



25 G InGaAs PIN Photodiode ROSA-FC Package

Description

A 25 Gb/s InGaAs PIN photodiode package. This device is packaged in a TO-Can with FC bulkhead receptacle. It comes configured with a Flex PCB. Offering flat response and a broad temperature operating range. This device can be easily soldered to a PCB for mechanical rigidity.

Features

- TO-Can Package
- FC- Receptacle
- 25 Gbps
- Low dark current
- High linearity
- Wide temperature operating range
- PCB solderable Pins
- 2 M2 mounting screw points.



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}	3	5		V	
Supply Current	I_{cc}		1		mA	$V_{cc} = 5\text{ V}$ Pin = 3 dBm
Response Spectrum	λ	1260		1610	nm	$V_{cc} = 3.3\text{ V}$
Bandwidth	BW		22		GHz	-3 dB bandwidth
Overload	OL		3		dBm	$V_{cc} = 3.3\text{ V}$
Sensitivity	Sen			-15	dBm	10.30 Gbps, 1310 nm, ER = 4.5 dB, BER = 10^{-12}
Optical Return Loss	ORL			-27	dB	CW = 1310 nm
Responsivity	R	0.7	0.8		A/W	1310 nm, 50 % VBR, M=2, Pin -20 dBm
Dark Current	I_d		1		nA	$V_{cc} = 3.3\text{ V}$
Output Impedance ¹	Z_o^-		50		Ω	Single ended

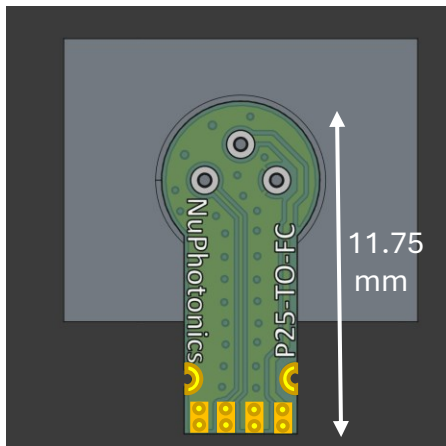
1. Photodiode device is unterminated. Designed for optimal 50 Ω impedance match. Terminated flexible PCB option available.

Photodiode Absolute Maximum Ratings

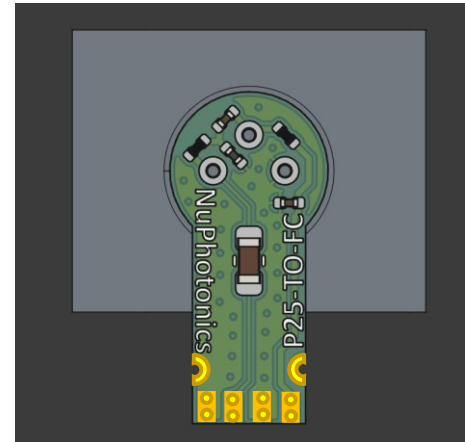
Parameter	Symbol	Condition	Min.	Max.	Unit
Voltage	V			20	V
Input Optical Power	P_{in}			5	dBm
Storage Temperature	T_{stg}		-40	90	$^{\circ}\text{C}$
Storage Humidity	H_{stg}			85	% r.H.
Operating Temperature	T_{op}		-40	85	$^{\circ}\text{C}$
Soldering Temperature	T_{st}	10 sec		260	$^{\circ}\text{C}$
ESD Susceptibility		HBM	100		V

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



Flexible PCB (optional)

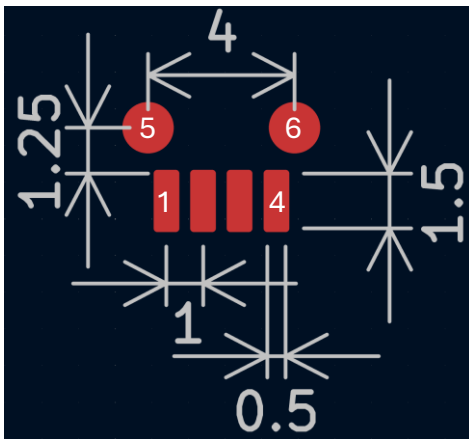
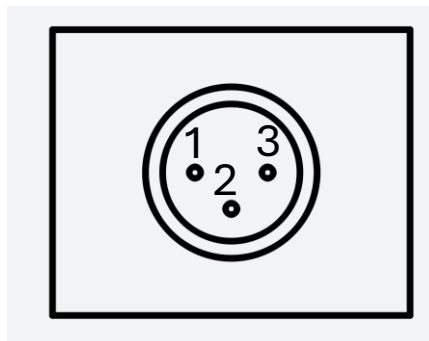
Non-Terminated Flex PCB



Terminated Flex PCB

The P25-TO-FC flexible PCB options.

