NuPhotonics
Rev. 1.-0 – October 2025

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 receptable. 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 mechanically 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 ± 3ºc, 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 V Pin = 3 dBm
Response Spectrum	λ	1260		1610	nm	V_{cc} = 3.3 V
Bandwidth	BW		22		GHz	-3 dB bandwidth
Overload	OL		3		dBm	V_{cc} = 3.3 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	Id		1		nA	V_{cc} =3.3V
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	ºC
Storage Humidity	H_{stg}			85	% r.H.
Operating Temperature	T_{op}		-40	85	ºC
Soldering Temperature	T_{st}	10 sec		260	ºC
ESD Susceptibility		HBM	100		V

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

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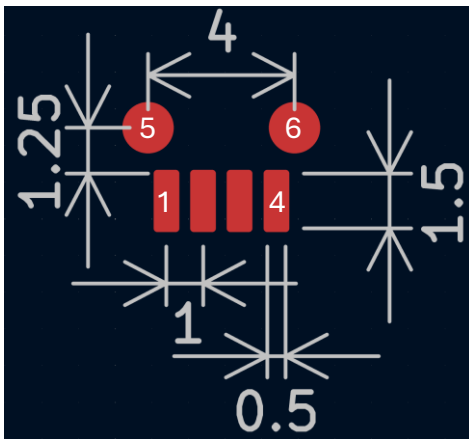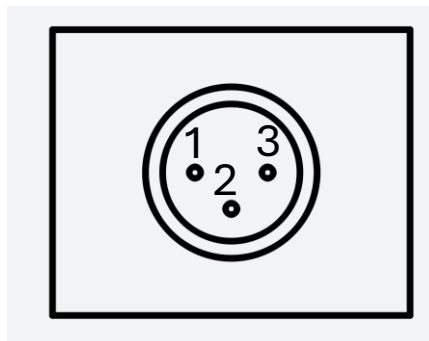## Flexible PCB (optional)
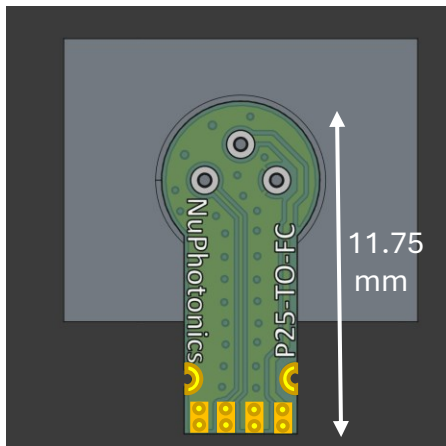
Non-Terminated Flex PCB
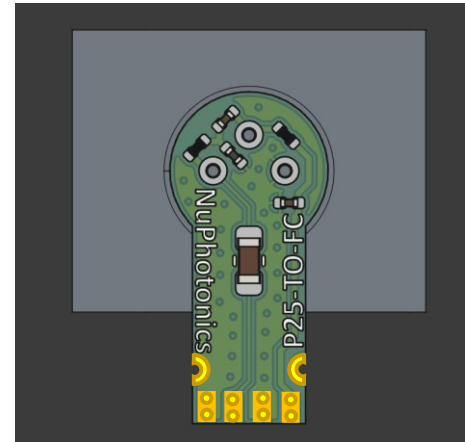
Terminated Flex PCB

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)

