

Description

PerkinElmer C30659 Series includes a Silicon or InGaAs Avalanche Photodiode with a hybrid preamplifier. It is supplied in a single modified 12-lead TO-8 package.

The avalanche photodiodes used in these devices are the C30817E, C30902E, C30954E, C30956E, C30645E and C30662E that provide very good response between 830 and 1550 nanometers and very fast rise and fall times at all wavelengths. The preamplifier section uses a very low noise GaAs FET front end designed to operate at higher transimpedance than the regular C30950 series.

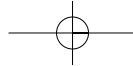
The C30659 is pin to pin compatible with the C30950 series. The output of the C30659 is negative. An emitter follower is used as an output buffer stage. To obtain the wideband characteristics, the output of these devices should be AC (capacitively) coupled to a 50 Ohm termination. The module must not be DC coupled to loads of less than 2,000 Ohms.

For field use, it is recommended that a temperature compensated HV supply be employed to maintain responsivity constant over temperature.

- ▶ 4-5 volts amplifier operating voltages
- ▶ 50 Ω AC Load capability
- ▶ Hermetically sealed TO-8 package
- ▶ High reliability
- ▶ Fast overload recovery
- ▶ Pin compatible with the C30950 series
- ▶ Light entry angle $\varnothing 130^\circ$

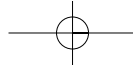


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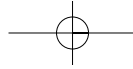
90% to 10% points	-	7	-	-	2	-	ns
Recovery time after overload (note 4)	-	-	150	-	-	150	ns
Output Voltage Swing (1kΩ load) (note 5)	2	3	-	2	3	-	V
Output Voltage Swing (50Ω load) (note 5)	0.7	0.9	-	0.7	0.9	-	V
Output Offset Voltage	-1	0.25	1	-1	0.25	1	V
Positive Supply Current (V+)	-	20	35	-	20	35	mA
Negative Supply Current (V-)	-	10	20	-	10	20	mA

- Notes:
1. A specific value of V_R is supplied with each device. The V_R value will be within the specified ranges.
 2. $I_f = 0.1 \text{ mA}$, 25°C
 3. NEPmax is the Maximum Output Spectral Noise Voltage max divided by the typical Responsivity.
 4. 0dBm, 250ns pulse.
 5. Pulsed operation.



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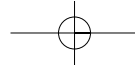
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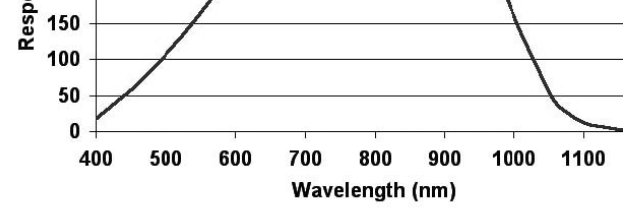
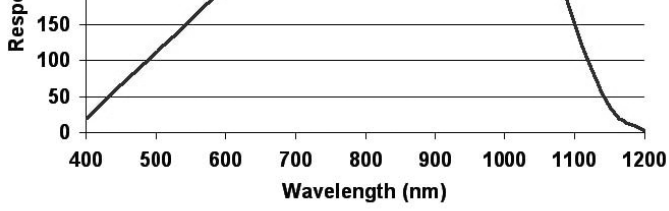
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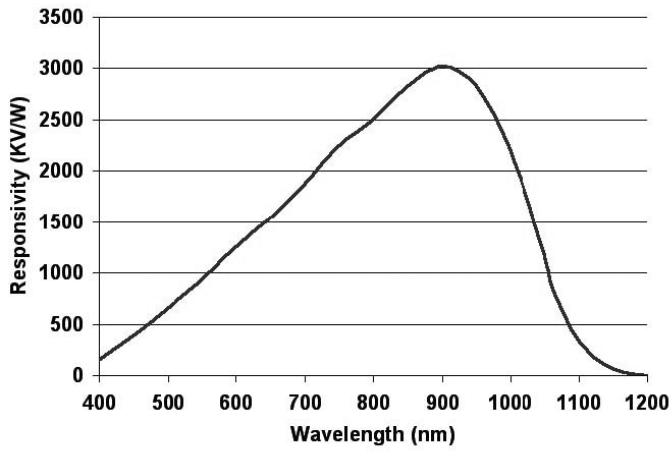
4. 0dBm, 250ns pulse.

