



10G InGaAs APD Photodiode TIA ROSA-LC Package

Description

A 10 Gb/s InGaAs APD photodiode packaged with a transimpedance amplifier (TIA). This device is packaged in a TO-Can with LC flange receptacle. Offering flat response and a broad temperature operating range. The device allows a LC connector to be easily connected. The device is configured for vertical mounting on PCB. Flexible PCB can be soldered for horizontal mounting.

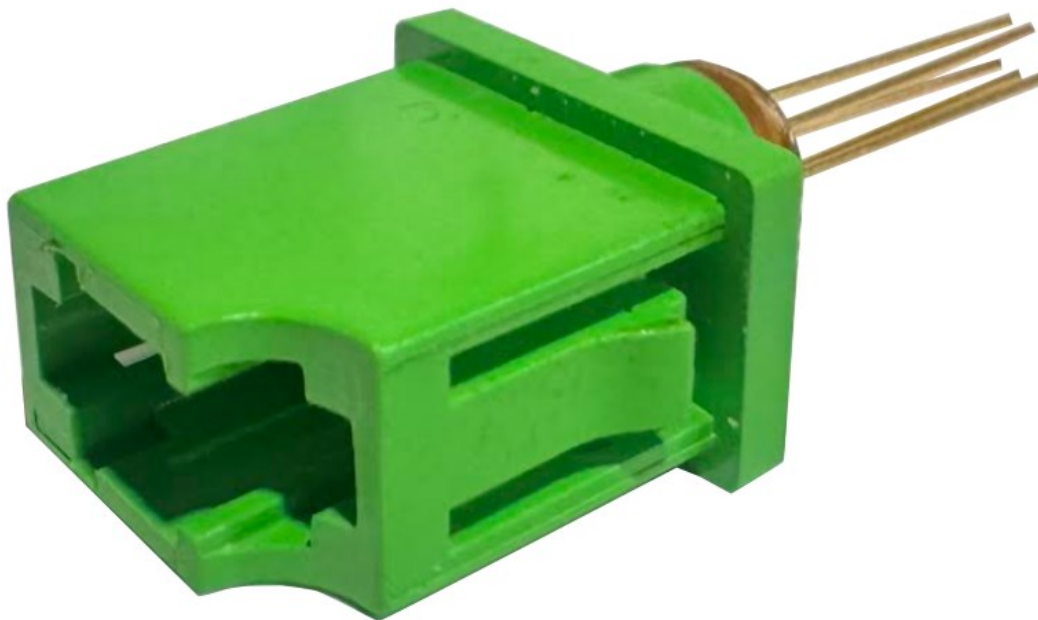
Features

- TO-Can Package
- LC Flange Receptacle
- 10 Gbps
- Wide temperature operating range
- TIA Built in
- 4K Ohm Transimpedance Gain
- PCB solderable mount
- -30 dBm sensitivity



Applications

- 5G
- RF over Fiber (RFoF)



Photodiode Electro-Optical Characteristics ($T_{op} 23 \pm 3^{\circ}\text{C}$, unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Supply Voltage	V_{cc}	2.9	3.3	3.6	V	
Supply Current	I_{cc}		26	30	mA	$V_{cc} = 3.3 \text{ V}$
Response Spectrum	λ	1260		1610	nm	$V_{cc} = 3.3 \text{ V}$
Bandwidth	BW		8		GHz	-3 dB bandwidth
Saturation	Sat		3		dBm	$V_{cc} = 3.3 \text{ V}$
Sensitivity	Sen		-30	-27	dBm	10.30 Gbps, 1310 nm, ER = 4.5 dB, BER = 10^{-12}
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		5	30	nA	VBr
Output Impedance	Z_o		100			Differential
Maximum Output Voltage	V_o		300		mV _{p-p}	Differential
Low Frequency Cutoff	F_{low}		10		KHz	

