PIN and APD Hybrid Receivers

Si and InGaAs APD Modules

Applications

- LiDAR
- Range finding
- Laser designation
- Confocal microscopy
- High-speed, extreme low-light detection
- Distributed Optical Fiber Sensing (DAS, DTS, DSS)
- Analytical instrumentation
- High-speed, free-space optical communication

Features and Benefits

- Ultra low noise
- High speed
- High linear transimpedance gain
- Customization available upon request

Product Description

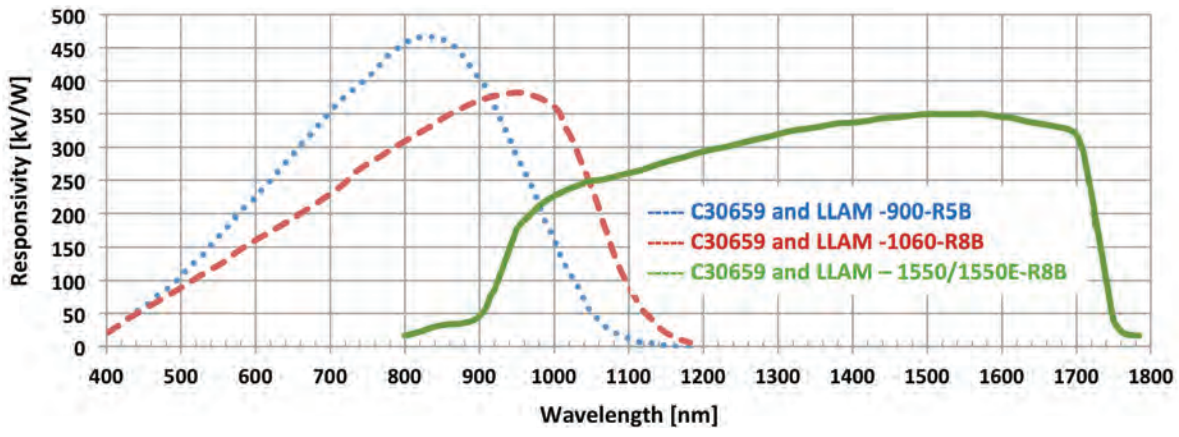
These hybrid receivers comprise of a APD and a transimpedance amplifier in the same hermetically-sealed package. Having both amplifier and photodetector in the same package allows low noise pickup from the surrounding environment and reduces parasitic capacitances from interconnect allowing lower noise operation.

The C30659EH series includes an APD connected to a low noise transimpedance amplifier. Four models are offered with a Silicon APD and two models offered with an InGaAs APD. Standard bandwidth of 50 MHz and 200 MHz can accommodate a wide range of applications. The C30659 models are offered with the APD mounted on a thermo-electric cooler (the LLAM series) to help improve noise or to keep the APD at constant temperature regardless of the ambient temperature. The C30659EH can be customized to meet application specific requirements by using one of the Excelitas rear entry APDs, by choosing a custom bandwidth or by qualifying it to your environmental conditions. Pigtailed versions are also available in a 12 pins offering nearly 100% coupling efficiency. Both the C30659EH and LLAM series have options for enhanced higher damage thresholds, thus providing greater resilience when exposed to high optical power densities. The C30950EH offers a low cost alternative to the C30659EH. The amplifier is designed to neutralize the input capacitance of a unity voltage gain amplifier. The C30919E uses the same architecture of the C30950EH with the addition of a high voltage temperature compensation circuit which maintain module responsivity constant over a wide temperature range.

All optical receiver products can be qualified to meet the most demanding environmental specification as described in MIL-PRF-38534.

Figure 1

APD Receiver Responsivity vs. Wavelength



Product Table

Si and InGaAs APD Typical Modules

Unit	Detector	Active Diameter mm	Typical Bandwidth MHz	Responsivity, 900 nm kV/W	Responsivity, 1064 nm kV/W	Responsivity, 1550 nm kV/W	NEP fW/√Hz	Output Voltage Swing, 50 Ohm V	Package
C30919E	C30817	0.8	40	1000	250	-	20	0.7	TO, 1 in
C30950EH	C30817	0.8	50	560	140	-	27	0.7	TO-8
C30659-900-R5BH	C30902	0.5	200	400	-	-	40	0.9	TO-8
C30659-900-R8AH	C30817	0.8	50	3000	-	-	12	0.9	TO-8
C30659-1060(E)-R8BH*	C30954	0.8	200	370	200	-	100	0.9	TO-8
C30659-1060-3AH	C30956	3.0	50	450	280	-	90	0.9	TO-8
C30659-1550(E)-R08BH*	C30645	0.08	200	-	-	90	220	0.9	TO-8
C30659-1550(E)-R2AH*	C30662	0.2	50	-	-	340	130	0.9	TO-8
LLAM-1550-R08BH	C30645	0.08	200	-	-	90	220	0.9	TO-8 FLANGE
LLAM-1550E-R08BH*	C30645	0.08	200	-	-	90	220	0.9	TO-8 FLANGE
LLAM-1550-R2AH	C30662	0.2	50	-	-	340	130	0.9	TO-8 FLANGE
LLAM-900-R5BH	C30902	0.5	200	400	-	-	40	0.9	TO-8 FLANGE
LLAM-1550E-R2AH	C30662	0.2	50	-	-	340	130	0.9	TO-8 FLANGE
LLAM-1060-R8BH	C30954	0.8	200	370	200	-	50	0.9	TO-8 FLANGE
LLAM-1060E-R8BH*	C30954	0.8	200	370	200	-	50	0.9	TO-8 FLANGE
LLAM-1060-R8BH-FC	C30954	0.8	200	370	200	-	55	0.9	TO-8 FLANGE+FC

* "E" versions of the receivers are with enhanced damage threshold over exposure protection feature.

Figure 1

TO-8 Package for C30659 Devices

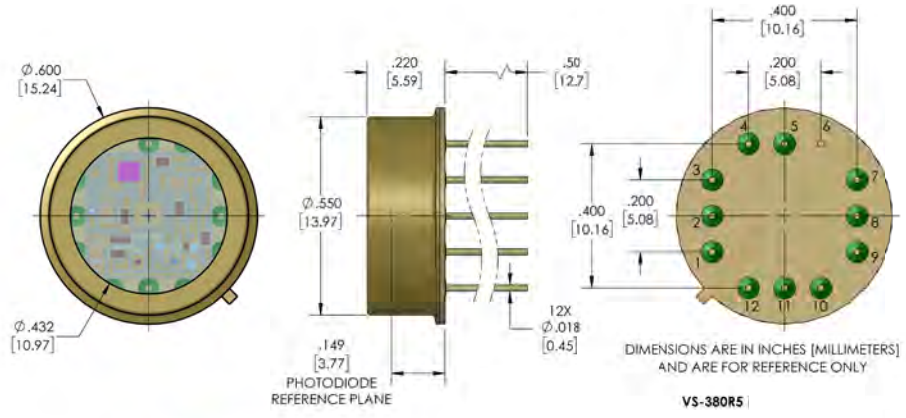


Figure 2

To Flange package for LLAM Devices