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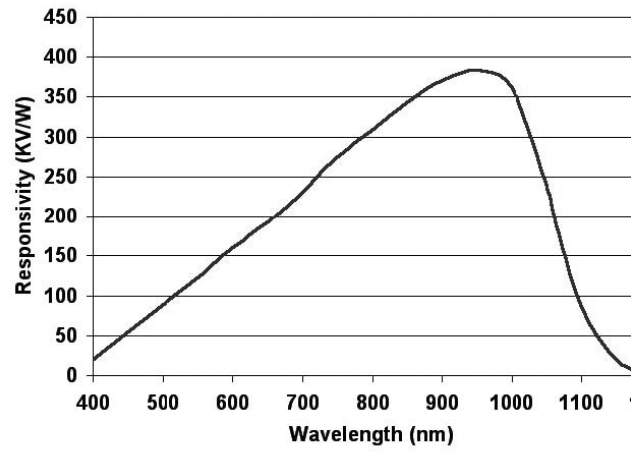




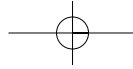
C30659-1060-3A

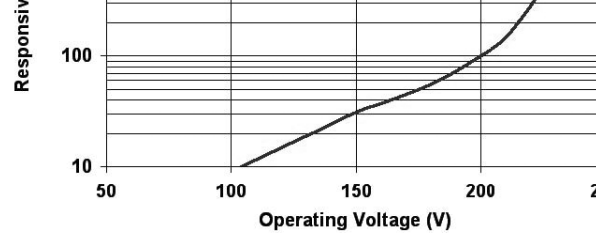
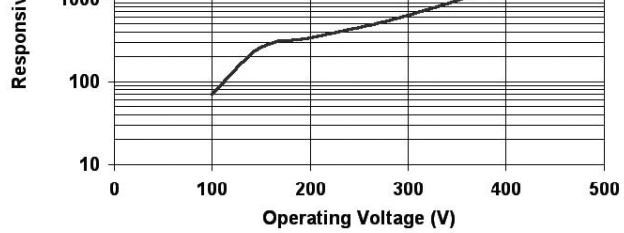


C30659-1060-R8B

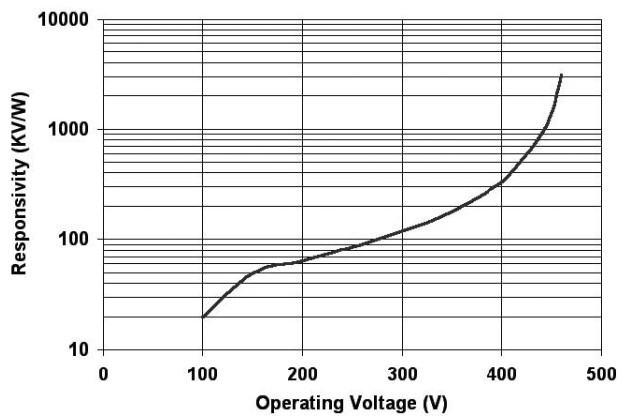


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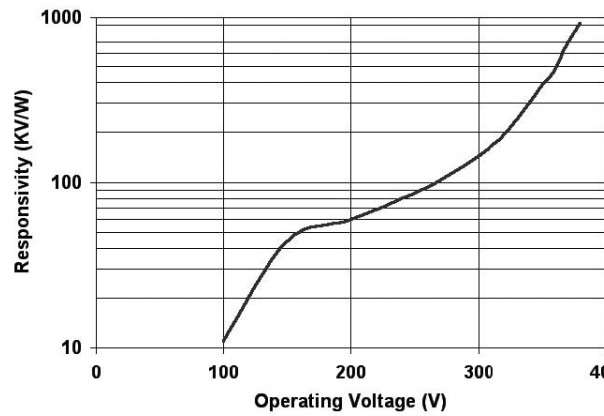




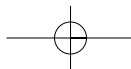
C30659-1060-3A

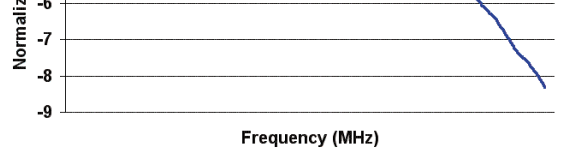
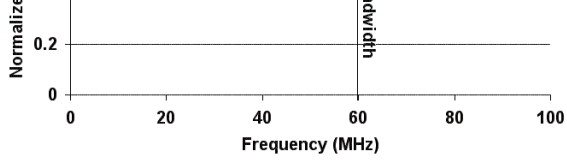


