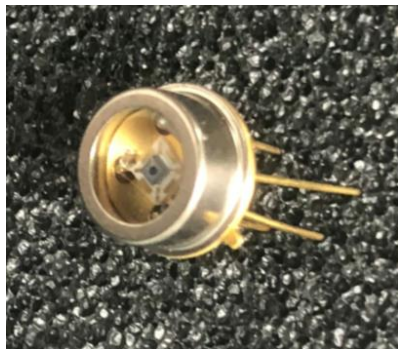
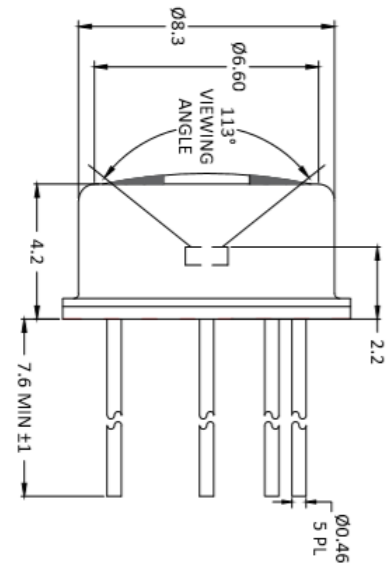


Hybrid APD



The APD230-8-2G T05 is an Avalanche Photodiode Amplifier Hybrid containing a 0.042mm² active area APD chip integrated with an internal transimpedance amplifier. Hermetically packaged in a TO-5 with a borosilicate glass window cap.

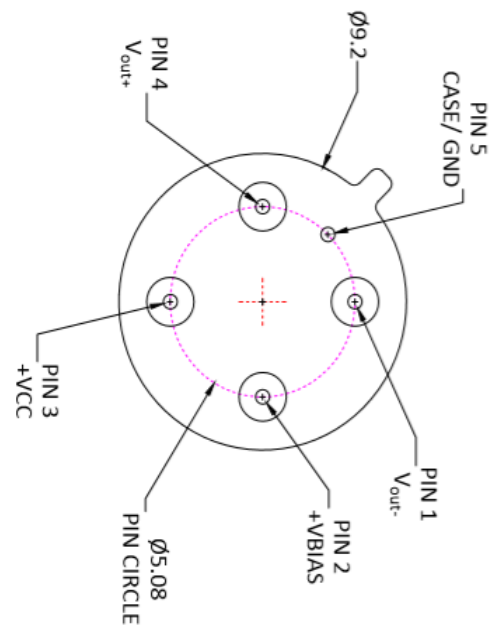


Application

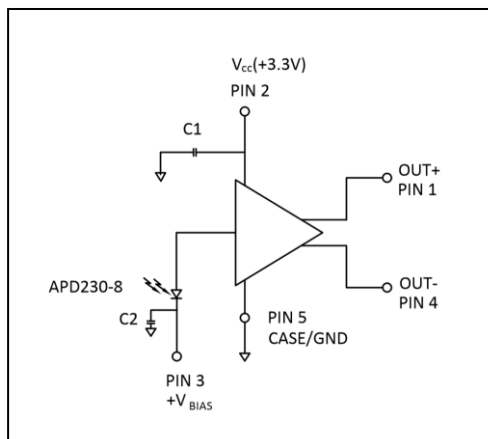
- ◆ Precision photometry
- ◆ Analytical instruments
- ◆ Low light sensor

Absolute Maximum Rating

Symbol	Parameter	Min.	Max.	Units
T _{STG}	Storage Temp.	-15	+125	°C
T _{OP}	Operating Temp	0	+70	°C
T _{soldering}	Soldering Temp.	-	+240	°C
P	Power Dissipation		360	mW
V _{cc}	Single Supply Voltage	+3.0	+5.5	V
I _{cc}	Supply Current	-	63	mA



Schematic





APD230-8-2G T05

Optoelectronic Characteristics @25 °C

Symbol	Parameter	Test Conditions	Min.	Typ.	Max	Units
Id	Dark Current	M=100 (see note 1)	-	0.50	1.0	nA
C	Capacitance	M=100 (see note 1)	-	1.5	-	pF
Vbr	Breakdown Voltage	Id= 2uA	80	-	120	V
	Temperature Coefficient of Vbr		0.30	0.40	050	V/K
f _{3dB}	3dB Bandwidth**		-	2	-	GHz
Tr	Rise Time			185		ps
	Optimum Gain		50	60		
	"Excess Noise" factor	M=100		2.2		
	"Excess Noise" index	M=100		0.2		
	Noise Current	M=100		0.65		pA/Hz ^{1/2}
	Max Gain		200			
NEP	Noise Equivalent Power	M=100, λ=800nm	-	1.2*10 ⁻¹⁴		W/Hz ^{1/2}

