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 VB may vary from device-to-device, VB data is attached to each device for reference.

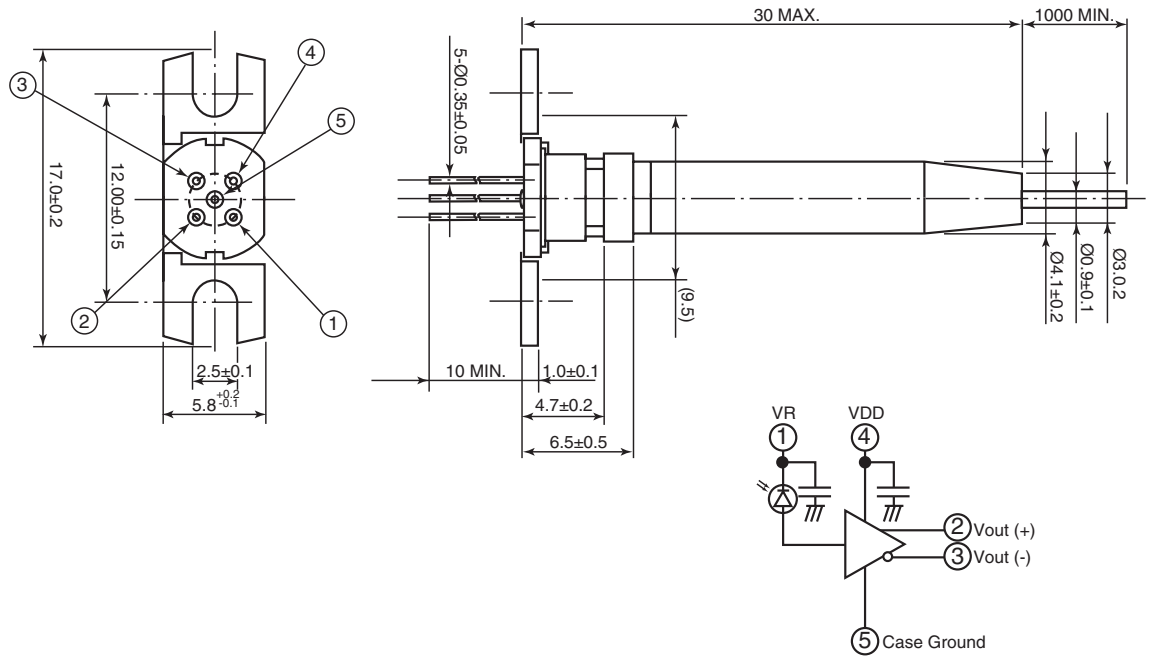
OPTICAL & ELECTRICAL CHARACTERISTICS
(T_C=25°C, λ=1,550nm, V_{DD}=+3.3V unless otherwise specified)

Parameter	Symbol	Test Conditions		Limits Min.	Limits Typ.	Limits Max.	Unit
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	fcl			-	50	75	kHz
Peaking	dpk	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	S22	up to 1.75GHz		10	-	-	dB
		up to 2.5GHz		5	-	-	
Equivalent Input Noise Current Density	in	Average within 2.2GHz		-	9.5	11	$pA\sqrt{Hz}$
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=2^{23}-1, B.E.R.=10^{-10}, VR=Optimum.

Notes

"LY" PACKAGE **UNIT: mm**



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.**