

FEATURES

- Data Rates up to 2.7Gb/s
- High Sensitivity: -34 dBm (typ.)
- Differential Electrical Output
- Preamplifier Power Supply Voltage: +3.3V
- Wide operating temperature range: -40 to +85°C

APPLICATIONS

This APD detector preamp is intended to function as an optical receiver in long haul SONET, SDH, and DWDM systems operating up to 2.7Gb/s. The device operates in both the 1,310 and 1,550nm wavelength windows. The detector preamplifier is DC coupled with a differential electrical output.



DESCRIPTION

The FRM5W232LY incorporates a 30 micron InGaAs Avalanche Photodiode (APD) detector, a GaAs IC transimpedance preamplifier. The APD is processed with modern MOVPE techniques resulting in reliable performance over a wide range of operating conditions. The lens coupling system and the single mode fiber are assembled using Nd: YAG welding. The LY package is secured by a vertical flange.

ABSOLUTE MAXIMUM RATINGS (T_C=25°C, unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Storage Temperature	T _{stg}	-40 to +85	°C
Operating Case Temperature	T _{op}	-40 to +85	°C
Supply Voltage	V _{DD}	0 to +4.5	V
APD Reverse Voltage	V _R	0 to V _B (Note)	V
APD Reverse Current	I _{R(peak)}	2	mA

Note: Since V_B may vary from device-to-device, V_B data is attached to each device for reference.

OPTICAL & ELECTRICAL CHARACTERISTICS

(T_C=25°C, λ=1,550nm, V_{DD}=+3.3V unless otherwise specified)

Parameter	Symbol	Test Conditions	Limits			Unit	
			Min.	Typ.	Max.		
APD Responsivity	R13	λ = 1,310nm, M=1	0.75	0.80	-	A/W	
	R15	λ = 1,550nm, M=1	0.80	0.85	-		
	R16	λ = 1,610nm, M=1	-	0.70	-		
APD Breakdown Voltage	VB	ID=10μA	40	50	65	V	
Temperature Coefficient of VB	γ	Note (1)	0.08	0.12	0.15	V/°C	
AC Transimpedance	Z _t	Pin=-30dBm, f=100MHz, Single-end	1800	2200	2600	Ω	
Bandwidth	BW	Pin=-30dBm, M=10, -3dB from 1MHz	2.2	2.5	-	GHz	
Lower Cut-Off Frequency	f _{cl}		-	50	75	kHz	
Peaking	d _{pk}	Pin=-30dBm, M=10, from 1MHz	-	-	+2	dB	
Group Delay Deviation	GD	Pin=-30dBm, M=10, from 500MHz to 1.75GHz	-	60	-	psec	
Output Return Loss	S ₂₂	up to 1.75GHz	10	-	-	dB	
		up to 2.5GHz	5	-	-		
Equivalent Input Noise Current Density	i _n	Average within 2.2GHz	-	9.5	11	pA/√Hz	
Minimum Sensitivity	P _r	Note (4)	Ta=25°C, Rext=14dB	-	-34.0	-33.0	dBm
			Ta=-40°C ~ 85°C, Rext=14dB	-	-33.0	-31.0	
			Ta=25°C, Rext=10dB	-	-33.0	-	
Maximum Overload	P _{max}	2.488Gb/s, NRZ, PRBS=2 ²³ -1, BER=10 ⁻¹⁰ , M=3	-5	-	-	dBm	
		M=3, Note (3)	-7	-	-		
Maximum Output Voltage Swing	V _{clip}	Saturated Output Voltage	450	550	800	mV	
Optical Return Loss	ORL	-	30	-	-	dB	
Power Supply Current	I _{DD}	-	-	45	70	mA	
Power Supply Voltage	V _{DD}	-	3.15	3.30	3.45	V	

