



## 10G InGaAs PIN Photodiode TIA ROSA-FC Package

### Description

A 10 Gb/s InGaAs PIN photodiode packaged with a transimpedance amplifier (TIA). 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
- 10 Gbps
- Wide temperature operating range
- Received signal strength indicator
- TIA Built in
- 4K Ohm Transimpedance Gain
- PCB solderable mount



### Applications

- 5G
- RF over Fiber (RFoF)



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**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         | $I_{cc}$  |      | 30   | 35   | mA                | $V_{cc} = 3.3 \text{ V}$                           |
| Response Spectrum      | $\lambda$ | 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       |      |      | -17  | 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           | $I_d$     |      | 25   | 100  | nA                | VBr                                                |
| Output Impedance       | $Z_o$     |      | 100  |      |                   | Differential                                       |
| Maximum Output Voltage | $V_o$     |      | 300  |      | mV <sub>p-p</sub> | Differential                                       |
| Low Frequency Cutoff   | $F_{low}$ |      | 10   |      | KHz               |                                                    |

**Photodiode Absolute Maximum Ratings**

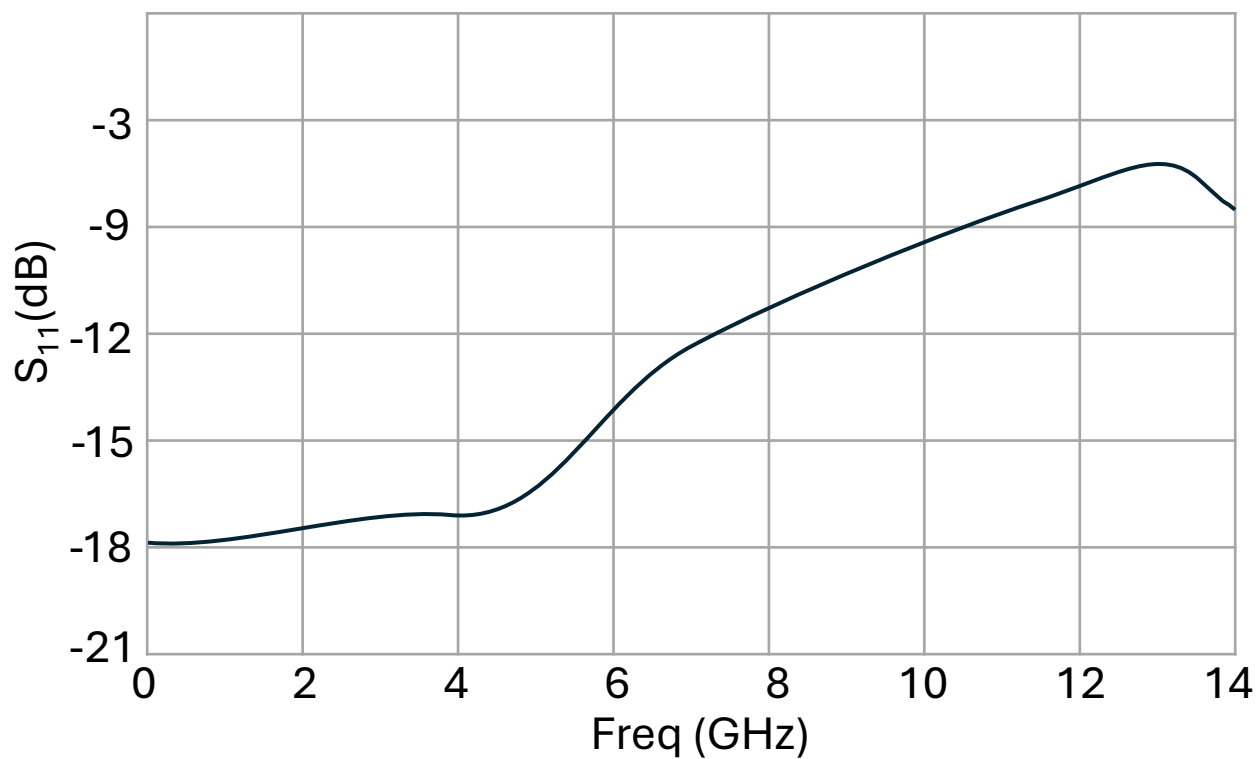
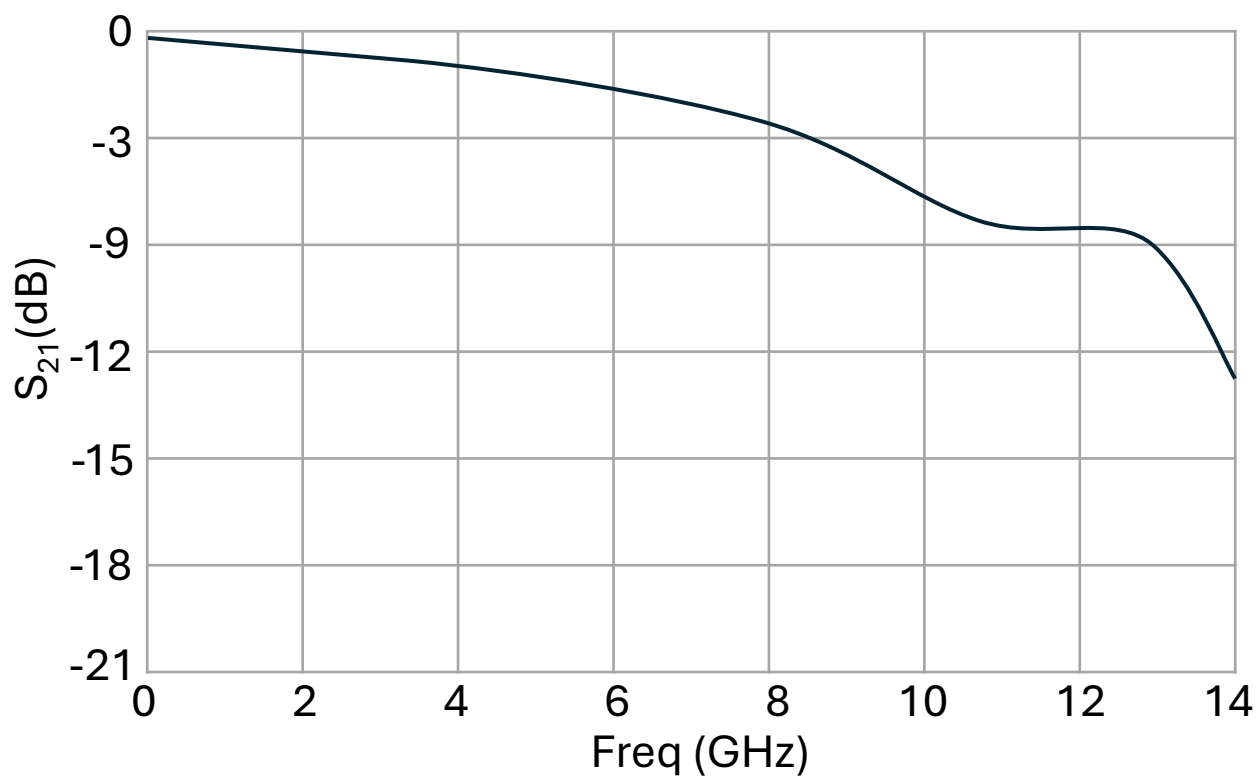
| Parameter             | Symbol    | Condition | Min. | Max. | Unit               |
|-----------------------|-----------|-----------|------|------|--------------------|
| Voltage               | V         |           |      | 3.6  | V                  |
| Input Optical Power   | $P_{in}$  |           |      | 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.