- 1) The first being a standard 50 Ω co-planner wave guide that offers a smooth transition from your PCB to the photodiode. The Non-terminated standard flex PCB offers more freedom in signal design.
- 2) The second being a 50 Ω co-planner wave guide that incorporates impedance matching circuitry for a better 50 Ω match as well as an on-PCB bias-T to allow the user to simply apply Bias without needing for any DC-blocking circuitry. This PCB will limit the user on the signal design as it incorporates RLC components for impedance matching and Bias-T circuit.

Recommended PCB Footprint (all units in mm)**Device Pinout with No Flex**

Pin	Function
1	Gnd
2	PD -/Cathode
3	Gnd
4	PD+/Anode
5,6	Gnd

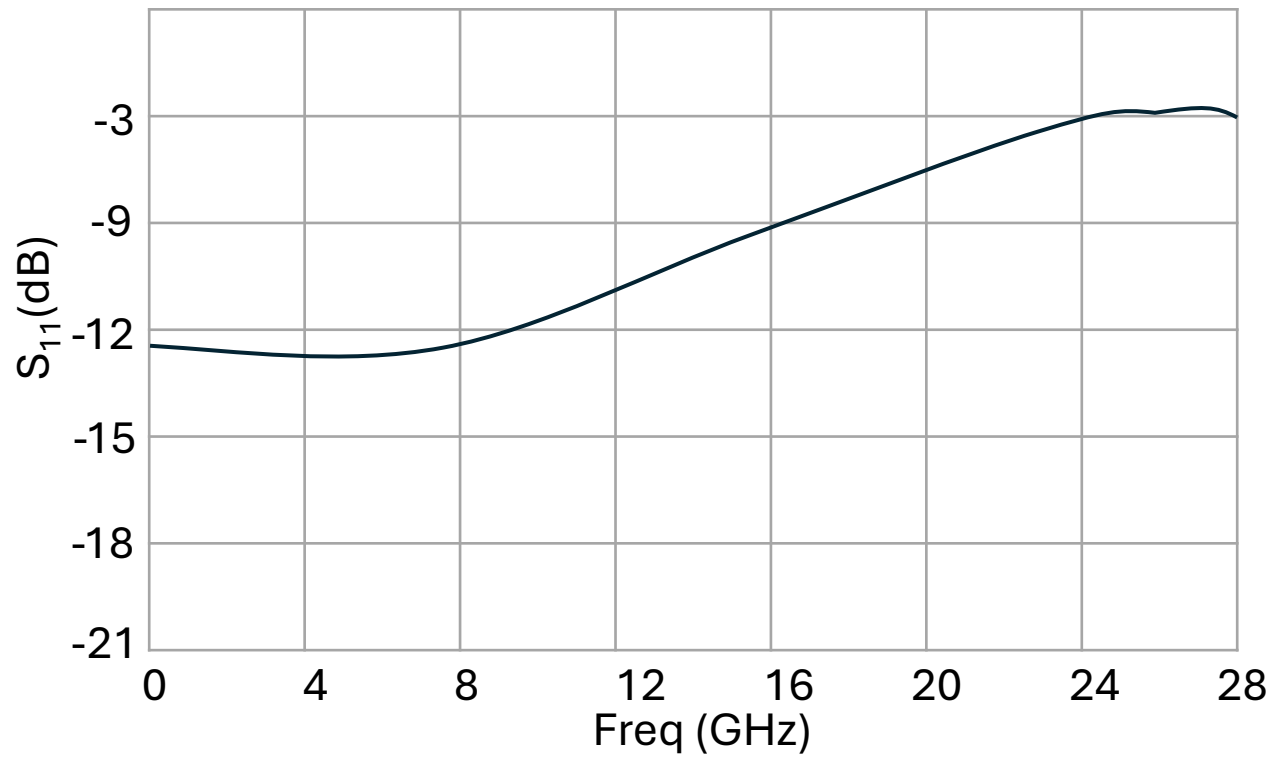
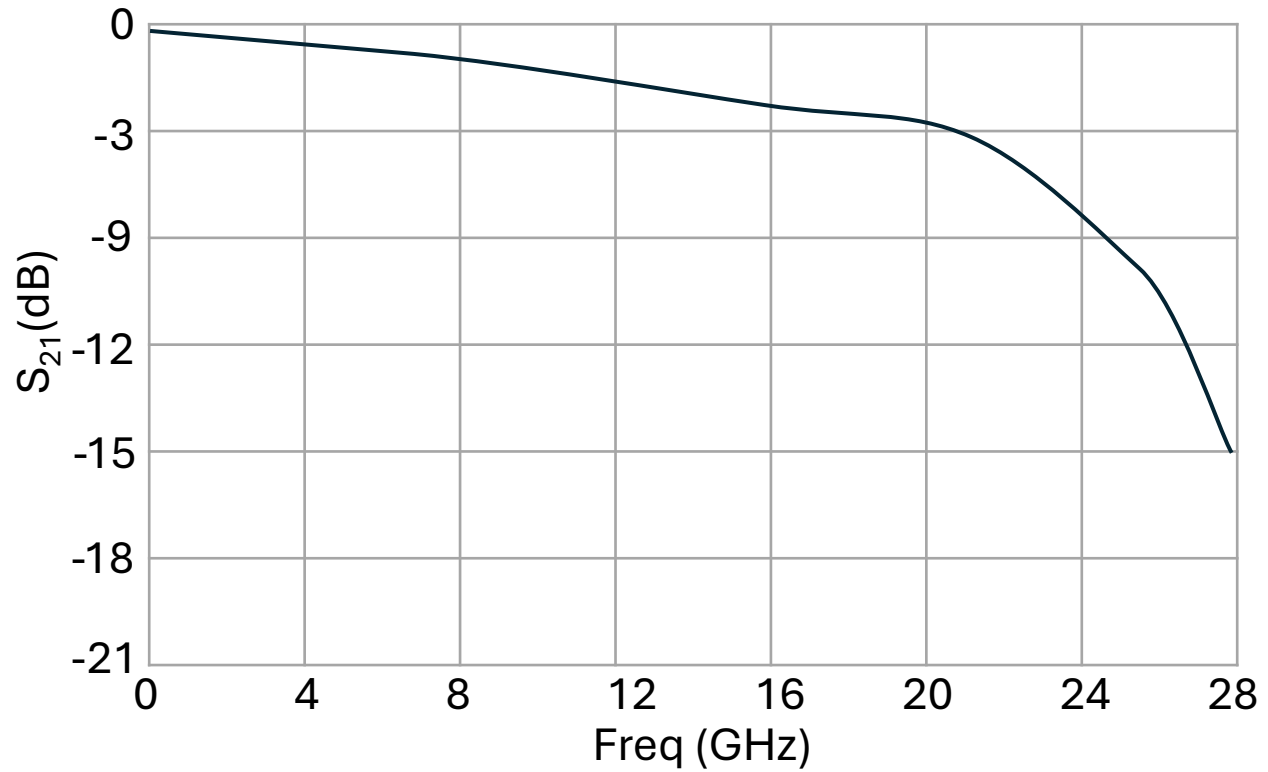
Pins 5 & 6 offer mechanical support to the Flexible PCB