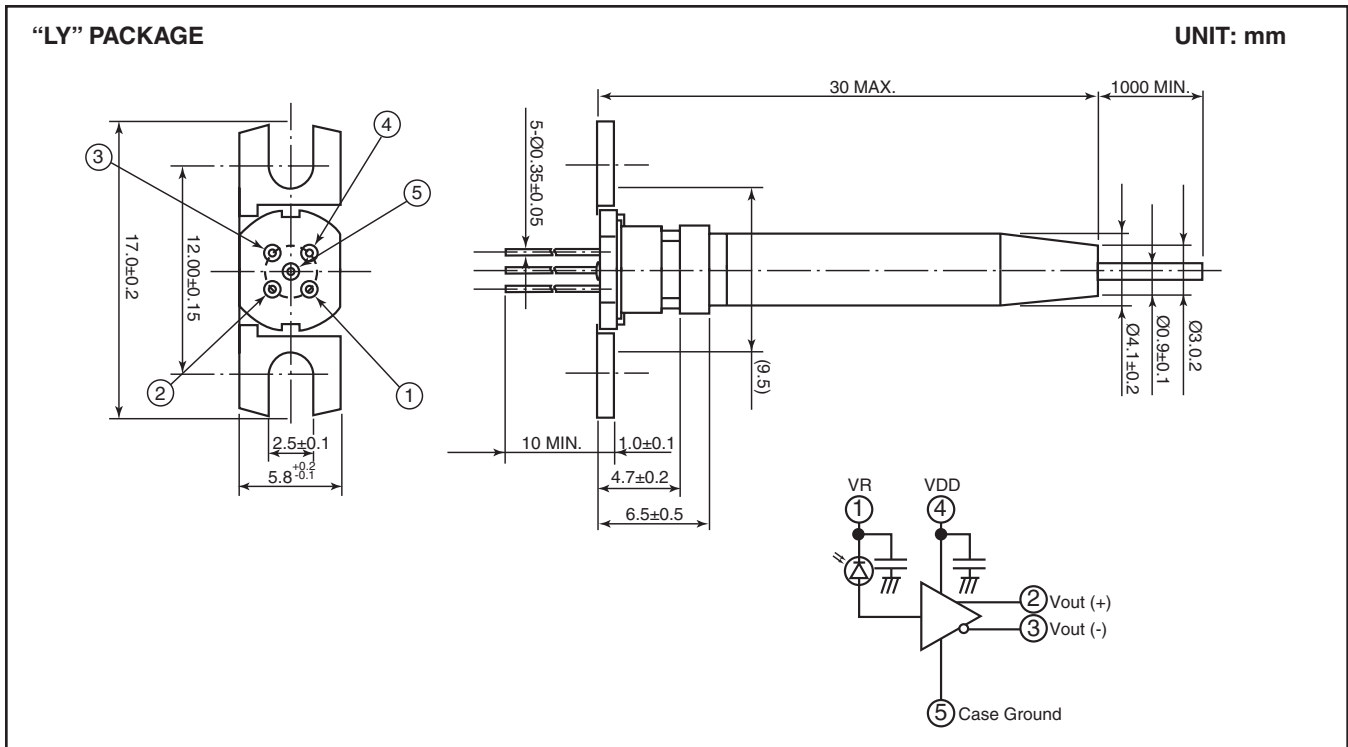
Note: (1) γ=ΔVB/ΔTc

Note: (2) All the parameters are measured with 50Ω AC-coupled.

Note: (3) Defined by 10% distortion of wave form.

Note: (4) Test condition is 2.488Gb/s, NRZ, PRBS=2²³-1, B.E.R.=10⁻¹⁰, VR=Optimum.

Notes



For further information please contact:

Eudyna Devices USA Inc.

2355 Zanker Rd.
San Jose, CA 95131-1138, U.S.A.
TEL: (408) 232-9500
FAX: (408) 428-9111
www.us.eudyna.com

Eudyna Devices Europe Ltd.

Network House
Norreys Drive
Maidenhead, Berkshire SL6 4FJ
United Kingdom
TEL: +44 (0) 1628 504800
FAX: +44 (0) 1628 504888

Eudyna Devices Asia Pte Ltd.

Hong Kong Branch
Rm. 1101, Ocean Centre, 5 Canton Rd.
Tsim Sha Tsui, Kowloon, Hong Kong
TEL: +852-2377-0227
FAX: +852-2377-3921

Eudyna Devices Inc.

Sales Division
1, Kanai-cho, Sakae-ku
Yokohama, 244-0845, Japan
TEL: +81-45-853-8156
FAX: +81-45-853-8170

CAUTION

Eudyna Devices Inc. products contain **gallium arsenide (GaAs)** which can be hazardous to the human body and the environment. For safety, observe the following procedures:

- Do not put this product into the mouth.
- Do not alter the form of this product into a gas, powder, or liquid through burning, crushing, or chemical processing as these by-products are dangerous to the human body if inhaled, ingested, or swallowed.
- Observe government laws and company regulations when discarding this product. This product must be discarded in accordance with methods specified by applicable hazardous waste procedures.

Eudyna Devices Inc. reserves the right to change products and specifications without notice. The information does not convey any license under rights of Eudyna Devices Inc. or others.

© 2004 Eudyna Devices USA Inc.
Printed in U.S.A.