

FEATURES

- Small Form Factor Package(GW): 9 pins coplanar
- Integrated Design Optimizes Performance at Bit Rates up to 10.7Gb/s
- High Gain: 4k Ω (Single-ended), 8k Ω (Differential)
- High Sensitivity: -20dBm (typ.)
- Electrical Differential Output
- Wide Bandwidth: 10GHz (typ.)
- Wide Operating Temperature Range: -5°C to +75°C



APPLICATIONS

This PIN with HBT preamplifier is intended to function as an optical receiver at 1,310nm or 1,530-1,620nm in SONET, SDH, DWDM or other optical fiber systems operating up to 10.7Gb/s. The typical transimpedance (Z_t) value of 4,000 Ω optimizes the total bandwidth for 10Gb/s application. The detector preamplifier is DC coupled and has an electrical differential output.

DESCRIPTION

The FRM5J142GW incorporates a high bandwidth InGaAs PIN photo diode, a GaAs HBT IC amplifier in a hermetically sealed Small Form Factor package (SFF). The PIN is processed with modern MOVPE techniques resulting in a reliable performance over a wide range of operating conditions. The lens coupling system and the single mode fiber are assembled using Nd YAG welding.

ABSOLUTE MAXIMUM RATINGS ($T_c=25^\circ\text{C}$)

Parameter	Symbol	Ratings	Unit
Storage Temperature	T_{stg}	-40 to +85	$^\circ\text{C}$
Operating Temperature	T_{op}	-5 to +75	$^\circ\text{C}$
Supply Voltage	V_{ss}	-6 to 0	V
PIN Reverse Voltage	V_{R}	0 to 20	V
PIN Reverse Current	$I_{\text{R(peak)}}$	4	mA

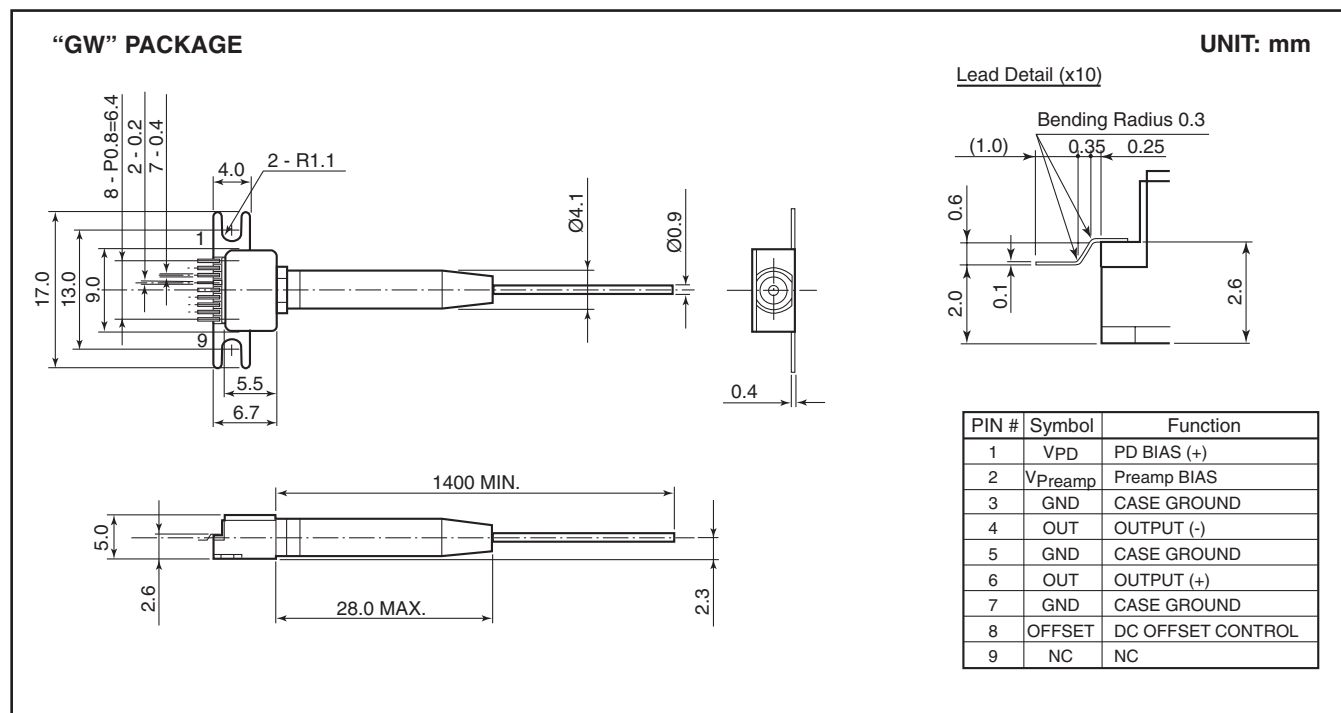
OPTICAL & ELECTRICAL CHARACTERISTICS

(T_C=25°C, λ=1,550nm, V_{SS}=-5.2V, V_R=5V, unless otherwise specified)

Parameter	Symbol	Test Conditions	Limits			Unit
			Min.	Typ.	Max.	
PIN Responsivity	R13	λ = 1,310nm	0.85	0.95	-	A/W
	R15	λ = 1,550nm	0.85	1.00	-	
	R16	λ = 1,620nm	-	0.85	-	
AC Transimpedance	Z _t	f = 750MHz, Single-end	3500	4000	-	Ω
Maximum Output Voltage Swing	V _{clip}	Saturated Output Voltage	250	350	450	mV
Bandwidth	BW	-3dB from 750MHz, Pin=-16dBm	8.5	10.0	-	GHz
Lower Cut-off Frequency	f _{cl}		-	40	100	kHz
Peaking	d _{pk}	130MHz to BW, Pin=-16dBm	-	1.5	-	dB
Group Delay Deviation	GD	1GHz to 6GHz, Pin=-16dBm	-	30	-	ps _{p-p}
		1GHz to 8GHz, Pin=-16dBm	-	40	-	
Output Return Loss	S22	130MHz to 6GHz	-	10	-	dB
		130MHz to 8GHz	-	7	-	
Minimum Sensitivity	P _r	10Gb/s, NRZ, 25°C, R _{ext} =13dB	-	-20.0	-18.0	dBm
		PRBS=2 ³¹ -1, 25°C, R _{ext} =8.2dB	-	-18.0	-	
		B.E.R.=10 ⁻¹² , 25°C, R _{ext} =6.0dB	-	-15.0	-	
		75°C, R _{ext} =13dB	-	-19.0	-17.0	
Maximum Overload	P _O	10Gb/s, NRZ, PRBS=2 ³¹ -1, B.E.R.=10 ⁻¹² , R _{ext} =13dB	0	1	-	dBm
Optical Return Loss	ORL	λ = 1,550nm	27	-	-	dB
		λ = 1,310nm	27	-	-	
Preamp Supply Current	I _{SS}	-	-	80	130	mA
Preamp Supply Voltage	V _{SS}	-	-5.46	-5.20	-4.94	V
PIN Supply Voltage	V _R	-	4.75	5.0	12	V

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

Notes



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- 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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