InGaAs Avalanche Photodiode (APD)

1.25Gbps BM APD-TIA

PDAF0055TOL-T20

Applications

Ge-PON OLT
SONET /SDH Transmission System
DWDM System
Gibabit Ethernet / Fiber Channel Systems

Features

Data rate up to 1.25 Gbps
Burst-mode Applicable
Hermetically Sealed
1000 to 1625nm Spectral Response

Description

This document defines Go!Foton Avalanche Photodiode (APD) with TIA suitable for GE-PON burst-mode application. InGaAs APD is fabricated at Go!Foton proprietary wafer fab. It has a planar structure for high reliability and very high sensitivity and low noise. APD chip and burst mode TIA are assembled in 5 pin TO46 package with ball lens that makes optical coupling easy.

Specifications (Condition unless otherwise noted: 25°C, Popt=1μW)

Absolute Maximum Rating

Parameter	Min	Typ	Max	Unit	Conditions
APD Reverse Current			2	mA	
APD Forward Current			2	mA	
APD Supply Voltage			Vbr	V	
TIA Supply Voltage			4.0	V	
Maximum Input Power			1.0	mW	
Operating Temperature	-40		85	°C	
Storage Temperature	-40		85	°C	
Electrostatic Discharge			TBD	V	HBM

Go!Foton, Inc.
TEL: +81-29-847-8686
FAX: +81-29-847-8693

Go!Foton, Corp. (East Coast)
TEL: +1-732-469-9650
FAX: +1-732-469-9654

Go!Foton, Corp. (West Coast)
TEL: +1-408-441-0501
FAX:+732-469-9654

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Recommended Operating Conditions

Parameter	Min	Typ	Max	Unit	Conditions
Supply Voltage	3.0	3.3	3.6	V	
APD Operating Voltage		Vbr-3	Vbr	V	
Operating Temperature	-40		85	°C	

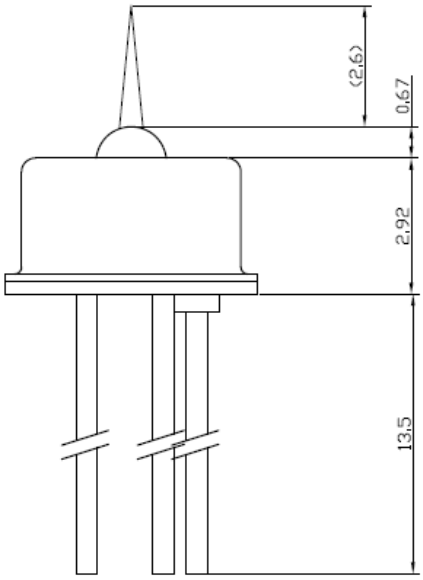
Electro-Optical Characteristics

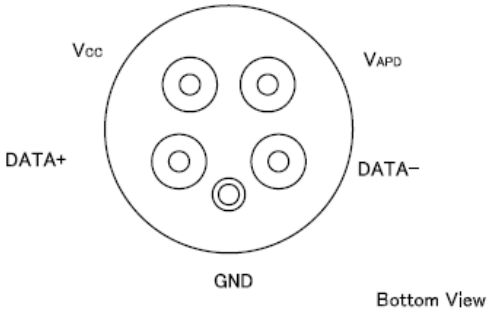
Parameter	Min	Typ	Max	Unit	Conditions
APD Responsivity	0.8	0.9		A/W	M = 1, λ = 1.3 μm
	0.9	1.0			M = 1, λ = 1.55 μm
APD Breakdown Voltage	40	50	55	V	Id = 100 μA, Vcc = 0
Temperature Coefficient of Vbr	0.07	0.1	0.16	V/°C	
Sensitivity		-33	-30	dBm	1.25 Gbps, PRBS = 2^7-1 ER = 10 dB, BER=10^{-12}
Optical Overload		-3		dBm	1.25 Gbps, PRBS = 2^7-1 ER = 10 dB, BER=10^{-12}
Bandwidth		1000		MHz	-3dB
TIA Operating Current		66	100	mA	

Notes

1. APD responsivity is defined when APD voltage is equal to its punch-through voltage. It is defined as voltage where 1.5V above the voltage where the first deviation of IV curve under illumination shows local maximum.
2. APD breakdown voltage is approximately 1.5 V higher than that of APD chip itself when TIA is turned on.

Drawing





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