

# Integrated 43 Gbit/s DPSK Receiver

Product code: IDRV2242A



## Features

- Balanced receiver integrated with an optical delay-line interferometer (DLI)
- Athermal DLI design, very low skew
- Input power monitor
- FSR of 21.5, 43, 50 or 67 GHz
- Peak level detector
- Optional: fixed attenuation in the constructive arm

## Applications

- 43G DPSK communication systems
- Transponder and line card designs

The integrated DPSK receiver module IDRV consists of a balanced photoreceiver and an integrated delay-line interferometer (DLI). The IDRV is a differential front-end for 43 Gbit/s DPSK-applications featuring high differential gain of typically 1500 V/W. The two output ports of a phase-tunable DLI are coupled into two single chip waveguide-integrated pin-photodiodes (PD). Signal gain is obtained using a differential amplifier with limiting output stage. The limiting amplifier produces a typical differential output voltage swing of 550 mV. The receiver is therefore well suited for phase modulated OC-768/STM-256 system operation.

[www.u2t.com](http://www.u2t.com)

Berlin, Germany | +49-30-726-113-500 | [sales@u2t.com](mailto:sales@u2t.com)

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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	$\lambda$		1525		1570	nm
Average optical input power	$P_{opt}$	NRZ-DPSK	-6		10	dBm
Relative humidity	RH	non condensing	5		85	%
Photodiode bias voltage	$V_{PD1}, V_{PD2}$		2.0	2.25	2.75	V
Amplifier supply voltage	$V_{EE}$		-5.3	-5.2	-4.8	V
Amplifier adjustment voltage	$V_{ADJ}$		$V_{EE}$	-2.4	+0.3	V

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

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Differential conversion gain	CG	<sup>2)</sup> unattenuated version only	900	1500		V/W
DC responsivity	R	Optimum polarization and optimum DLI phase (unattenuated arm)	0.2	0.3	0.55	A/W
Extinction ratio	ER		15	18		dB
Phase control time constant <sup>3)</sup>	$\tau$	Resistive heater			1	s
Differential output voltage swing (ac-coupled)	$V_{out, diff}$	$P_{opt} \geq 6 \text{ dBm}$ <sup>4)</sup>	100	550	800	mV
Skew					1	ps
Amplifier supply current	$I_{EE}$			85	100	mA
Power consumption	$P_{con}$				1.7	W

Notes: 1)  $V_{PD1} = V_{PD2} = 2.25 \text{ V}$ ,  $V_{EE} = -5.2 \text{ V}$ ,  $\lambda = 1550 \text{ nm}$ ,  $T_{case} = 25^\circ\text{C}$ .

2) Measurement with Agilent 50 GHz Lightwave Component Analyzer (LCA).

3) Time it takes to tune half the way between the starting and the end point ( $T_{0-50\%}$ ).

4) Measurements performed in single-ended condition using an Agilent Infiniium Scope with precision time base and 67 GHz electrical sampling head.

## Block Diagram

