

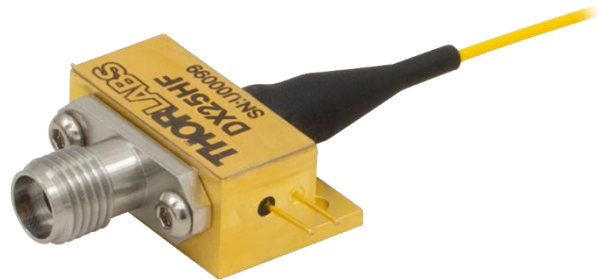
DX25H Series Photodetector

FEATURES

- DC – 25 GHz Bandwidth
- 18.5 ps Impulse Response
- Input Power up to 100 mW
- 50 Ω Reverse Termination Option
- Integrated Bias Network
- 0.45 A/W Responsivity at 1550 nm
- DC-Coupled Output

APPLICATIONS

- Test and Measurement
- RF-over-Fiber Communications
- Instrumentation O-E Front End
- Microwave Photonics

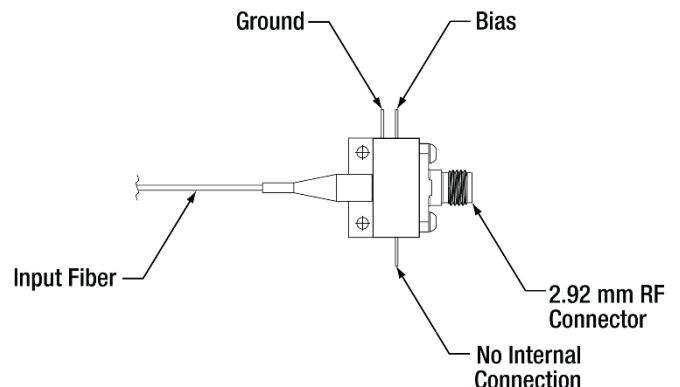
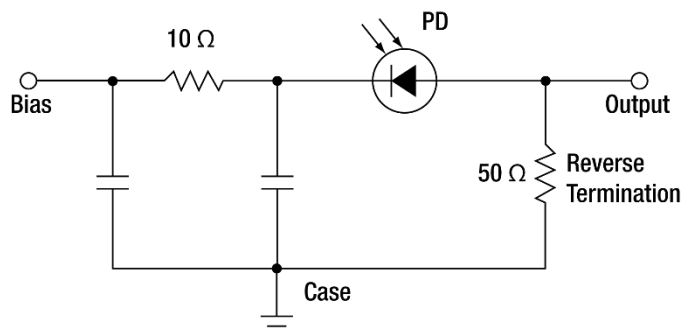


DESCRIPTION OF MODELS

The DX25H Series are high-linearity, InGaAs photodetectors for applications in the 980 nm - 1625 nm wavelength range. Designed to handle high CW input powers without sacrificing frequency response, the devices are linear up to 100 mW of input power. Signal output is provided via a field-replaceable, female, 2.92 mm RF connector, which may be connected to a measurement instrument with suitable adapters or cables. An internal biasing network eliminates the need for an external bias tee. This results in a clean pulse output that is DC coupled. An internal reverse termination of 50 Ω enables very low VSWR when connected to a 50 Ω system. The module is supplied with a single-mode optical fiber input with FC/PC or FC/APC connector. Order using the following model numbers:

