

Finisar®

43 GHz BALANCED PHOTODETECTOR BPDV2150R

PRODUCT BRIEF

KEY FEATURES

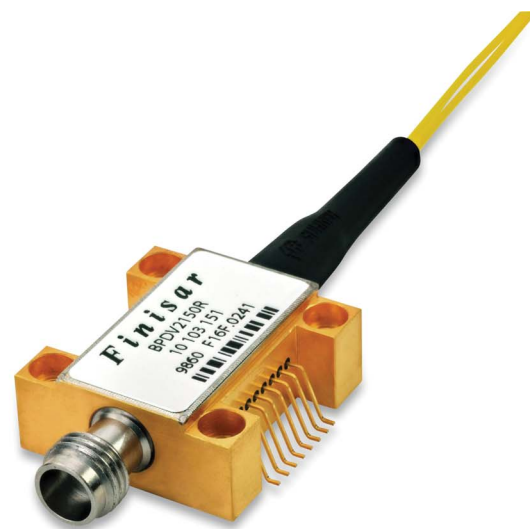
- ▶ Highest bandwidth with flat response
- ▶ Excellent pulse behavior
- ▶ Unsurpassed high-power handling capability
- ▶ Integrated 50 Ω termination
- ▶ Unique on-chip integrated bias network

APPLICATIONS

- ▶ 40/43 Gb/s DQPSK optical communication systems
- ▶ High-speed coherent systems
- ▶ High speed optical sensors

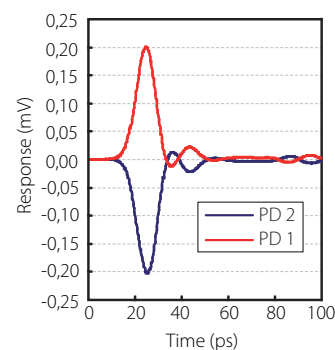
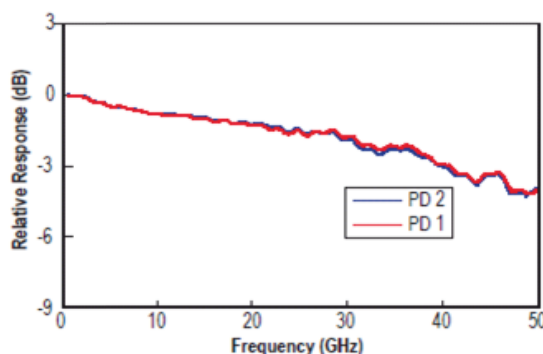
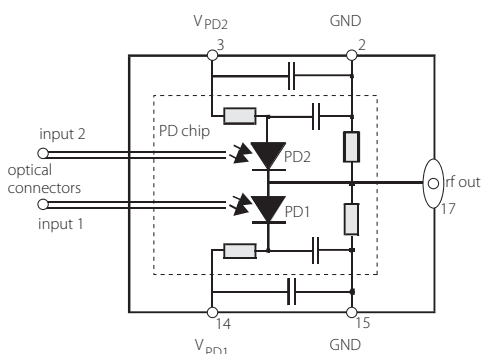
OVERVIEW

The balanced photodetector consists of two optimized, waveguide-integrated photodiodes on one single chip. As a single balanced photodetector, this configuration ensures an excellent uniformity of the paired photodiodes and is biased via integrated biasing network. Due to optimized combination of waveguide and photodiode design, even at high optical powers, a linear frequency response can be guaranteed. The integrated 50 Ω termination allows an excellent match of the electrical output signal. Customized configurations are available, such as BPDV dual pair- and quad-sets, including fiber matching and connector customization.



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BLOCK DIAGRAM AND TYPICAL PERFORMANCE



OPERATING CONDITIONS

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Case Temperature	T_{case}		0		+75	°C
Relative Humidity	RH	non condensing	5		85	%
Average Optical Input Power Local Oscillator	P_{opt}	for each diode			10	dBm
Wavelength Range	λ		1480		1620	nm
Photodiode Reverse Voltage	V_{PD1} V_{PD2}		2.5 -3.8	3.3 -3.3	3.8 -2.5	V

OPTICAL AND ELECTRICAL SPECIFICATIONS 1)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Photodiode DC Responsivity @ 1550 nm	R	optimum polarization	0.45			A/W
Imbalance of Responsivity	lmb	$lmb = 10 \cdot \log_{10}(R_{PD1}/R_{PD2}) $		0.15	0.5	dB
Polarization Dependent Loss	PDL			0.4	0.8	dB
Optical Return Loss	ORL	$\lambda = 1550 \text{ nm}$	27			dB
Pulse Width				11	12	ps
3 dB cut-off Frequency	f_{3db}		37	42		GHz
Output Reflection Coefficient	S_{22}	0.05 - 50 GHz		-5	-3	dB
Photodiode Dark Current	I_{dark}	$T_{case} = 25^\circ\text{C}$		5	200	nA
Skew					2	ps
Skew (Inter Detector Module)		dual pair; quad set			10	ps
RF Common Mode Rejection Ratio	CMRR	$CMRR = 20 \cdot \log_{10}[(S21-S31)/(S21+S31)]$		15		dB

Notes:

1) $\lambda = 1550 \text{ nm}$, $V_{PD} = \pm 2.8 \text{ V}$, $T = 25^\circ\text{C}$, $P_{opt} = +3 \text{ dBm}$

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