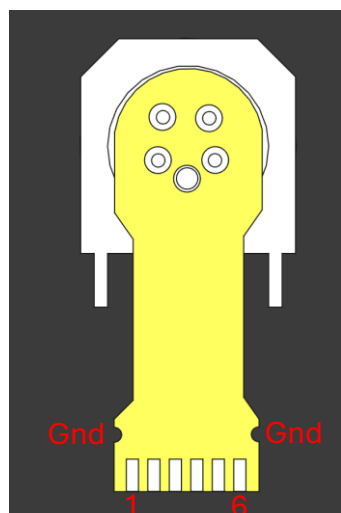


**Typical Performance Curves (Top 23°C, 801 PTs, 16 AVGs, 1.5% smoothing)**

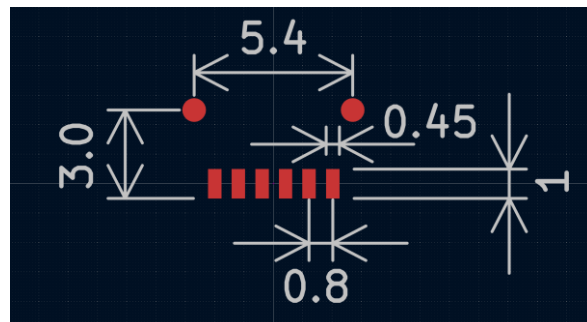
RF performance dependent on PCB design and optimization. Data shown for Rogers® RO3003 with Ground-backed Co-planar waveguide (GB-CPW). The GB-CPW was de-embedded. Single ended measurement, port two is terminated with 50 Ohm load



