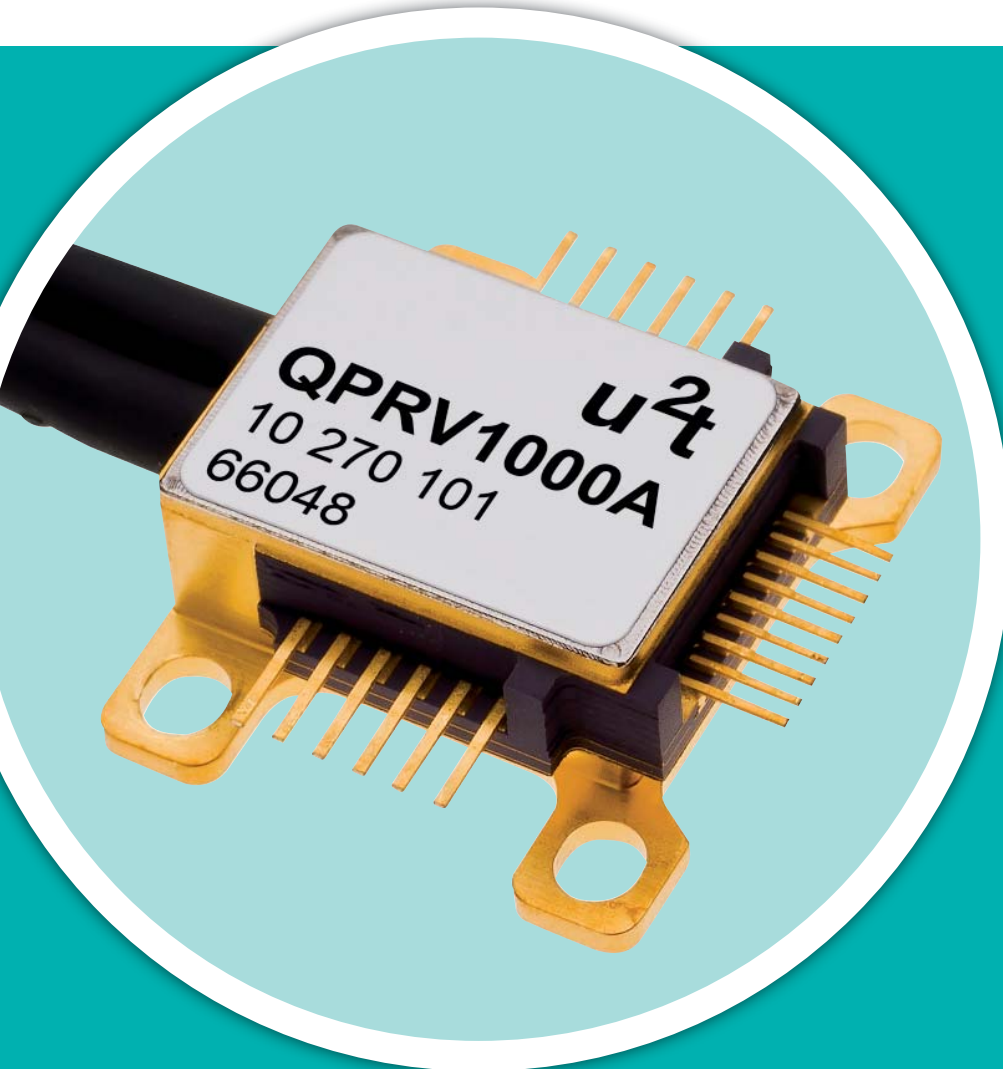


# 43 Gbit/s Dual Balanced Receiver

Product code: QPRV1000A



## Features

- Dual balanced receiver for up to 44.6 Gbit/s DQPSK
- Ribbon fiber optical interface
- AC coupled co-planar RF interface
- Linear differential output swing of 500 mV
- Peak level monitors for both I and Q inputs

## Applications

- 40 Gbit/s DQPSK communication systems
- Transponder and line card designs

The dual balanced receiver module QPRV is a small form-factor, optical front-end for DQPSK applications up to 44.6 Gbit/s. It has a bend-insensitive ribbon fiber optical interface and a co-planar RF interface. The receiver contains four waveguide-integrated pin-photodiodes (PDs) and two linear transimpedance amplifiers (TIAs) delivering a typical differential output swing of 500 mVpp. The transimpedance of each TIA is manually adjustable to meet linearity specifications over a large optical input power range. For both the in-phase and quadrature inputs the receiver offers peak level monitors for convenient feedback to the demodulator phase control circuitry.

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**u<sup>2</sup>t** photonics

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## Operation Conditions

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Operating case temperature range	$T_{case}$		0		+75	°C
Operating wavelength range	$\lambda$		1520		1620	nm
Average optical input power	$P_{opt}$	44.6 Gbit/s RZ-DQPSK per port <sup>1)</sup>	-10		0	dBm
Relative humidity	RH	non condensing	5		85	%
Photodiode bias voltage	$V_{PD1}, V_{PD2}$		+3.1	+3.3	+3.5	V
Amplifier supply voltage	$V_{CC}$		+3.135	+3.3	+3.465	V

Notes: 1) Operation over stated range requires input power dependent adjustment of transimpedance.

## Optical and Electrical Specifications <sup>1)</sup>

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Conversion gain				1800		V/W
Bit rate		RZ-DQPSK		43	44.6	Gbit/s
3 dB cut-off frequency	$f_{3dB}$	<sup>2)</sup>	11.5			GHz
Photodiode responsivity	R	Optimum polarization	0.45	0.55	0.7	A/W
Optical return loss	ORL		27			dB
Overload power	$P_{max}$	44.6 Gbit/s RZ-DQPSK, per port	0			dBm
Differential output voltage swing (ac-coupled)	$V_{out, diff}$		350	500	900	mV
Optical skew ( $I^+/I^-$ & $Q^+/Q^-$ )	$\tau_D$			1	2	ps
Total power consumption	$P_{con}$			0.5	0.8	W

Notes: 1)  $V_{PD1} = V_{PD2} = 3.3$  V,  $V_{CC} = +3.3$  V,  $\lambda = 1550$  nm,  $T_{case} = 25^\circ$ C

2) Measurement with an Agilent 50 GHz Lightwave component analyzer

## Block Diagram and Mechanical Dimensions