Photodiode Absolute Maximum Ratings

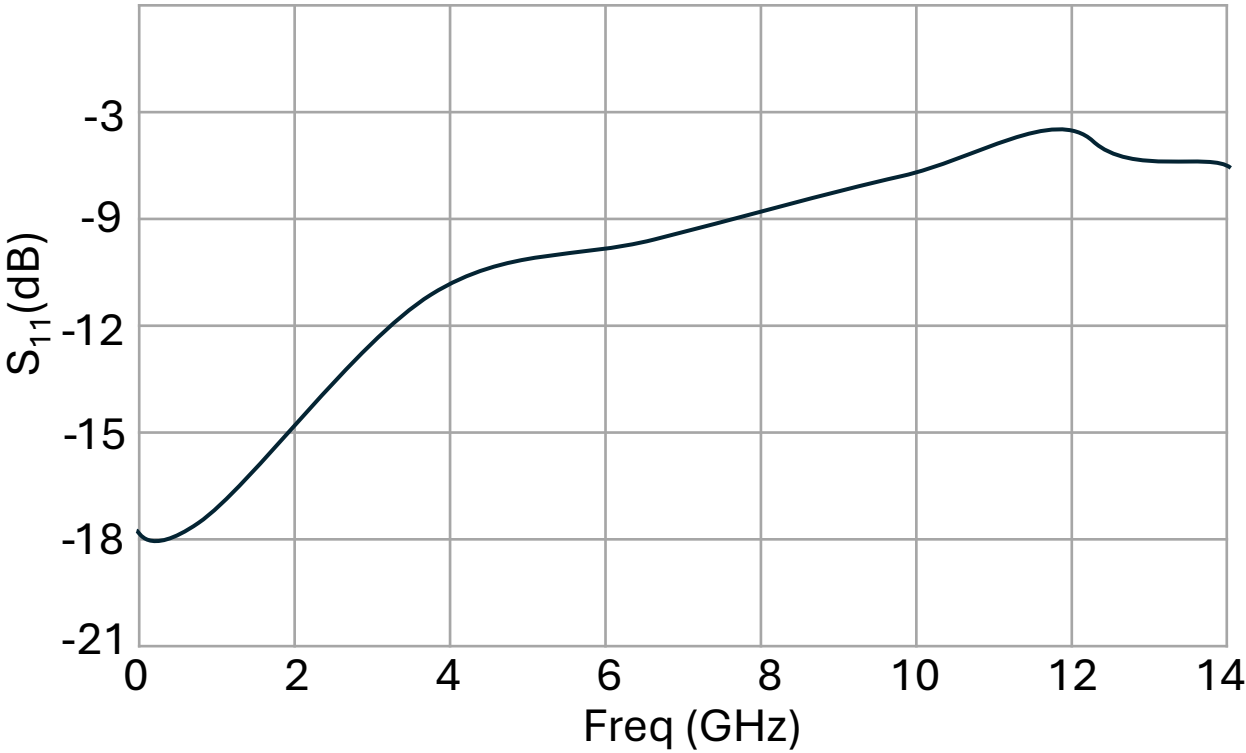
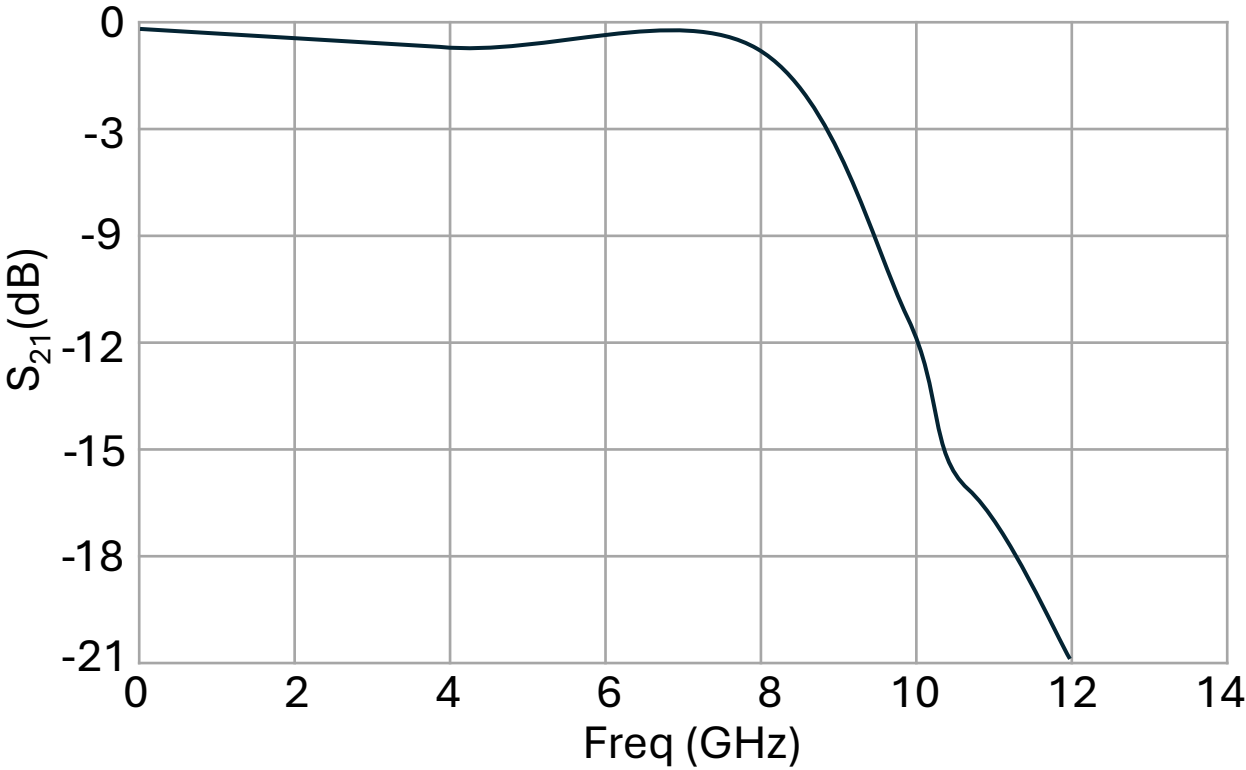
Parameter	Symbol	Condition	Min.	Max.	Unit
Voltage	V			3.6	V
V_{APD}	V			30	V
Input Optical Power	P_{in}			5	dBm
Storage Temperature	T_{stg}		-40	90	$^{\circ}\text{C}$
Storage Humidity	H_{stg}			85	% r.H.
Operating Temperature	T_{op}		-40	85	$^{\circ}\text{C}$
Soldering Temperature	T_{st}	10 sec		260	$^{\circ}\text{C}$
ESD Susceptibility		HBM	100		V

