

InGaAs PIN photodiode with preamp G9443-14

ROSA type, 1.3/1.55 μm , 2.5 Gbps



Features

- $\phi 1.25$ mm sleeve type ROSA (Receiver Optical Sub-Assembly)
- High-speed response: 2.5 Gbps
- High gain with AGC (Auto Gain Control): 1 V/mW (-17 dBm)
- Low power supply voltage: 3.3 V, 5 V
- Differential output
- Sensitivity: 1 to -22 dBm
- Optical return loss: 35 dB

Applications

- SDH/SONET
- Optical fiber communications

Absolute maximum ratings ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Value	Unit
Supply voltage	Vcc	-0.5, +6	V
Operating temperature	Topr	-20 to +70 ^{*1}	$^\circ\text{C}$
Storage temperature	Tstg	-40 to +85 ^{*1}	$^\circ\text{C}$

*1: No condensation

Electrical and optical characteristics

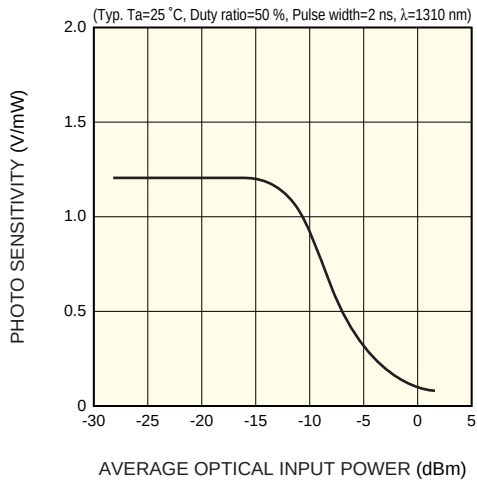
($T_a=25^\circ\text{C}$, $V_{cc}=3.3$ V or 5 V, $V_{ee}=0$ V, $R_L=50\ \Omega$ ^{*2}, $\lambda=1310$ nm, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Photo sensitivity	S	Pin= -17 dBm ^{*3}	0.5	1.0	-	V/mW
Supply current	Icc	Dark state, $V_{cc}=3.3$ V	-	35	48	mA
		$R_L=\infty$, $V_{cc}=5.0$ V	-	42	-	
Output bias voltage	Vo	Dark state, $R_L=\infty$, $V_{cc}=3.3$ V	-	3.0	-	V
Cut-off frequency	fc	Pin= -17 dBm, -3 dB (0 dB at 100 MHz) ^{*3}	1700	2000	-	MHz
Low cut-off frequency	fc-L	-3 dB	-	30	-	kHz
Noise equivalent power	NEP	Dark state, fc-L to 1.87 GHz ^{*3}	-	370	850	nWrms
Minimum receivable sensitivity	Pmin	2.5 Gbps, NRZ, PN=23, BER= 10^{-10} , Extinction ratio=8.2 dB	-	-22	-	dBm
Maximum receivable sensitivity	Pmax		-	1	-	
Optical return loss	ORL		28	35	-	dB

*2: Output: Capacitive coupling

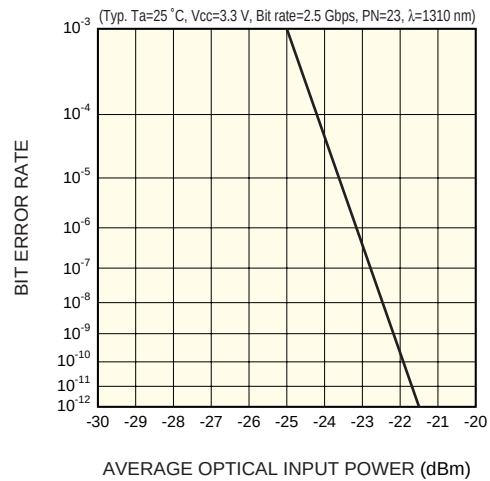
*3: Single-ended (V_{out+}) measurement

■ Photo sensitivity vs. average optical input power



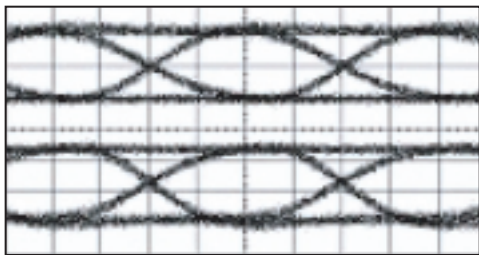
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■ Bit error rate



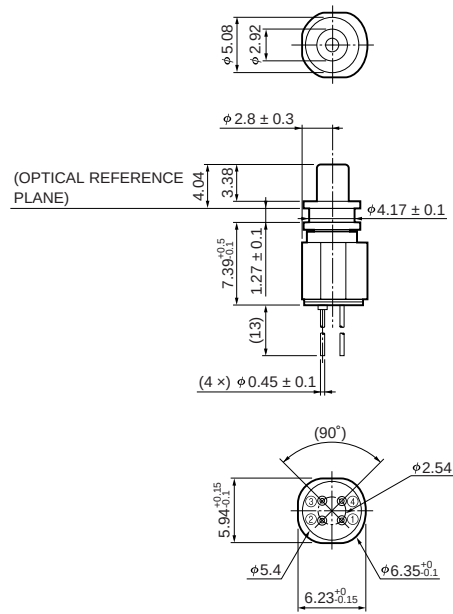
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■ Eye diagram



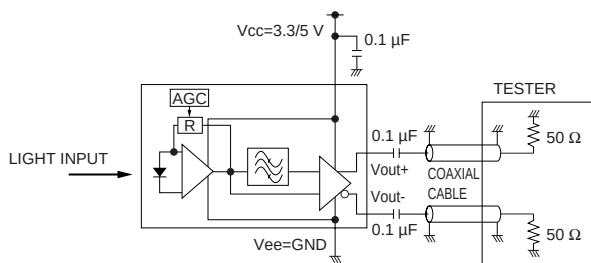
Bit rate=2.5 Gbps, PN=23
 $\lambda=1310\text{ nm}$, Pin = -20 dBm

■ Dimensional outline (unit: mm)



KIRDA0178EA

■ Operating circuit example



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