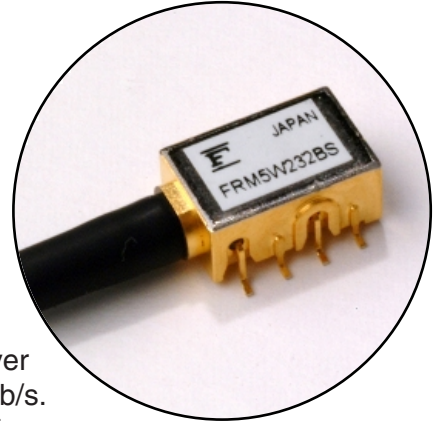


FEATURES

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

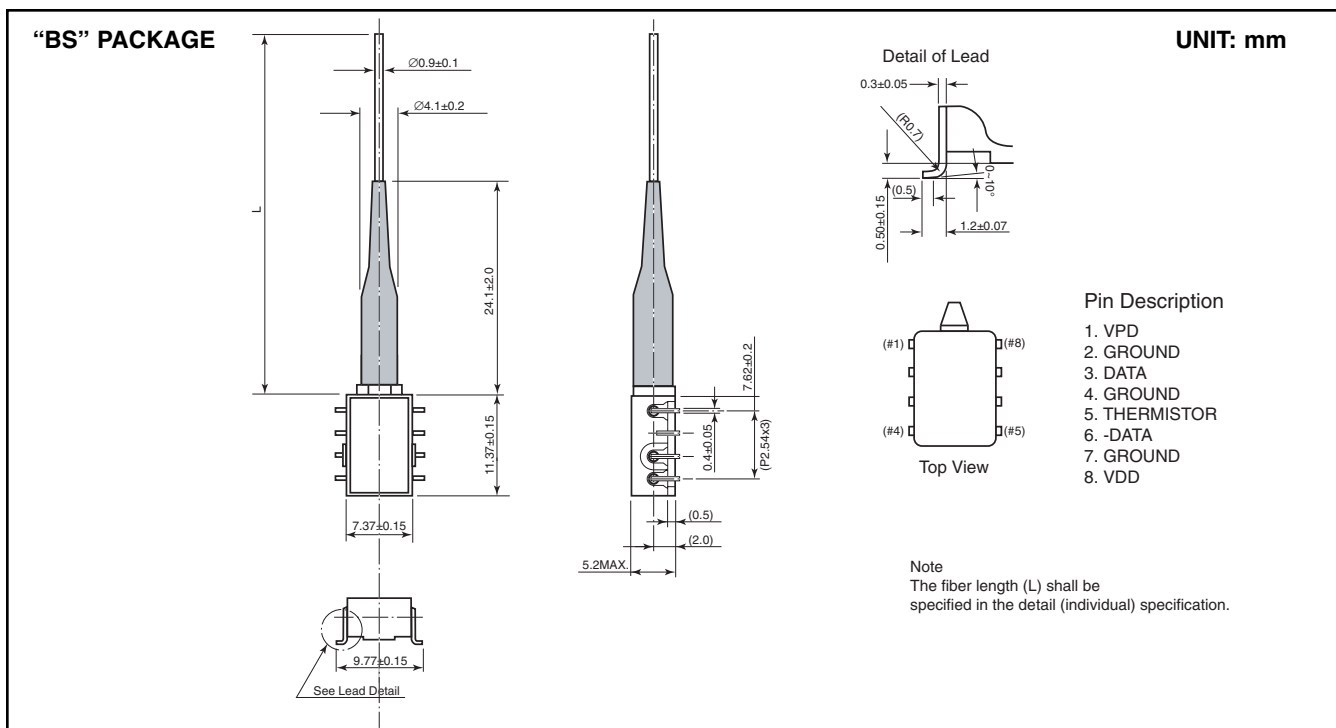
OPTICAL & ELECTRICAL CHARACTERISTICS

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

Parameter	Symbol	Test Conditions	Limits			Unit
			Min.	Typ.	Max.	
APD Responsivity	R ₁₅	1,550nm, M=1	0.8	0.85	-	A/W
	R ₁₃	1,310nm, M=1	0.75	0.85	-	A/W
APD Breakdown Voltage	V _B	I _D =10μA	40	50	65	V
Temperature Coefficient of V _B	γ	(Note 1)	0.08	0.12	0.15	V/°C
AC Transimpedance	Z _t	AC-coupled, f=100MHz, R _L =50Ω	-	2.0	-	kΩ
Bandwidth	BW	AC-Coupled, R _L =50Ω, M=10, -3dBm from 1MHz	2.2	2.5	-	GHz
Equivalent Input Noise Current Density	i _n	AC-Coupled, R _L =50Ω, Average in 1.8GHz	-	7.0	8.5	pA/√Hz
Sensitivity	P _r	2.5Gb/s, NRZ, PRBS=2 ²³ -1, B.E.R.=10 ⁻¹⁰ , R _{ext} =-13dB, V _R is set at optimum value T _a =25°C	-	-34.0	-33.0	dBm
		T _a =-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 , R _{ext} =-13dB, V _R is set at M=3, T _a =-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	R _{th}		9.5	10	10.5	kΩ
Thermistor B Constant	B		3800	3900	4000	K

Note: (1) γ=ΔV_B/ΔT_C

Notes



For further information please contact:

FUJITSU COMPOUND SEMICONDUCTOR, INC.

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

FUJITSU QUANTUM DEVICES EUROPE LTD.

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

FUJITSU QUANTUM DEVICES SINGAPORE PTE LTD.

Hong Kong Branch
Rm. 1101, Ocean Centre, 5 Canton Rd. Tsim Sha Tsui,
Kowloon, Hong Kong
TEL: +852-23770226
FAX: +852-23763269

CAUTION

Fujitsu Compound Semiconductor 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.

FUJITSU QUANTUM DEVICES LIMITED

Business Development Division
11th Floor, Hachioji Daiichi-Seimei Bldg.
3-20-6 Myojin-cho
Hachioji-city, Tokyo 192-0046, Japan
TEL: +81-426-43-5885
FAX: +81-426-43-5582

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

© 2002 FUJITSU COMPOUND SEMICONDUCTOR, INC.
Printed in U.S.A. FCSI0302M200