Operating at maximum operating specs for prolong periods of time will damage the device.

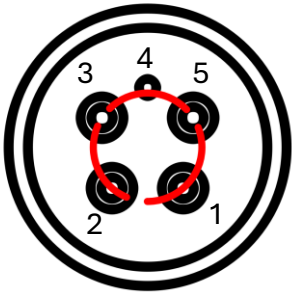
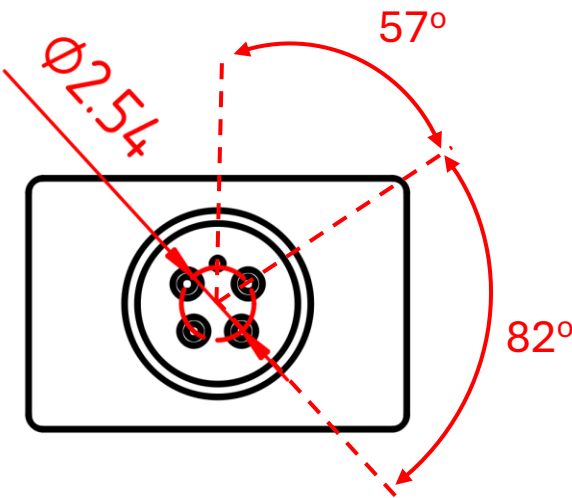


Typical Performance Curves (Top 23°C, 801 PTs, 16 AVGs, 1.5% smoothing)

RF performance dependent on PCB design and optimization. Data shown for Rogers® RO3003 with Ground-backed Co-planar waveguide (GB-CPW). The GB-CPW was de-embedded. Single ended measurement, port two is terminated with 50 Ohm load

