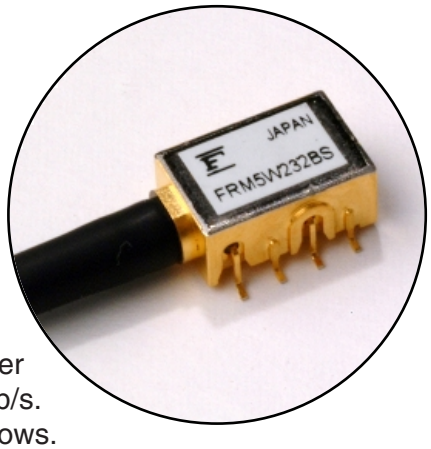
FEATURES



- 2.5Gb/s APD Receiver module in an industry standard mini-DIL package
- High Sensitivity: -34 dBm (typ.)
- High Differential Electrical Output
- Power Overload: -4dBm (typ.)
- Integral Thermistor and GaAs IC Preamp
- 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 nominal 10KΩ integral thermistor allows accurate monitoring of the APD temperature and facilitates the design of the APD bias control circuits. The detector preamplifier is DC coupled and has a differential electrical output.

DESCRIPTION

The FRM5W232BS incorporates a 30 micron InGaAs Avalanche Photodiode (APD) detector, a GaAs IC transimpedance preamplifier, and a thermistor in a mini-DIL type package. 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 techniques. The BS package is designed for a surface mount PC board assembly.

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

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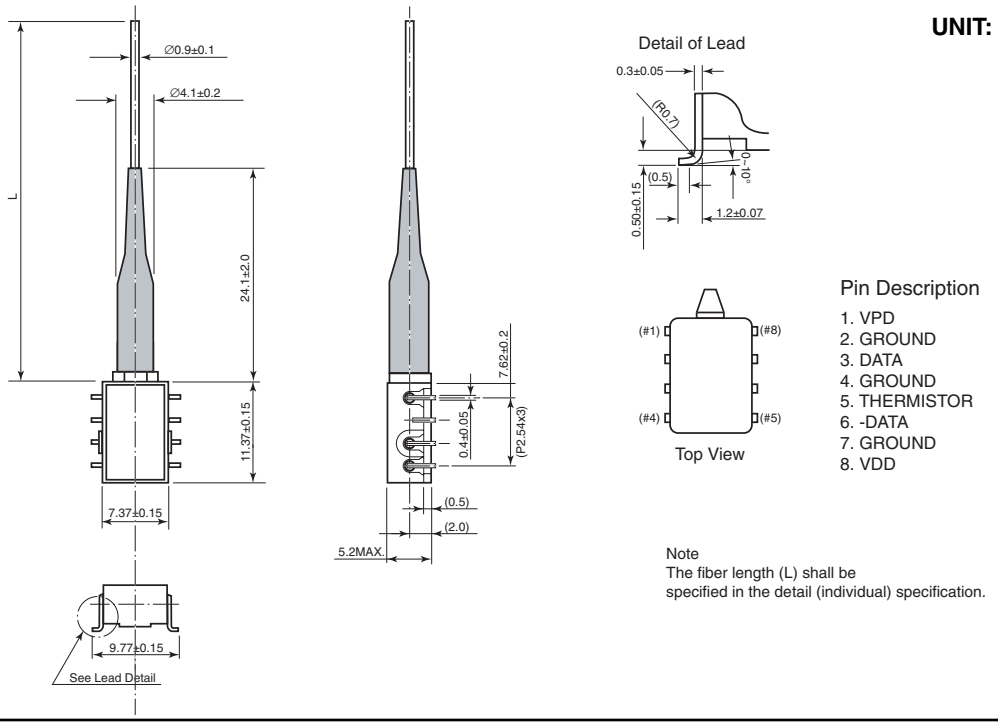
OPTICAL & ELECTRICAL CHARACTERISTICS
(T_C=25°C, λ=1,310/1,550nm, V_{DD}=+3.3V unless otherwise specified)

Parameter	Symbol	Test Conditions	Limits			Unit
			Min.	Typ.	Max.	
APD Responsivity	R15	1,550nm, M=1	0.8	0.85	-	A/W
	R13	1,310nm, M=1	0.75	0.85	-	A/W
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	AC-coupled, f=100MHz, RL=50Ω	-	2.0	-	kΩ
Bandwidth	BW	AC-Coupled, RL=50Ω, M=10, -3dBm from 1MHz	2.2	2.5	-	GHz
Equivalent Input Noise Current Density	in	AC-Coupled, RL=50Ω, Average in 1.8GHz	-	7.0	8.5	$pA\sqrt{Hz}$
Sensitivity	P_r	2.5Gb/s, NRZ, PRBS=2^{23}-1, B.E.R.=10^{-10}, Rext=-13dB, VR is set at optimum value Ta=25°C	-	-34.0	-33.0	dBm
		Ta=-40 to +85°C	-	-33.0	-32.0	dBm
Maximum Overload	P_o	2.5Gb/s, NRZ, PRBS=2^{23}-1, B.E.R.=10^{-10}, Rext=-13dB, VR is set at M=3, Ta=-40 to +85°C	-5	-4	-	dBm
Optical Return Loss	ORL		30	-	-	dB
Power Supply Current	I_{SS}		-	-	70	mA
Power Supply Voltage	V_{DD}		3.15	3.3	3.45	V
Thermistor Resistance	Rth		9.5	10	10.5	kΩ
Thermistor B Constant	B		3800	3900	4000	K

Note: (1) γ=ΔVB/ΔTc

Notes

"BS" PACKAGE **UNIT: mm**



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- **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.**

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