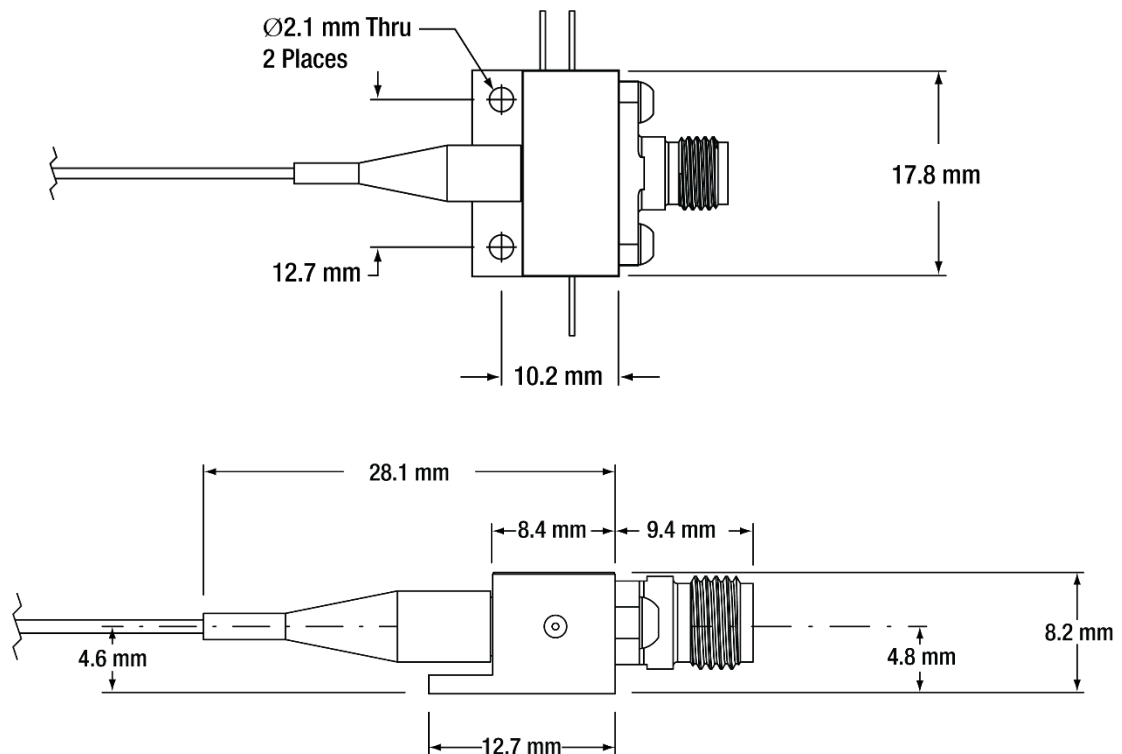
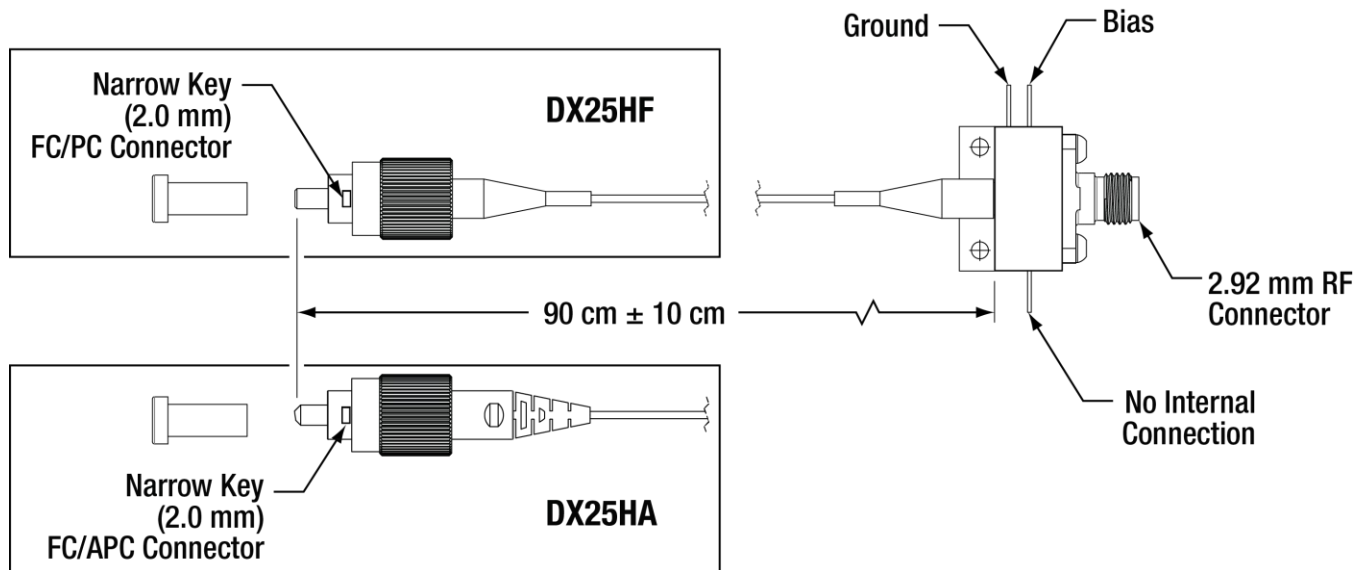
- **DX25HF** DX25H Series Module, with SM Input Fiber, FC/PC Connector, and 50 Ω Back Termination
- **DX25HA** DX25H Series Module, with SM Input Fiber, FC/APC Connector, and 50 Ω Back Termination

BLOCK DIAGRAM



MECHANICAL & PIN-OUT

Parameter	Value
Fiber Connector	DX25HF: 2.0 mm Narrow Key FC/PC DX25HA: 2.0 mm Narrow Key FC/APC
Fiber Type	SMF-28
Fiber Length	90 cm ± 10 cm
Fiber Buffer	Ø900 µm, Yellow
RF Output Connector	Female 2.92 mm, 50 Ω, Field Replaceable
Lead Soldering	Max 10 s at 250 °C per Lead



ABSOLUTE MAXIMUM RATINGS

All specifications are at 25 °C and 1550 nm unless noted.