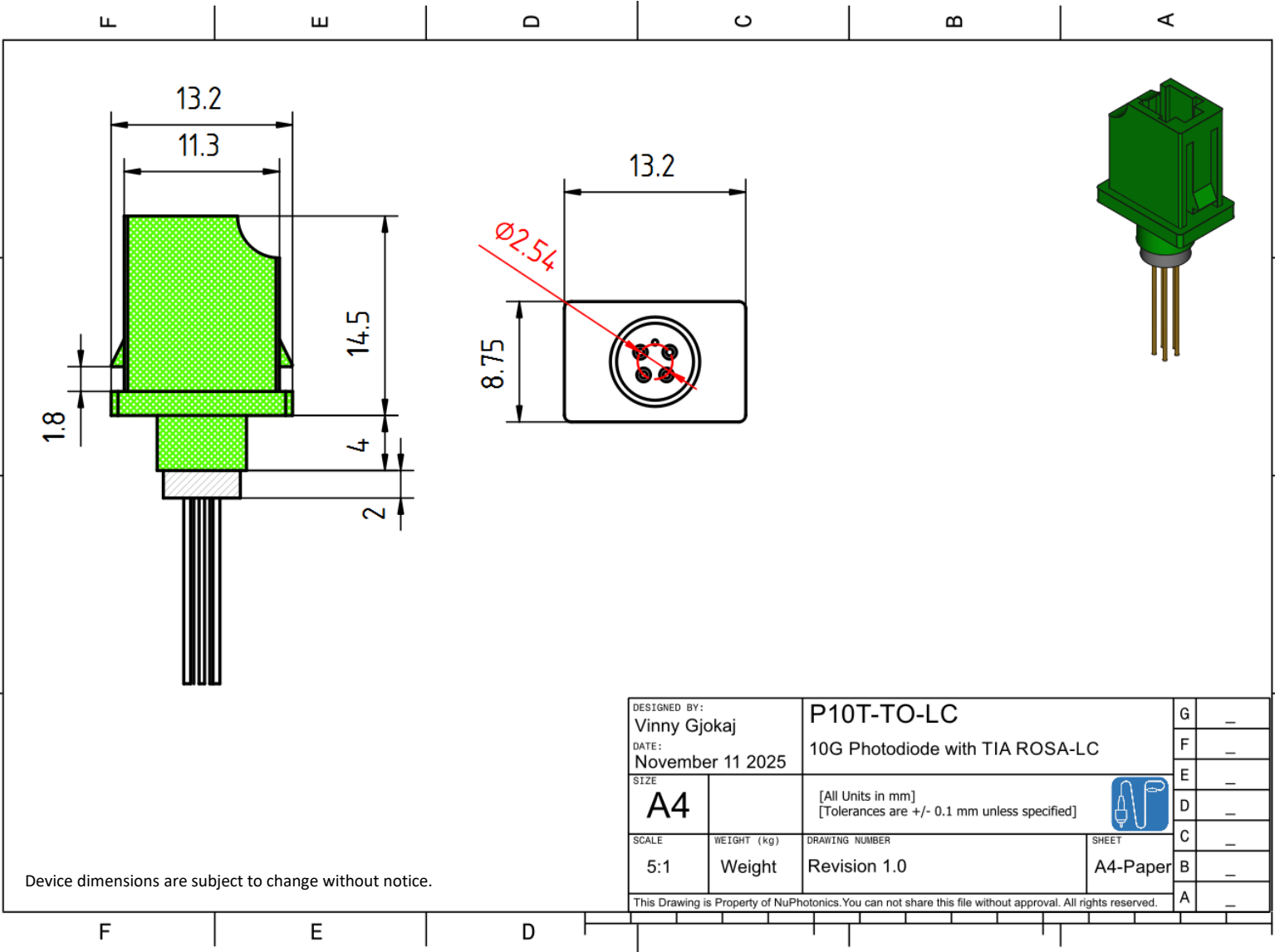


Device Pinout



Pin	Function
1	VCC
2	V _{APD}
3	Dout -
4	Gnd
5	Dout +

Mechanical Drawing



Device dimensions are subject to change without notice.



IMPORTANT NOTICES AND DISCLAIMERS

Warranty: NUPHOTONICS PROVIDES ALL OF THE INFORMATION ON TECHNICAL AND RELIABILITY DATA. THIS INCLUDES INFORMATION PRESENTED IN DATA SHEETS, DESIGN FILES, APPLICATIONS, AND OTHER RESOURCES “AS IS” AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD-PARTY INTELLECTUAL PROPERTY RIGHTS.

The information and resources are presented and intended for developers that are skilled and adequately qualified to work with this technology. You, the customer, are solely responsible for and accept full responsibility for selecting the appropriate NuPhotonics devices for your application. You accept the sole responsibility of designing, validating, and testing your application. You bear all responsibility for your application meeting standards, safety, security, and other regulatory requirements.

NuPhotonics retains the right to change these resources without notice. All rights are reserved for NuPhotonics. NuPhotonics grants you permission to use the information in these resources to design with NuPhotonics devices. Reproduction and display of these resources is prohibited. No Third-party licenses are offered. You will fully indemnify NuPhotonics against any claims, damages, costs, losses, and liabilities that arise from you using these resources.

NuPhotonics does not accept and objects to any terms you have proposed.

For terms and conditions for all NuPhotonics products please refer to www.nuphotonics.com Legal section.

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.