HIGH SPEED DETECTORS

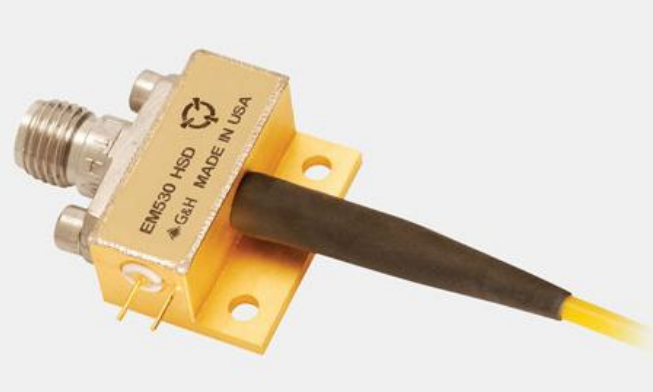
Optical Receivers for RF over Fiber Applications

PRODUCT DATASHEET

The DT family high speed detector module is designed for both digital and analog applications with 50 Ω impedance matched RF connections.

The module contains an InGaAs MUTC photodiode and necessary matching electronics optimized for high linearity at high optical power. Large aperture detector variants provide high saturation photocurrent up to 120 mA, and small aperture detector variants provide high bandwidth up to 22 GHz. The package is hermetically sealed with a SMA or K connector compatible RF connector*.

**Depending on version ordered*



Features

- Responsivity > 0.40 A/W minimum (typically >0.5 A/W)
- High linearity at high optical power
- Extended temperature range
- SMF-28, PM, or specialty MFD fiber
- Internal or external bias-T options

Applications

- RF links
- OC-192, STM-64
- Heterodyne detection
- Sensing
- Optical communications

Performance Characteristics

Operating reverse bias V_B = 5 V unless otherwise specified (external)

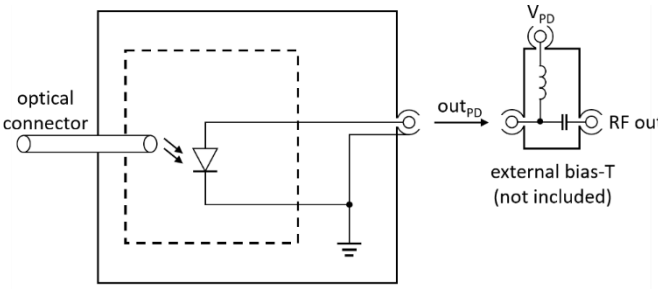
Characteristics	Symbol	Condition	Min	Typ	Max	Unit
Wavelength range	λ		1280		1620	nm
Optical return loss	RL_O	DC to 3-dB bandwidth		-35	-32	dB
Electrical return loss	RL_E			-8	-10	dB
Bias voltage	V_B	At rated photocurrent	-6	-5	-2	V

Performance Characteristics (detector aperture specific)

Operating reverse bias V_B = 5 V unless otherwise specified (external)

Characteristics	Symbol	Condition	20 um	28 um	50 um	Unit
Saturation photocurrent	P_{Sat}	1-dB compression, typical	80	90	120	mA
Responsivity	R	Minimum, 1550 nm	0.4	0.4	0.4	A/W
Dark current	I_D	Typical	0.1	0.1	1	uA
3-dB bandwidth	BW	Typical	TBD	22	5	GHz

Block Diagram



Block diagram (show with external bias-T configuration)

Typical current tuning

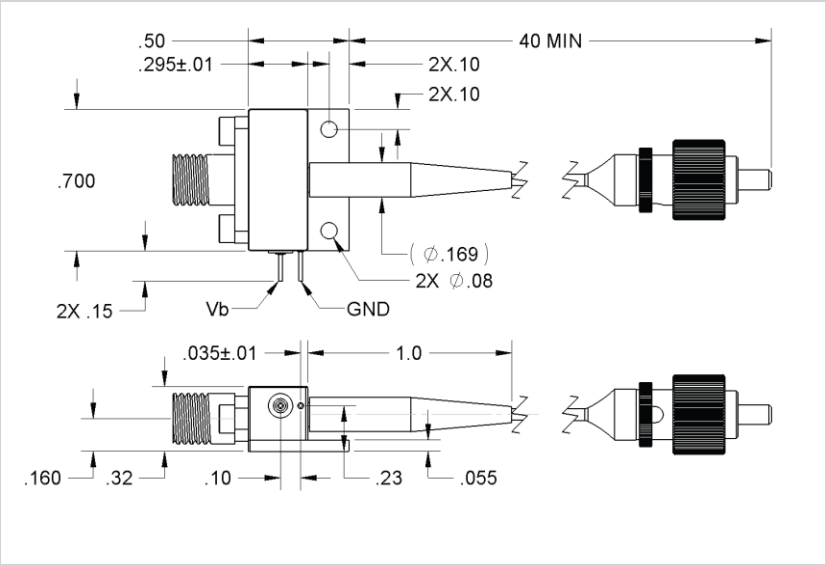
Fiber Characteristics

Fiber type	PM or non-PM single mode fiber
Jacket material[2]	Acrylate
Core / outer / buffer[2] diameters	8 µm / 125 µm / 250 µm
Minimum fiber length	1.0 m
Minimum bend radius	35 mm
Proof strength	100 kPSI
Connector[3], output polarization	FC/APC, polarization parallel to slow axis

[2] Optional additional 900 µm loose-tube PVDF buffer recommended for laboratory use.

[3] Other connector options available, contact sales for more information.

Mechanical Drawing



Absolute Maximum Ratings	Symbol	Min	Max	Unit
Storage temperature	T_{STG}	-55	85	°C
Operating case temperature	T_{op}	-40	85	°C
Operating reverse bias	V_B	-12	1	V
Lead soldering time			10	s
Lead soldering temperature			250	°C
ESD (HBM)			500	V

- Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only and operation of the device at or beyond these conditions is not implied. Exposure to absolute maximum ratings for extended periods of time may affect device reliability.

Ordering information

Example part number: DT0201-022-080-PM250-FCA-NA

Orde	①						②				③						④	
D	T	0	2	0	1	-	0	2	2	-	S	M	F	2	8	-	N	A

①	Model[1]	Standard
	Code	0201

②	Bandwidth[1]	22GHz	5GHz
	Code	022	005

③	Fiber	SM fiber
	Code	SMF28

④	Connector[2]	FC/APC[2]
	Code	FCA

⑤	Bias T	None	50 Ω
	Code	NA	50

[1] Custom versions or bandwidths available, contact sales for more information .

[2] Other connector options available, contact sales for more information.

For further information

EM4
T: +1 781-275-7501
E: em4-sales@luminarsemi.com

EM4photonics.com