

Exalos Balanced Receiver | EBR

Applications

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

Product Features

- Adjustable Bandwidth (60-380 MHz)
- Ultra-Low Noise
- 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

Description

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.

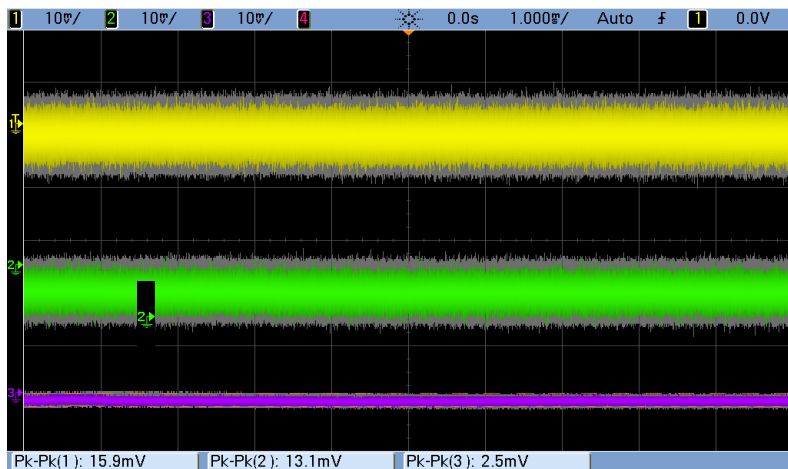


Output Voltage Noise (Oscilloscope Traces)

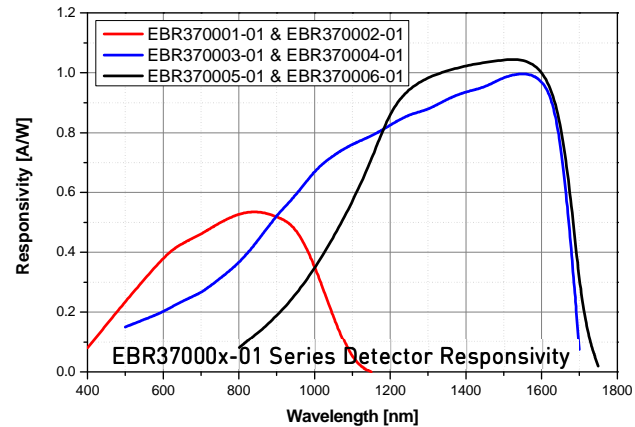
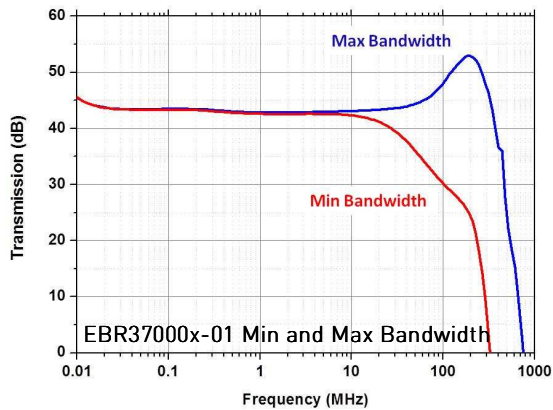
Competitor: $V_{pp} = 15.9 \text{ mV}$

EXALOS EBR: $V_{pp} = 13.1 \text{ mV}^*$

Scope input: $V_{pp} = 2.5 \text{ mV}$



* The bandwidth of the EBR37003 was set to the Competitor's bandwidth of $f_{3dB} = 350 \text{ MHz}$ for this measurement.



EBR				
Transimpedance Gain ¹	HIGH = 10×10^3 ; LOW = 10×10^1			V/A
Gain Bandwidth [3 dB] ²	DC – 380			MHz
Gain Flatness	5			dB
Common Mode Rejection Ratio	>25			dB
CW Saturation Power	-4			dBm
Max. Electrical Output Signal	1.8			V
Photodiode Option	Silicon	SWL-InGaAs	InGaAs	
Wavelength Range	400–1050	500–1700	800–1700	nm
Photodiode Responsivity	0.55 ³	0.75–1.0 ⁴	1.0–1.1 ⁵	A/W
Noise Floor	-140			dBm/Hz
Overall Output Voltage Noise ⁶	0.8			mV _{rms}
Minimum NEP (DC-100 MHz)	5			pW/ $\sqrt{\text{Hz}}$

Operating Conditions

Operating temperature	-20 to +65	°C
Supply voltage	5.0 (4.90 to 5.20)	V
Dimension	64 x 46 x 30	mm
Optical Connector	FC/APC	

Notes:

- 1 Electrically-switchable gain with TTL signals: HIGH = 5×10^3 @ 50 Ω termination ; LOW = 5×10^1 @ 50 Ω termination
- 2 Electro-optical bandwidth is continuously adjustable from 60 MHz to 380 MHz; other ranges available on request
- 3 Typical photodiode responsivity of 0.55 A/W at 840 nm, lower at other wavelengths
- 4 Typical photodiode responsivity of 0.40 A/W at 840 nm, 0.75 A/W at 1060 nm, 0.85 A/W at 1310 nm, 1.0 A/W at 1550 nm
- 5 Typical photodiode responsivity of 0.40 A/W at 1060 nm, 1.0 A/W at 1310 nm, 1.1 A/W at 1550 nm
- 6 Output voltage noise at 350 MHz; smaller at lower bandwidth, e.g. 0.4 mV_{rms} at 200 MHz

Ordering Information

- Part Number: **EBR370001-01** : DC-coupled standard silicon photodiodes, best for 400-900 nm
 Part Number: **EBR370002-01** : AC-coupled standard silicon photodiodes, best for 400-900 nm
 Part Number: **EBR370003-01** : DC-coupled short-wavelength enhanced (SWL) InGaAs photodiodes, best for 900-1600 nm
 Part Number: **EBR370004-01** : AC-coupled short-wavelength enhanced (SWL) InGaAs photodiodes, best for 900-1600 nm
 Part Number: **EBR370005-01** : DC-coupled standard InGaAs photodiodes, best for 1100-1600 nm
 Part Number: **EBR370006-01** : AC-coupled standard InGaAs photodiodes, best for 1100-1600 nm