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

Transimpedance amplifier data @25 °C

(Vcc=+3.0V to 5.5V, TA=0~+70C, 100Ω load between OUT+ and OUT-. Typical values are at TA=25C, Vcc=+3.3V)

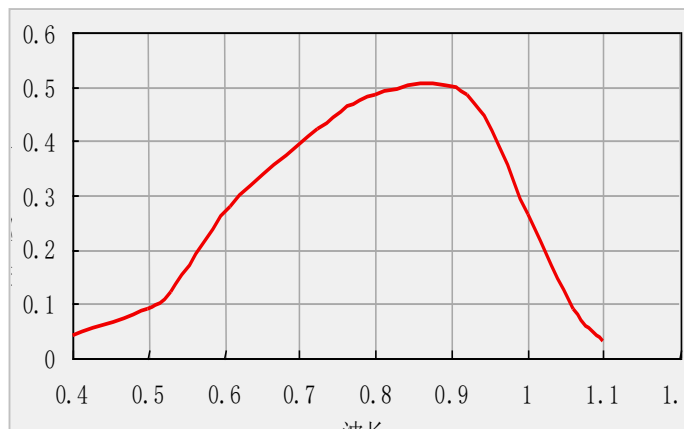
Parameter	Test Conditions	Min.	Typ.	Max	Unit s
Supply Voltage		-0.5	3.3	4.5	V
Supply Current		14	20	25	mA
Transimpedance	Differential, measured with 40uA p-p signal	5.60	7.70	10.2	KΩ
Output impedance	Single ended per side	40	50	60	Ω
Maximum Differential Output Voltage	Input=1mA p-p		140	270	mVp-p
AC Input Overload		2			mVp-p
DC Input Overload		1			mA
Input Referred RMS Noise	TO-5 package, see note 3		215		nA
Input Referred Noise Density	See note 3		11		pA/Hz ^{1/2}
Small Signal bandwidth	Source capacitance=0.85Pf, see note 2	1.525	2.00		GHz
Low Frequency Cutoff	-3dB, input<20uA DC		30		kHz
Transimpedance Linear Range	Gain at 40uA p-p is within 5% of the small signal gain	40			uAp-p
Power Supply Rejection Ratio (PSRR)	f<4MHz, PSSR=-20Log(ΔVout/ΔVcc)	-	28	-	dB



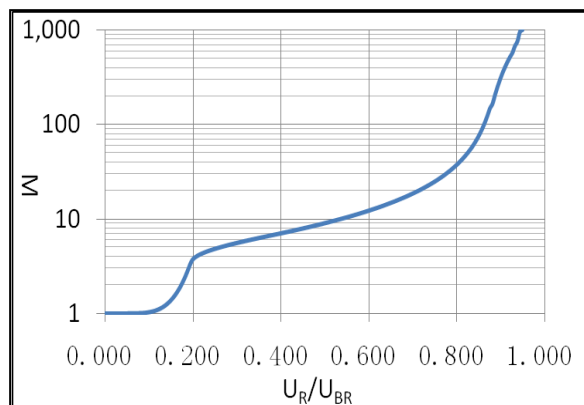
APD230-8-2G T05

Note 2: Source capacitance for APD230-8-2G T05 is the capacitance of APD. Note 3: Input referred noise is calculated as RMS output noise/ (gain at $f = 10$ Mhz). Noise density is (input referred noise)/ $\sqrt{\text{bandwidth}}$.

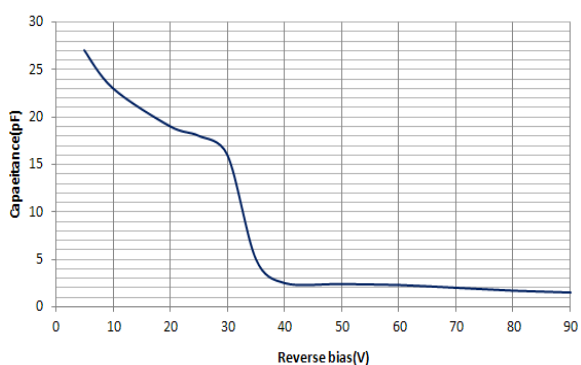
■ Responsivity vs. Wavelength at 0V



■ Gain vs. U_R/U_{BR}



■ Capacitance vs. Operating voltage



■ Gain vs. Reverse Voltage

