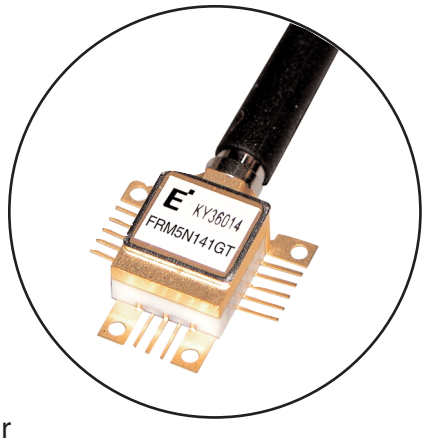
FEATURES



- Board mount type “GT” package: 17 pins
- InGaAs-APD with pre-amplifier
- Integrated Design Optimizes Performance at Bit Rates up to 10.7Gb/s
- Electrical Differential Output
- High Sensitivity: -26.5dBm
- Operates in both C and L wavelength bands

APPLICATIONS

This APD with preamplifier is intended to function as an optical receiver at 1,310nm or 1,530-1,610nm in SONET, SDH, DWDM or other optical fiber systems operating up to 10.7Gb/s. The typical transimpedance (Zt) value of 1,200Ω optimizes the total bandwidth for 10Gb/s application.
The detector preamplifier is DC coupled and has an electrical differential output.

DESCRIPTION

The FRM5N141GT incorporates a high bandwidth InGaAs APD photo diode, a GaAs amplifier in a hermetically sealed board mount type package. The APD is processed with modern epitaxial techniques resulting in a reliable performance over a wide range of operating conditions.

ABSOLUTE MAXIMUM RATINGS (T_C=25°C, unless otherwise specified)

Parameter	Symbol	Ratings		Unit
		Min.	Max.	
Storage Temperature	T_{stg}	-40	+85	°C
Operating Temperature	T_{op}	-5	+75	°C
Supply Voltage	V_{ss}	-6	0	V
APD Reverse Voltage	V_R	0	VB(Note)	V
APD Reverse Current	I_R	-	4(peak)	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_{SS}=-5.2V, unless otherwise specified)

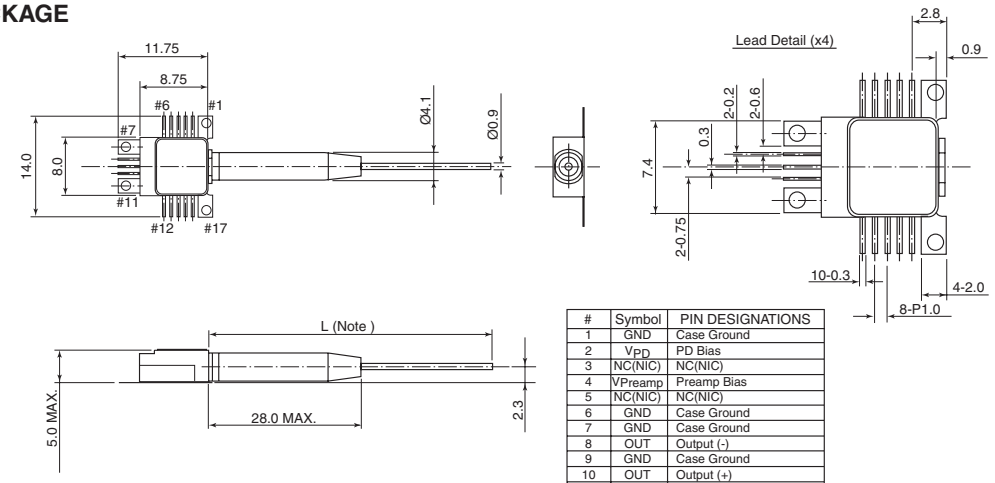
Parameter	Symbol	Test Conditions		Limits Min.	Limits Typ.	Limits Max.	Unit
APD Responsivity	R	λ = 1,310nm, M=1		0.75	0.85	-	A/W
		λ = 1,550nm, M=1		0.75	0.90	-	
		λ = 1,610nm, M=1		-	0.80	-	
APD Breakdown Voltage	VB	ID = 10μA		20.0	25.0	30.0	V
Temperature Coefficient of VB	Γ	Note (1)		0.03	0.05	0.07	V/°C
AC Transimpedance	Z_t	f = 750MHz, Single-end		800	1200	-	Ω
Maximum Output Voltage Swing	V_{clip}	Saturated Output Voltage		350	550	750	mV
Bandwidth	BW	-3dB from 750MHz, Pin=-20dBm	M=9	6.0	7.5	8.5	GHz
			M=3	6.0	7.5	-	
Lower Cut-off Frequency	fcl	-3dB from 750MHz, Pin=-20dBm		-	40	100	kHz
Peaking	dpk	130MHz to BW, Pin=-20dBm, M=9		-	0.5	-	dB
Group Delay Deviation	GD	1GHz to 4GHz, Pin=-20dBm, M=9		-	30	-	ps_{p-p}
		1GHz to 6GHz, Pin=-20dBm, M=9		-	50	-	
Output Return Loss	S22	130MHz to 6GHz		-	12	-	dB
		130MHz to 8GHz		-	7	-	
Minimum Sensitivity	P_r	10Gb/s, NRZ, PRBS=2^{31}-1, B.E.R.=10^{-12}, VR=Optimum, Rext=13dB	25°C	-	-26.5	-25.0	dBm
			75°C	-	-25.5	-24.0	
Maximum Overload	P_o	10Gb/s, NRZ, PRBS=2^{31}-1, B.E.R.=10^{-12}, M=3, Rext=13dB		-7	-5	-	dBm
Optical Return Loss	ORL	λ = 1,550nm		27	-	-	dB
		λ = 1,310nm		27	-	-	
Power Supply Current	I_{ss}	-		-	110	130	mA
Power Supply Voltage	V_{ss}	-		-5.46	-5.20	-4.94	V
Thermistor Resistance	R_{th}	-		9.5	10.0	10.5	kΩ
Thermistor B Constant	B	-		3800	3900	4000	K

Note 1: Γ=ΔVB/dTc
Note: All the parameters are measured with 50Ω load through external coupling capacitor.

Notes

"GT" PACKAGE

UNIT: mm



#	Symbol	PIN DESIGNATIONS
1	GND	Case Ground
2	V_{PD}	PD Bias
3	NC(NIC)	NC(NIC)
4	VPreamp	Preamp Bias
5	NC(NIC)	NC(NIC)
6	GND	Case Ground
7	GND	Case Ground
8	OUT	Output (-)
9	GND	Case Ground
10	OUT	Output (+)
11	GND	Case Ground
12	GND	Case Ground
13	OFFSET	DC Offset Control
14	NC(NIC)	NC(NIC)
15	NC(NIC)	NC(NIC)
16	Rth	Thermistor for APD
	NC(NIC)	NC(NIC)
17	GND	Case Ground

NC (NIC): No Internal Connection

Note: The fiber length (L) shall be specified in the detail (individual) specification.

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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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