Parameter	Min	Typical	Max	Unit	Note
Optical Input Power, Average	-	-	20	dBm	-
Optical Input Power, Peak	-	-	21	dBm	50% Duty Cycle
Photodiode Bias Voltage	-	-	10	V	-
Fiber Bend Radius	15	-	-	mm	Breakage

OPERATING CONDITIONS

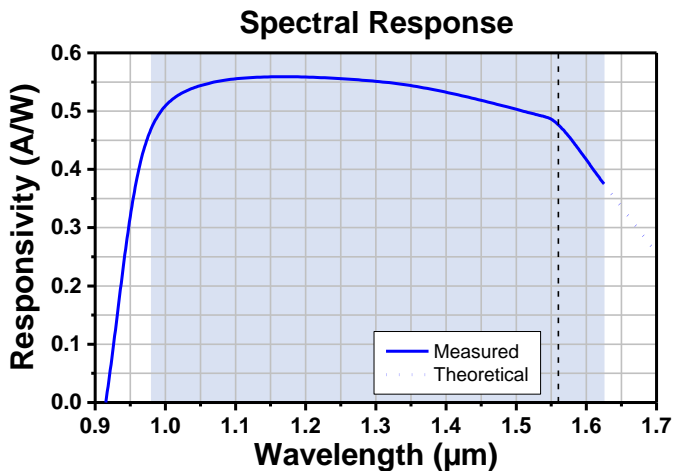
Parameter	Min	Typical	Max	Unit	Note
Operating Temperature	0	-	70	°C	-
Storage Temperature	-40	-	75	°C	-
Relative Humidity	-	-	85	%	Non-Condensing
Photodiode Bias Voltage	4	9.5	10	V	-

SPECIFICATIONS

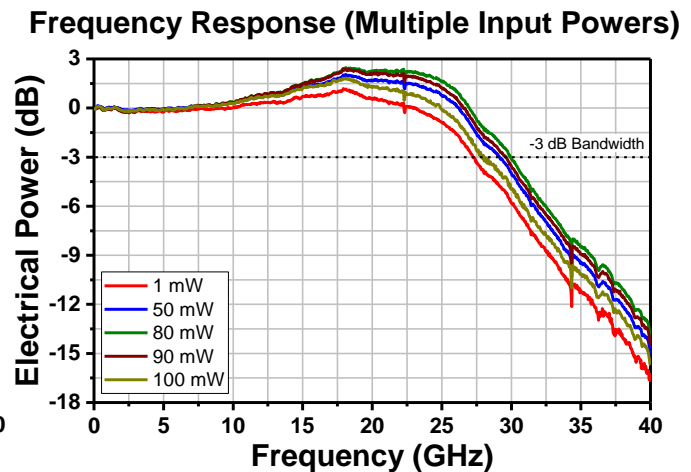
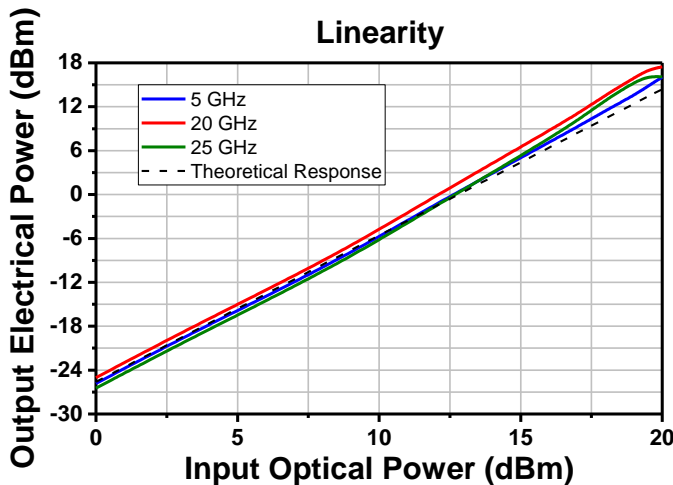
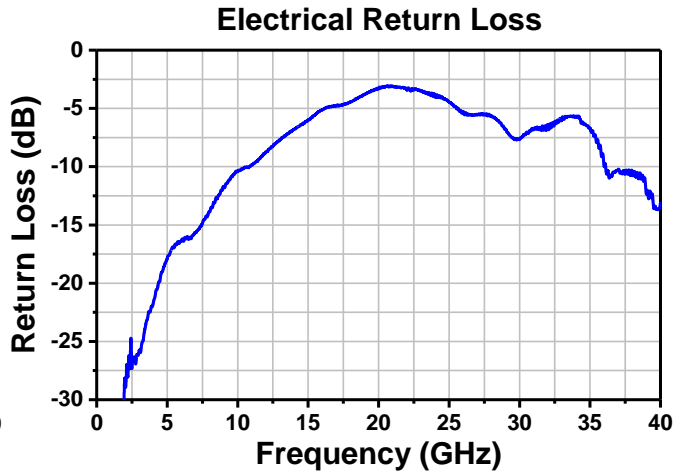
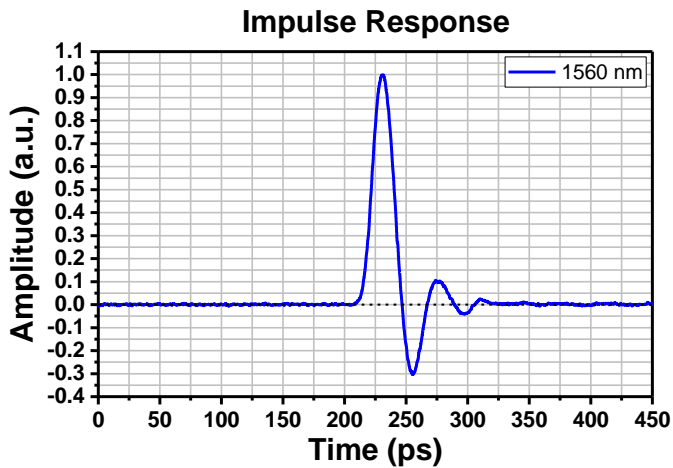
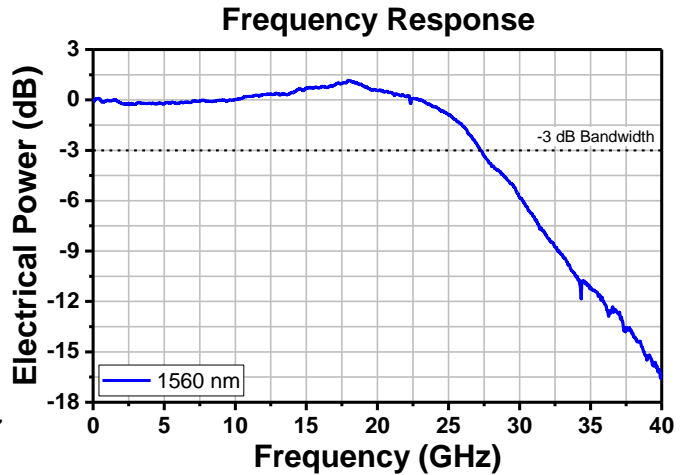
All specifications are at 25 °C, 1550 nm, and 9.5V bias unless noted.