Pin	Function
1	Gnd
2	PD -/Cathode
3	PD+/Anode

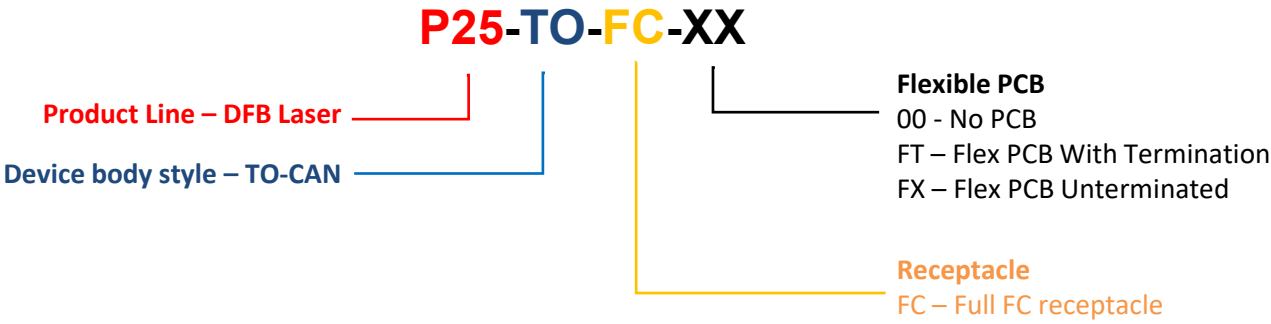


Typical Performance Curves (Top 23°C, 801 PTs, 16 AVGs, 1.5% smoothing)

RF performance dependent on PCB design and optimization. Data shown for Rogers® RO3003 with Ground-backed Co-planner waveguide (GB-CPW). The device was soldered directly to the PCB.

