



10G InGaAs Avalanche Photodiode W/ TIA

Description

The A10T-TO is a high sensitivity 10G APD-TIA receiver in a pigtail fiber coupled TO package. It includes a 10G APD photodiode with a high gain TIA in a hermetically sealed package.

Features

- Dark Current ~ 25 nA (typical)
- High Sensitivity ~- 29 dBm
- Terminal Capacitance 1 pF at $V_{BR_{90\%}}$
- 8 GHz Cutoff Frequency
- 4K Ohm Transimpedance Gain
- Ability to choose desired optical connector.
- Ability to choose desired fiber length.



Applications

- Telecommunications
- RF over Fiber (RToF)



IMPORTANT NOTICE: more information on warranty, changes, rights, notices, and other information are presented at the back of this data sheet. If the back sheet is not present, refer to www.nuphotonics.com for the company issued data sheet.

Electro-Optical Characteristics (T = 25°C)

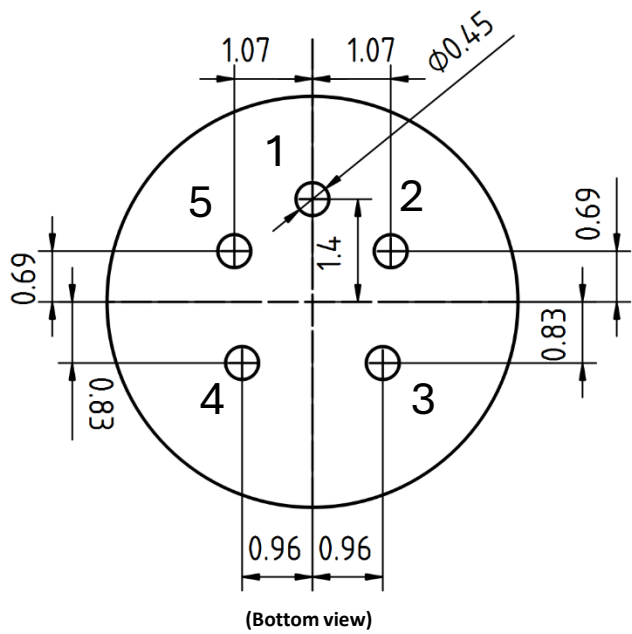
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Supply Voltage	V_{cc}	-	3.3	3.6	V	
	V_{APD}		30		V	
Supply Current	I_{cc}	-	26	35	mA	$V_{cc} = 3.3\text{ V}$
Response Spectrum	λ	1100	-	1650	nm	$V_{cc} = 3.3\text{ V}$
Bandwidth	BW	-	8	-	GHz	-3 dB bandwidth
Overload	OL	2.2	-	-	dBm	$V_{cc} = 3.3\text{ V}$
Sensitivity	Sen	-	-29	-28	dBm	25.78 Gbps, 1310 nm, ER = 4 dB, BER = 10^{-5}
Optical Return Loss	ORL	-	-	-27	dB	CW = 1310 nm
RSSI Offset Current	I_{RSS}	-	-	100	nA	$V_{cc} = 3.3\text{ V}$
Responsivity	R	0.7	0.8	-	A/W	1310 nm, 50 % VBR, M=2, Pin -20 dBm
Dark Current	I_d	-	25	100	nA	VBr
Operation Current	I_{op}	-	5	-	uA	
Output Impedance	Z_o	-	100	-	-	Differential
Maximum Output Voltage	V_o	-	300	-	mV _{p-p}	Differential
Low Frequency Cutoff	F_{low}	25	100	-	KHz	

Absolute Maximum Rating (T = 25°C)