Parameter	Min	Typical	Max	Unit	Note
Wavelength Range	980	-	1625	nm	See Performance Graphs for Full Spectral Response
-3 dB Bandwidth	-	25	-	GHz	At 1560 nm
Low Frequency Cutoff	-	DC	-	-	DC-Coupled Output
Impulse Response	-	18.5	-	ps	FWHM at 1560 nm
Impulse Undershoot	-	28	-	%	At 1560 nm
Responsivity	-	0.45	-	A/W	
Max Linear Input Power	-	100	-	mW	
Max Linear Output Current	-	50	-	mA	
Conversion Gain	-	11.5	-	V/W	Across External 50 Ω Load
Noise-Equivalent Power	-	55	-	pW/√Hz	25 Ω Load Limited
Optical Return Loss	-	-	-25	dB	-
Dark Current	-	-	100	nA	-
Reverse Termination Impedance	45	50	55	Ω	RF Output (Measured at DC)
Electrical Return Loss	-	-10	-	dB	To 9 GHz
Electrical Return Loss	-	-6	-	dB	To 14 GHz
Electrical Return Loss	-	-3	-	dB	To 40 GHz

TYPICAL PERFORMANCE GRAPHS



Vertical dashed line indicates the wavelength that the frequency and impulse responses are measured. The blue-shaded region indicates the wavelength range.



*The modulation depth was 23% for the VNA measurements shown in the Frequency Response and Linearity graphs.

QUALIFICATION TESTING

Parameter	Value
Mechanical Shock	500 g, Six Axes, 5 Times
Thermal Cycling	100 Cycles, 0 °C to 70 °C
Temperature Storage	100 hours at -40 °C
Fiber Pull	Straight Pull: 0.5 kg, 60 s Side Pull: 0.25 kg, 10 s, 4 Directions

PRECAUTIONS



The components inside this module are ESD sensitive. Take all appropriate precautions to discharge personnel and equipment before making any electrical connections to the unit. This also applies to coaxial cables that easily accumulate capacitive charge.

MANUFACTURING AND COMPLIANCE

Manufactured by: Thorlabs Inc., Ann Arbor, MI 48103 USA

All specifications are subject to change without notice.