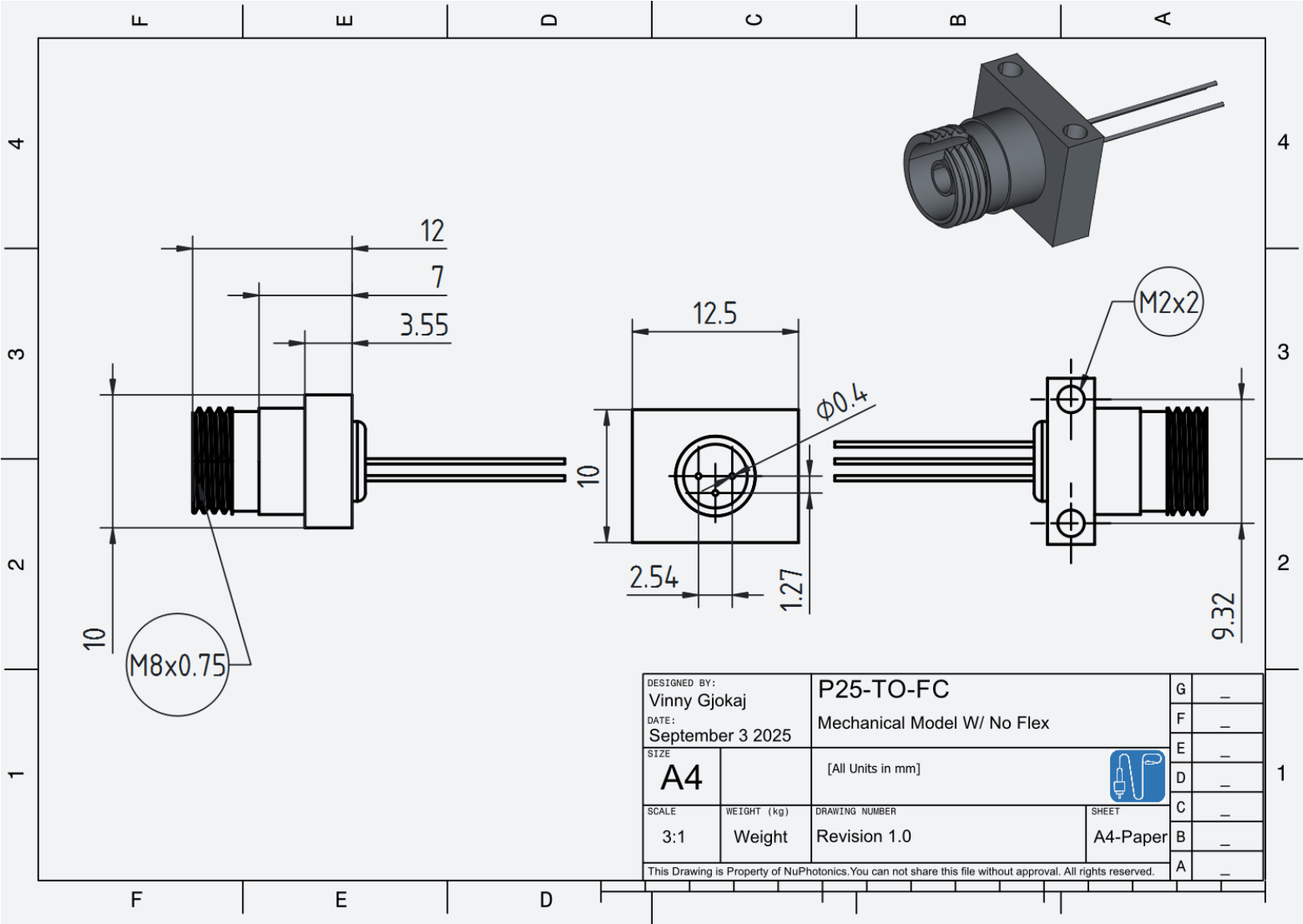


Device Nomenclature



Example: P25-TO-FC-FT
25G PIN Photodiode Rosa-FC with Flexible PCB with termination circuitry

Mechanical Drawing



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.