

FEATURES

- Small Form Factor Package(GW): 9 pins coplanar
- Integrated Design Optimizes Performance at Bit Rates up to 12.5Gb/s
- High Sensitivity: -19dBm (typ.)
- Electrical Differential Output
- Wide Bandwidth: 11GHz (typ.)

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 12.5Gb/s. The typical transimpedance (Z_t) value of 1,300 Ω optimizes the total bandwidth for 10Gb/s application. The detector preamplifier is DC coupled and has an electrical differential output.



DESCRIPTION

The FRM5J141GW 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

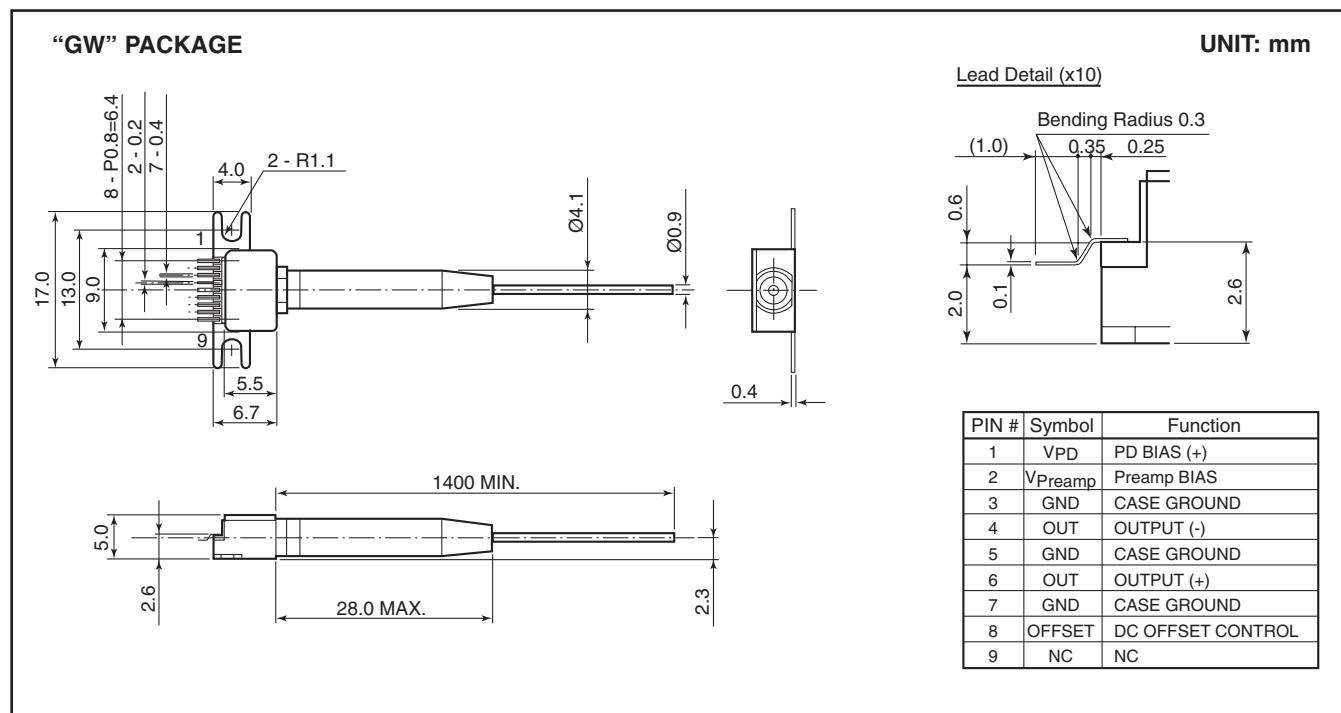
OPTICAL & ELECTRICAL CHARACTERISTICS

(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	900	1300	-	Ω
Output Common Voltage	V _{out}	-	-	-400	-	mV
Maximum Output Voltage Swing	V _{clip}	Saturated Output Voltage	400	600	800	mV
Bandwidth	BW	-3dB from 750MHz, Pin=-16dBm	9.0	11.0	-	GHz
Lower Cut-off Frequency	f _{cl}		-	40	100	kHz
Peaking	d _{pk}	130MHz to BW, Pin=-16dBm	-	0.5	1.5	dB
Group Delay Deviation	GD	1GHz to 6GHz, Pin=-16dBm	-	15	40	ps _{p-p}
		1GHz to 8GHz, Pin=-16dBm	-	30	60	
Output Return Loss	S22	130MHz to 6GHz	-	12	-	dB
		130MHz to 8GHz	-	10	-	
Minimum Sensitivity	P _r	10Gb/s, NRZ, PRBS=2 ³¹ -1, B.E.R.=10 ⁻¹²	25°C, R _{ext} =13dB	-	-19.0	dBm
			25°C, R _{ext} =8.2dB	-	-17.0	
			25°C, R _{ext} =6.0dB	-	-14.0	
			70°C, R _{ext} =13dB	-	-18.0	
Maximum Overload	P _o	10Gb/s, NRZ, PRBS=2 ³¹ -1, B.E.R.=10 ⁻¹²	R _{ext} =13dB	-0.5	0	dBm
			R _{ext} =8.2dB	-	1	
			R _{ext} =6.0dB	-	2	
Optical Return Loss	ORL	λ = 1,550nm	27	-	-	dB
		λ = 1,310nm	27	-	-	
Preamp Supply Current	I _{SS}	-	-	110	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 DC-coupled and 0V output offset.

Notes



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