°C and 60% relative humidity.
- The reels are shipped in dry packs. Once dry packs are opened or damaged the floor life has to be considered.
- Reflow soldering after floor life is exceeded might cause damage to the component.
- After floor life is exceeded the reel has to be baked or dried before reflow soldering to avoid failures.
- The recommended baking condition according to JEDEC STD-033C is 13 days at 40°C and 5% relative humidity. Alternatively, 8 days @ 25°C/1% r.h.; 3 days @ 40°C/1%r.h.; 12 days @ 25°C/2% r.h. or 5 days @ 40°C/2% r.h. can be applied.

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

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