## Device Pinout

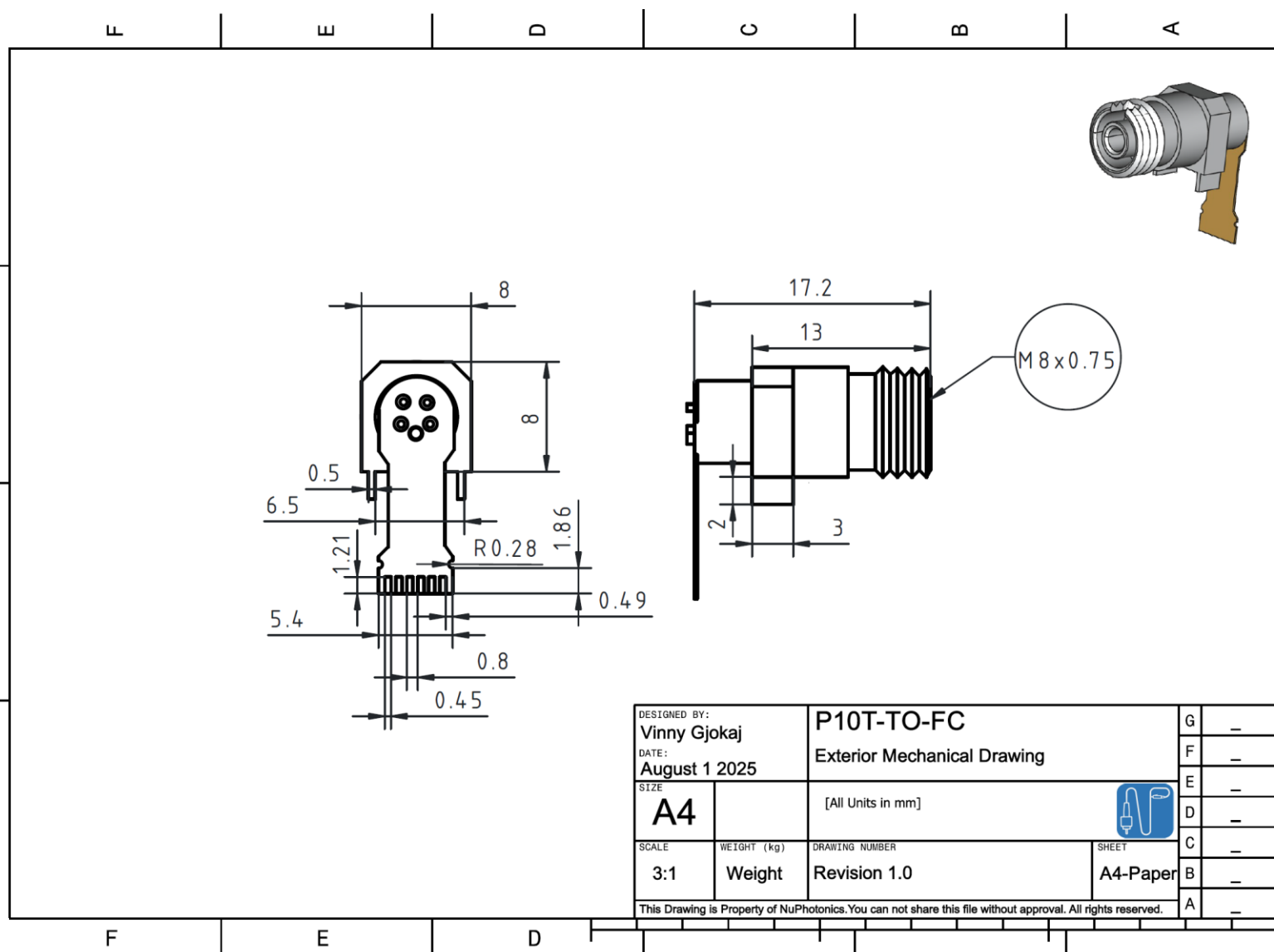


| Pin | Function |
|-----|----------|
| 1   | VCC      |
| 2   | Gnd      |
| 3   | Dout +   |
| 4   | Dout -   |
| 5   | Gnd      |
| 6   | Imon     |



Recommended PCB Footprint (all units in mm)

## Mechanical Drawing



Device dimensions are subject to change without notice.



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Obsolete: Currently not supported.