indie

EXALOS
An indie Semiconductor Company

Product Brief
EBR-2025-A

Balanced Receiver

EBR

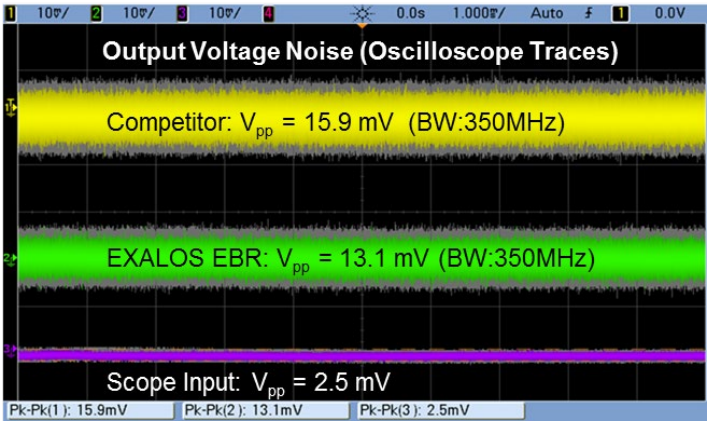
Applications

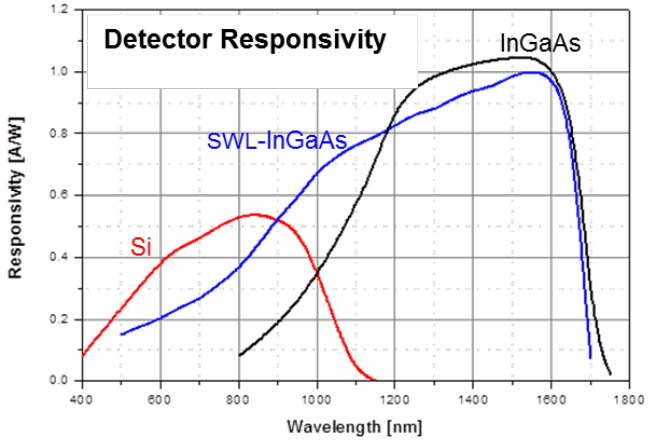
- Optical Coherence Tomography
- Optical Delay Measurements
- Spectroscopy
- Heterodyne Detection

Features

- Adjustable-Bandwidth (80-350 MHz) and Fixed-Bandwidth (100, 200 MHz) Models
- Ultra-Low Noise Performance
- Electrically-Switchable Gain (high/low gain selection via TTL signals)
- Well-matched Photodiodes to achieve high common-mode rejection
- Two Monitor Outputs (DC-400 kHz)
- Compact OEM form factor
- Single +5V power supply

The EXALOS optical balanced receiver (EBR) is engineered particularly to support challenging applications such as Optical Coherence Tomography where high signal-to-noise performance is critical. It achieves the lowest noise performance of balanced receivers in this bandwidth range. It features a compact design and a single supply voltage for OEM applications and allows for electrically switching the gain or for continuously adjusting the bandwidth. Contact EXALOS for customized versions tailored to your requirements.





Balanced Receiver

EBR

General Specifications

EBR Part #	λ Range (nm)	Detector Type[1]	DC/AC[2] - Coupled	Bandwidth[3] (MHz)	Gain (V/A)[4] @ 50 Ohm	Noise Floor (dBm/Hz)	Saturation Power -CW (dBm)	Gain Flatness (dB)
370003-02	900 – 1700	InGaAsSWL	DC	DC – 80/350	5 × 103	-140	-4	5
370004-02	900 – 1700	InGaAsSWL	AC	0.03 – 80/350	5 × 103	-140	-4	5
370005-02	1200 – 1700	InGaAs	DC	DC – 80/350	5 × 103	-140	-4	5
370006-02	1200 – 1700	InGaAs	AC	0.03 – 80/350	5 × 103	-140	-4	5
370009-02	900 – 1700	InGaAsSWL	DC	DC – 100	40 × 103	-122	-13	2
370010-02	900 – 1700	InGaAsSWL	AC	0.03 - 100	40 × 103	-122	-13	2
370011-02	1200 – 1700	InGaAs	DC	DC – 100	40 × 103	-122	-13	2
370012-02	1200 – 1700	InGaAs	AC	0.03 - 100	40 × 103	-122	-13	2

Common Mode Rejection Ratio (Typical)	30 dB
Max. Electrical Output Signal	±1.8 V
Overall Output Voltage Noise (Typical)[5]	0.8 – 3 mVrms
Noise Equivalent Power (Typical)[6]	5 – 6 pW/√Hz
Operating Temperature	-20 to +65 °C
Supply Voltage	5.0 (4.8 to 5.2) V
Dimensions	64 × 46 × 30 mm
Optical Connector[7]	FC Receptacle

[1] (900-1700 nm): Short- enhanced InGaAsSWL photodiode responsivity of ~ 0.75 A/W at 1060 nm, 0.85 A/W at 1310 nm, 1.0 A/W at 1550 nm. Short- enhanced InGaAs PDs (good for 1060nm applications) have extremely low back reflection, thus preventing line artifacts in OCT imaging.
(1200-1700 nm): Standard InGaAs photodiode responsivity of ~ 0.40 A/W at 1060 nm, 1.0 A/W at 1310 nm, 1.1 A/W at 1550 nm.
Silicon photodetectors for 400 – 900 nm also available upon request.

[2] f-3dB = 30 kHz, other cut-off frequencies available upon request

[3] For models 370003 to 370006: Electro-optical bandwidth is continuously adjustable from 80 MHz to 350 MHz; other ranges available on request

[4] For models 370003 to 370006: Electrically-switchable gain with TTL signals: HIGH = 5×103 & LOW = 5×101 @ 50 termination

[5] For models 370003 to 370006: Output voltage noise at 350 MHz is 0.8 mVrms; smaller at lower bandwidth, e.g. 0.4 mVrms at 200 MHz; for models 370009 to 370012: Output voltage noise ~ 3 mVrms;

[6] For models 370003 to 370006: Noise Equivalent Power (NEP) is measured from DC to 100MHz.
For models 370009 to 370012: NEP is measured from DC to 10MHz.

[7] The FC adapters are aligned for 9/125µm single-mode fiber with APC connectors. When using FC/PC connectors, minimal alignment errors may occur due to the small detector size, which will result in a reduced output signal. In general, multi-mode fiber at the input can be used, too, but in this case the light beam spot diameter exceeds the active area of the detector, which results in a reduced output signal as well.