C30659-1060-R8B

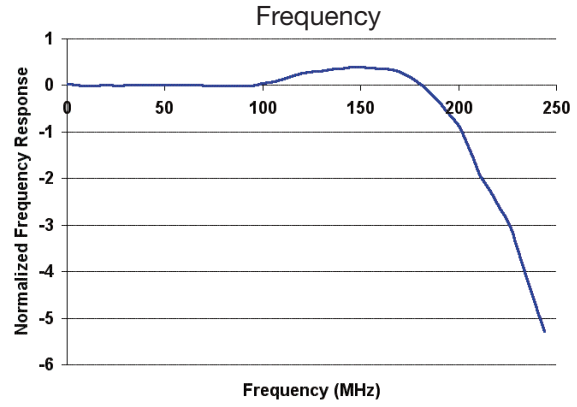
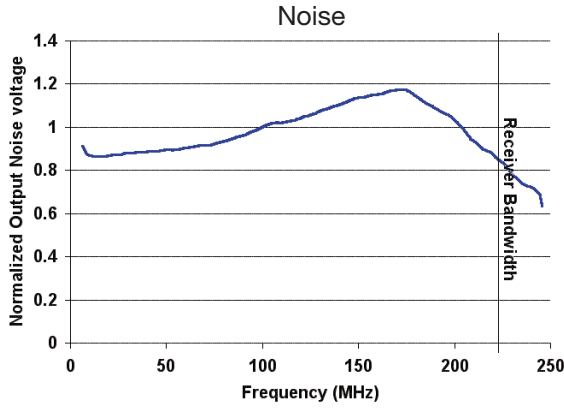


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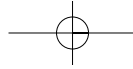
200 MHz Receivers

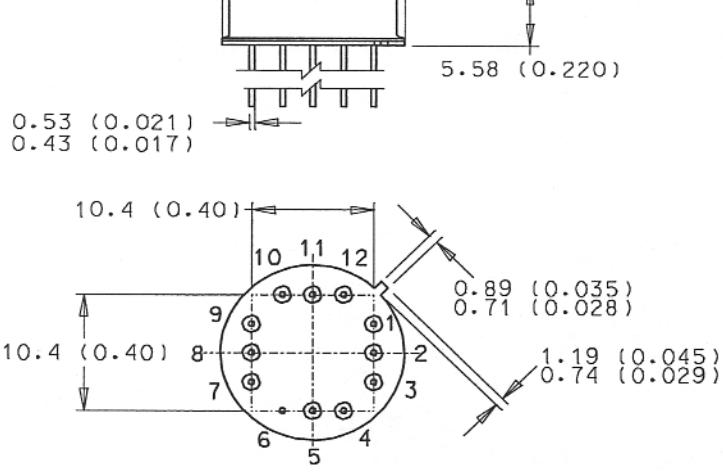


Output voltage noise normalization is calculated using the following formula:

$$V_{n_{\text{normal}}} = \frac{V_n}{V_{n_{\text{average}}}}$$

$$V_{n_{\text{average}}} \left(\frac{V}{\sqrt{\text{Hz}}} \right) = \sqrt{\frac{\int_{f_{\text{HP}}}^{f_{\text{LP}}} V_n^2 \cdot df}{100 \text{ Hz}}} \cdot \frac{1}{f_{\text{-3dB}}}$$





- 3: -Vcc Negative Amplifier Bias
- 4: Positive high voltage
- 5: No Connection
- 6: Case Ground
- 7: No Connection
- 8: Temp. Sensing Diode - Anode
- 9: Temp. Sensing Diode - Cathode
- 10: Ground, DC returns
- 11: No Connection
- 12: +Vcc Positive Amplifier Bias

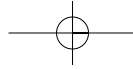


Table 5. Ordering Guide

Model	Description
C30659-900-R8A	50 MHz, 900nm, 0.8mm Active Region Diameter
C30659-900-R5B	200 MHz, 900nm, 0.5mm Active Region Diameter
C30659-1060-3A	50 MHz, 1060nm, 3mm Active Region Diameter
C30659-1060-R8B	200 MHz, 1060nm, 0.8mm Active Region Diameter
C30659-1550-R2A	50 MHz, 1550nm, 0.2mm Active Region Diameter
C30659-1550-R08B	200 MHz, 1550nm, 0.08mm Active Region Diameter

Ordering Information

While the information in this data sheet is intended to describe the form, fit and function for this product, PerkinElmer reserves the right to make changes without notice.

For more information e-mail us at opto@perkinelmer.com or visit our web site at www.optoelectronics.perkinelmer.com. All values are nominal; specifications subject to change without notice.

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