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

Device Pinout with No Flex

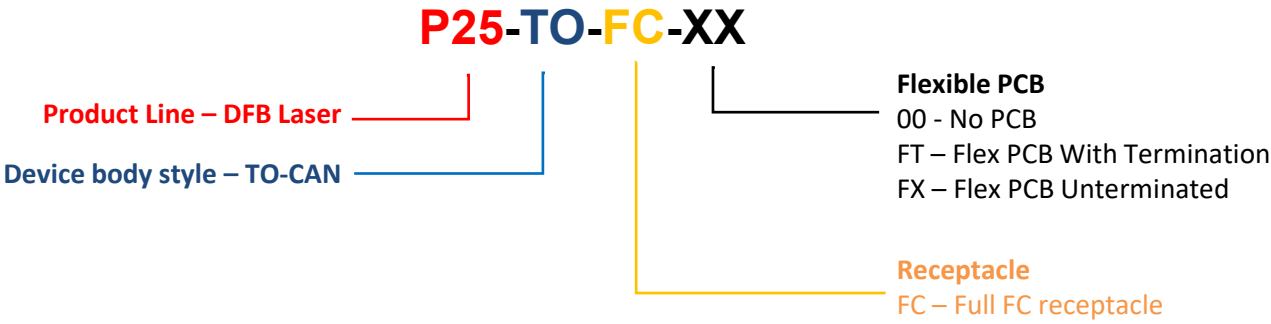| Pin	Function
1	Gnd
2	PD -/Cathode
3	PD+/Anode

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Typical Performance Curves (Top 23ºC, 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.
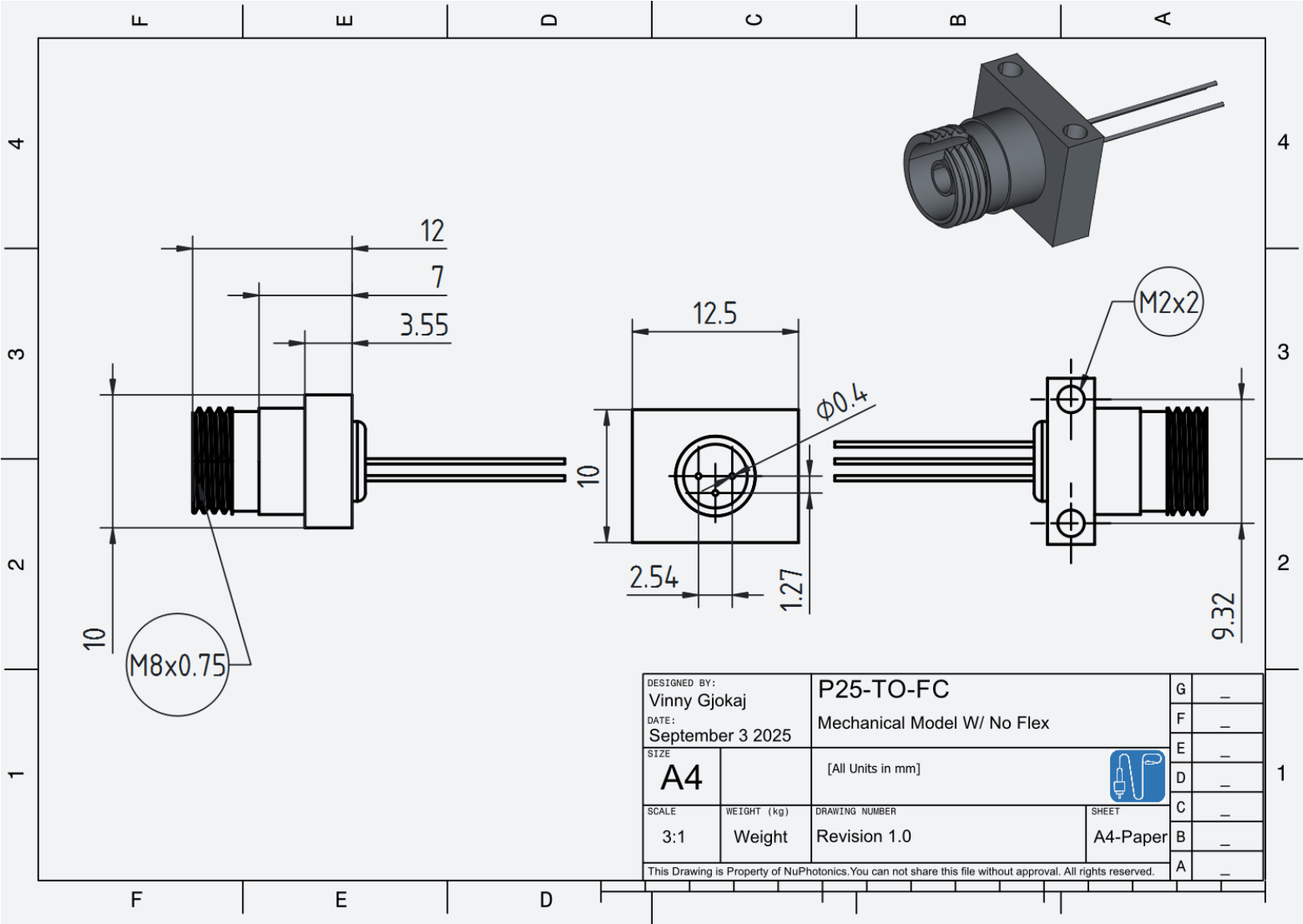

