InGaAs PIN photodiode with preamp
G10342-14/-54

ROSA type, 1.3/1.55 µm, 10 Gbps

Features

- Compatible with 10 Gbps Miniature Device (XMD-MSA)
- High-speed response: 11.3 Gbps
- Low power supply voltage: Vcc=Vpd=3.3 V
- Differential output
- Sensitivity: +3 to -20.5 dBm
- High trans-impedance gain: 6 kΩ
- Low optical return loss: 35 dB Typ.
- Isolation type: Housing and signal ground are electrically isolated.
- Flex board interface (G10342-54)

Applications

- SDH/SONET (STM-64/OC-192)
- 10 Gigabit Ethernet
- XFP transceiver

■ Absolute maximum ratings

Parameter	Symbol	Value	Unit
Supply voltage	Vcc	-0.5, +3.7	V
Reverse voltage (photodiode)	V_R	7	V
Storage temperature *1	Tstg	-40 to +90	°C

■ Recommended operating conditions

Parameter	Symbol	Value	Unit
Case temperature *1	Tc	-20 to 90	°C
Supply voltage	Vcc	3.05 to 3.53	V
Reverse voltage (photodiode)	Vpd	3.05 to 5.0	V
Spectral response range	λ	1.26 to 1.57	µm
Load resistance *2	R_L	50	Ω
Bit rate	-	9 to 11.1	Gbps
Bit pattern	-	NRZ, Mark ratio=1/2	-

*1: No condensation
*2: Capacitive coupling

■ Electrical and optical characteristics (recommended operating conditions, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Responsivity	R	λ=1.31 µm	0.75	0.85	-	A/W
		λ=1.55 µm	0.8	0.9	-	
Supply current	Icc	Dark state, R_L=∞	-	32	45	mA
Cut-off frequency	fc	λ=1.55 µm, -3 dB	7.0	9.0	-	GHz
Low cut-off frequency	fc-L	λ=1.55 µm, -3 dB	-	10	50	kHz
Noise equivalent power *3	NEP	Dark state, to 7.5 GHz	-	1.0	-	µWrms
Trans-impedance *3	Tz	R_L=50 Ω, f=100 MHz	4	6	-	kΩ
Minimum receivable sensitivity	Pmin	λ=1.55 µm, PRBS=2^{31}-1, BER=10^{-12}, Extinction ratio=14 dB	-	-20.5	-18.5	dBm
Maximum receivable sensitivity	Pmax		+1	+3	-	
Output amplitude	Vomax	Differential	300	450	650	mVpp
Dark current	I_D	Dark state, Tc=25 °C, Vpd=3.3 V	-	0.05	0.5	nA
			-	-	100	
Optical return loss	ORL	λ=1.31/1.55 µm	27	35	-	dB

*3: Single-ended (Vout+) measurement

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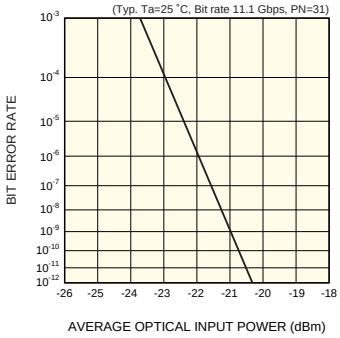
■ Bit error rate



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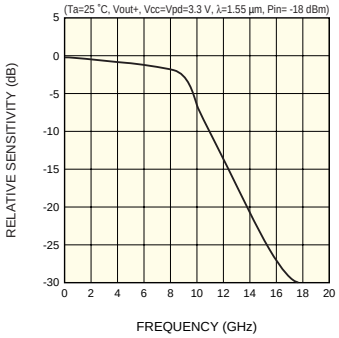
■ Frequency response



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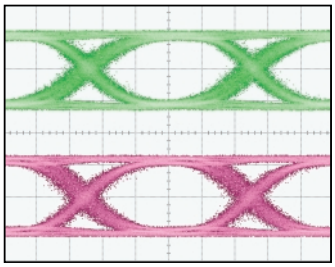
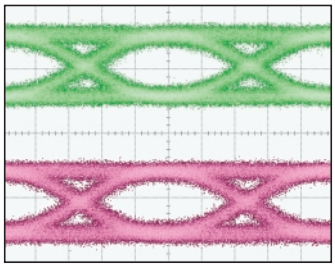
■ Eye diagram

Bit rate 10 Gbps, PN=31, NRZ, λ=1.55 µm, Extinction raito 14 dB, Vcc=Vpd=3.3 V



Pin= +2.5 dBm, 100 mV/div., 20 ps/div.



Pin= -20 dBm, 50 mV/div., 20 ps/div.

■ Dimensional outline (unit: mm)

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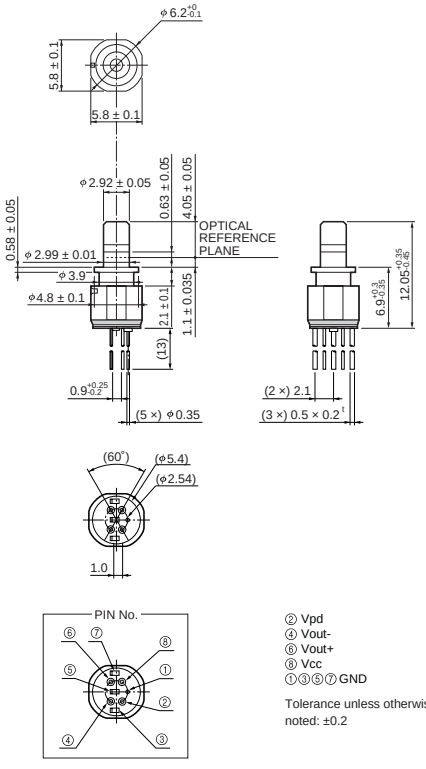

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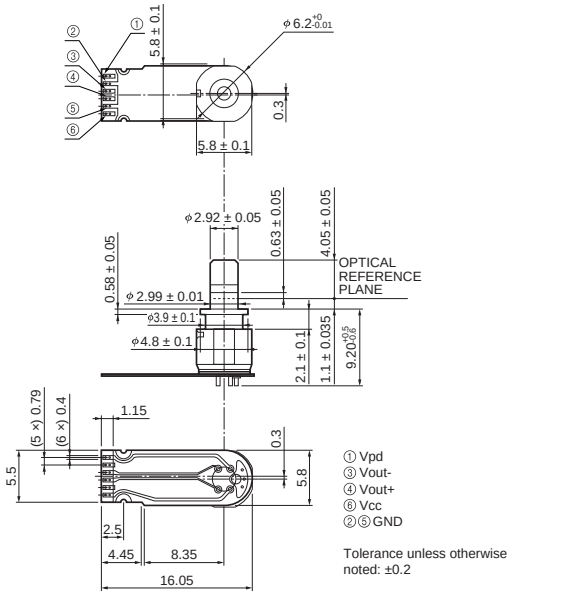

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