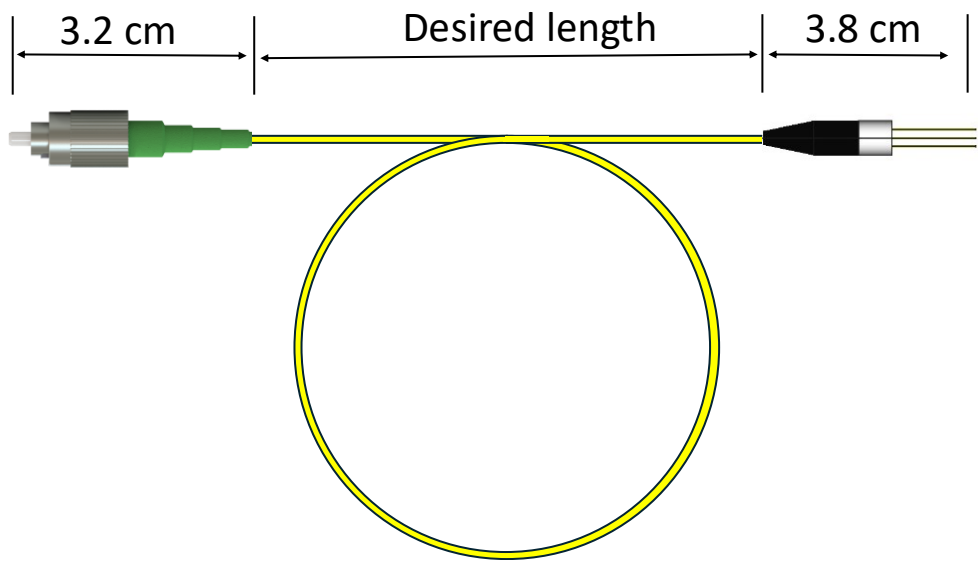
Parameter	Symbol	Condition	Min.	Max.	Unit
Vcc Voltage	V_{cc}	-	-	5	V
Forward Current	I_F	-	-	40	mA
Monitor Current	I_{mon}	-	-	5	mA
Optical Input power	P_{in}	-	-	10	mW
Storage Temperature	T_{stg}	-	-25	90	°C
Storage Humidity	H_{stg}	-	-	85	% r.H.
Operating Temperature	T_{op}	-	-10	80	°C
Soldering Temperature	T_{st}	60 sec	-	200	°C
ESD Susceptibility		HBM	100	-	V

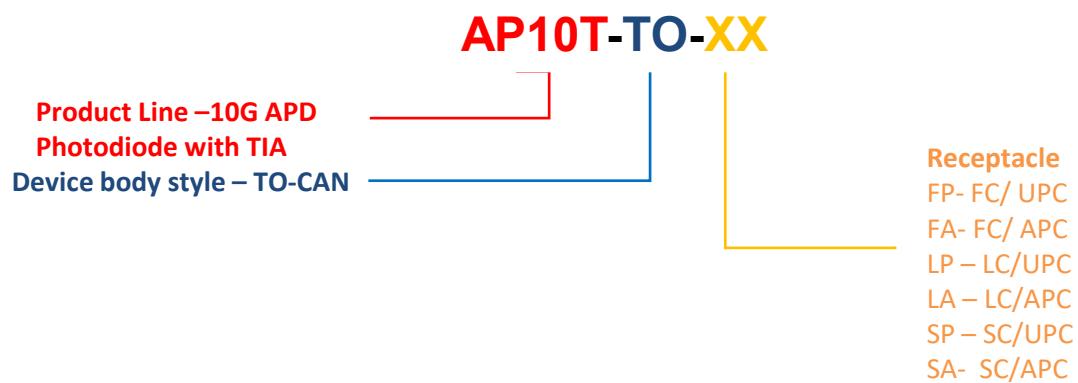
Operating at maximum ratings for a prolonged period will cause damage to the device.





Pin #	Description:
1	Case Ground
2	Data (+)
3	Vcc
4	Vapd
5	Data (-)





Example – AP10T-TO-FA

10G InGaAs Avalanche Photodiode with TIA Pigtail TO-Can No mount FC/APC optical connector



IMPORTANT NOTICES AND DISCLAIMERS

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Definitions: Product State

Alpha Build: Devices in Alpha build are in internal engineering build and testing stages. Major changes may happen for production build.

Beta Build: Devices in Beta build are for external customer and engineering sample testing stages. Minor changes may happen for production build.

Production Build: Customer ready devices. Small appearance changes may occur between devices.

Obsolete: Currently not supported.

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Revision History

1.0 – August 2024 – Initial Release

1.1 – May 2026 – Updated footprint location image. Cleaned up data sheet and minor grammatical and spelling corrections.