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Device Nomenclature

P25-TO-FC-XX

Product Line – DFB Laser

Device body style – TO-CAN

Flexible PCB
00 - No PCB
FT – Flex PCB With Termination
FX – Flex PCB Unterminated
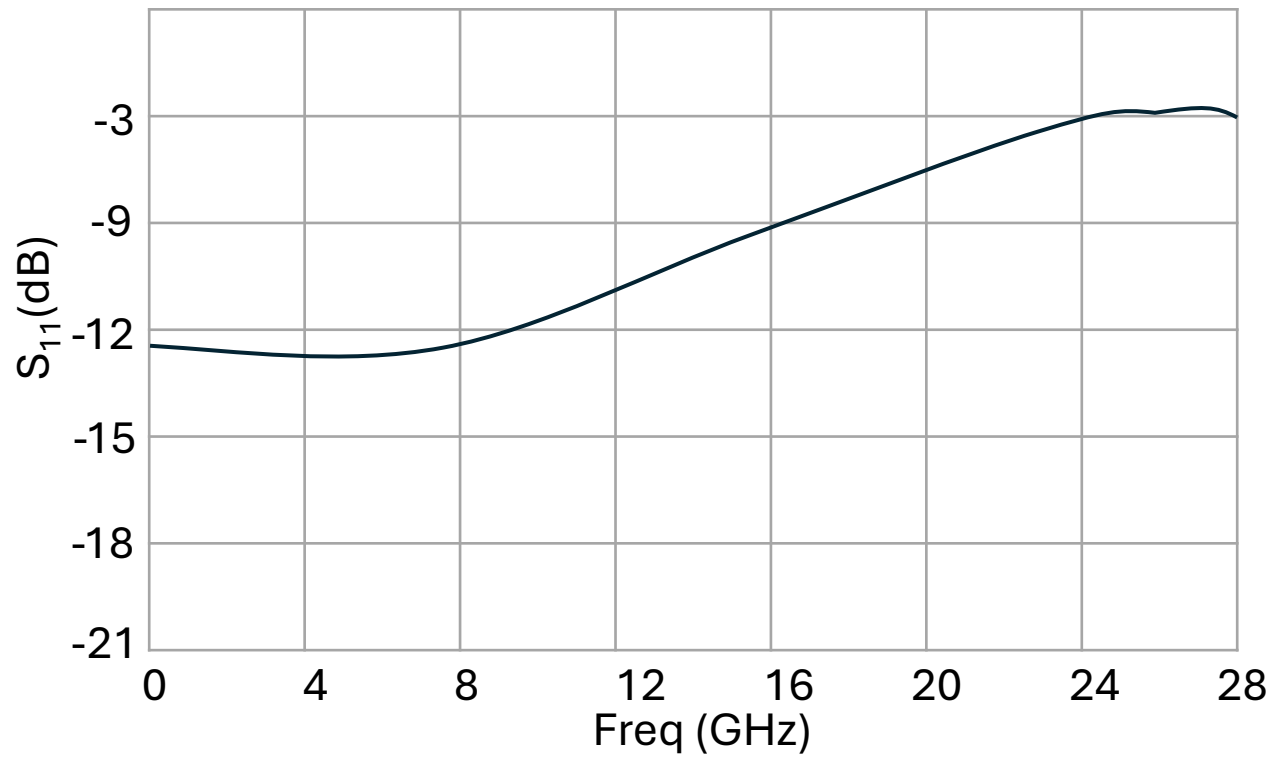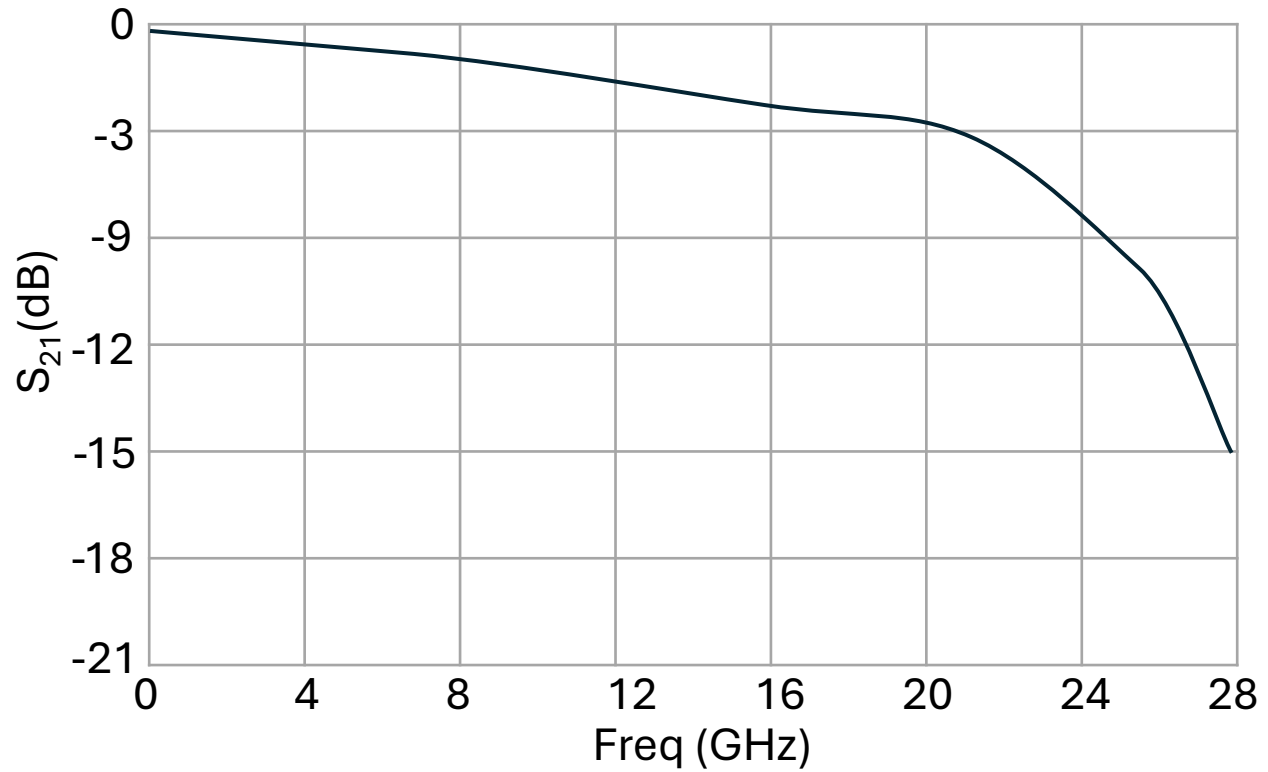
Receptacle
FC – Full FC receptacle

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

Mechanical Drawing

DESIGNED BY: Vinny Gjokaj	P25-TO-FC		G	–
DATE: September 3 2025	Mechanical Model W/ No Flex		F	–
			E	–
SIZE A4	[All Units in mm]		D	–
			C	–
SCALE 3:1	WEIGHT (kg) Weight	DRAWING NUMBER Revision 1.0	SHEET A4-Paper	B	–
			A	–

Dimensions shown: 12, 7, 3.55, 12.5, Ø0.4, 10, 2.54, 1.27, M2x2, 9.32, 10, M8x0.75

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IMPORTANT NOTICES AND DISCLAIMERS

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.