



Electro-Optics Technology, Inc.

# Innovative High Quality Laser Solutions

## >10 GHz

## Photodetectors



EOT's >10 GHz Photodetectors contain PIN photodiodes that utilize the photovoltaic effect to convert optical power into an electrical current.

When terminated into 50  $\Omega$  into an oscilloscope, the pulsewidth of a laser can be measured. When terminated into 50  $\Omega$  into a spectrum analyzer, the frequency response of a laser can be measured.

EOT's >10 GHz Photodetectors come with their own internal bias supply consisting of long-life lithium cells. Plugging a coaxial cable into the photodetector's SMA output connector and terminating into 50  $\Omega$  at the oscilloscope or spectrum analyzer is all that is required for operation.

### FEATURES

- Small footprint
- Internal voltage bias
- DC to 22 GHz

### OPTIONS

- External wall plug-in power supply available
- Fiber-coupled or free space options available
- Detector Material

### APPLICATIONS

- Monitoring the output of Q-switched lasers
- Monitoring the output of mode-locked lasers
- Monitoring the output of externally modulated CW lasers
- High frequency, heterodyne applications
- Time domain and frequency response measurements



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## SPECIFICATIONS

| Part No. (Model)                    | 120-10058-0001 (ET-3500) | 120-10068-0001 (ET-3500F) | 120-10071-0001 (ET-4000) | 120-10081-0001 (ET-4000F) | 120-10105-0001 (ET-5000) | 120-10104-0001 (ET-5000F) | 120-10140-0001 (ET-3600) | 120-10142-0001 (ET-3600F) |
|-------------------------------------|--------------------------|---------------------------|--------------------------|---------------------------|--------------------------|---------------------------|--------------------------|---------------------------|
| Detector Material                   | InGaAs                   | InGaAs                    | GaAs                     | GaAs                      | InGaAs                   | InGaAs                    | InGaAs                   | InGaAs                    |
| Rise Time/Fall Time                 | <25 ps/<25 ps            | <25 ps/<25 ps             | <30 ps/<30 ps            | <30 ps/<30 ps             | 28 ps/28 ps              | 28 ps/28 ps               | 16 ps/16 ps              | 16 ps/16 ps               |
| Responsivity <sup>a</sup>           | >0.90 A/W at 1300 nm     | >0.65 A/W at 1300nm       | 0.53 A/W at 830 nm       | 0.38 A/W at 830 nm        | 1.3 A/W at 2000 nm       | 0.95 A/W at 2000 nm       | >0.70 A/W at 1300 nm     | >0.70 A/W at 1300 nm      |
| Power Supply                        | 6 VDC                    | 6 VDC                     | 3 VDC                    | 3 VDC                     | 3 VDC                    | 3 VDC                     | 3 VDC                    | 3 VDC                     |
| Bandwidth                           | >15 GHz                  | >15 GHz                   | >12.5 GHz                | >12.5 GHz                 | >12.5 GHz                | >12.5 GHz                 | >22 GHz                  | >22 GHz                   |
| Active Area Diameter                | 32µm                     | 32 µm                     | 60 µm                    | 60 µm                     | 40 µm                    | 40 µm                     | 20 µm                    | 20 µm                     |
| Dark Current                        | <3 nA                    | <3 nA                     | <0.5 nA                  | <0.5 nA                   | <1 µA                    | <1 µA                     | <1 nA                    | <1 nA                     |
| Acceptance Angle (1/2 angle)        | 15°                      | N/A                       | 15°                      | N/A                       | 20°                      | N/A                       | 15°                      | N/A                       |
| Noise Equivalent Power <sup>b</sup> | 20 pW/√Hz at 1300 nm     | 28 pW/√Hz at 1300 nm      | 35 pW/√Hz at 830 nm      | 45 pW/√Hz at 830 nm       | 15 pW/√Hz at 2000 nm     | 20 pW/√Hz at 2000 nm      | 26 pW/√Hz at 1300 nm     | 26 pW/√Hz at 1300 nm      |
| Maximum Linear Rating CW            | 10 mW                    | 10 mW                     | 10 mW                    | 10 mW                     | 3 mA                     | 3 mA                      | 10 mW                    | 10 mW                     |
| Mounting (Tapped Holes)             | 8-32 or M4               | 8-32 or M4                | 8-32 or M4               | 8-32 or M4                | 8-32 or M4               | 8-32 or M4                | 8-32 or M4               | 8-32 or M4                |
| Output Connector                    | SMA                      | SMA                       | SMA                      | SMA                       | SMA                      | SMA                       | SMA                      | SMA                       |
| Fiber Optic Connection <sup>c</sup> | N/A                      | FC/UPC, SMF28e            | N/A                      | FC/UPC, SMF28e            | N/A                      | FC/UPC                    | N/A                      | FC/UPC, SMF28e            |

Product specifications are subject to change. All products are RoHS compliant.

<sup>a</sup> Photodetectors have an internal 50 Ω termination. Responsivity data applicable to diode only. Detector output should be determined based on 1/2 the responsivity of that shown on graph.

<sup>b</sup> Noise Equivalent Power (NEP) is determined via open circuit output.

<sup>c</sup> Multi-mode fiber available. May limit bandwidth.

NOTE: All specifications apply for a 50 Ω termination unless otherwise noted.

