

# 850nm, 1.25Gbps

## Large Active Area and High Speed Silicon Photodiodes

OSI Optoelectronics's family of large active area and high speed silicon PIN photodiodes possesses a large sensing area optimized for short-haul optical data communication applications at 850nm. The photodetectors exhibit high responsivity, wide bandwidth, low dark current and low capacitance at 3.3V. They are designed to match the most widely used transimpedance amplifiers. The photodiodes can be used in all 850nm transceivers and GBICs up to 1.25Gbps applications such as Gigabit Ethernet and Fibre Channel. The chip is isolated in a 3 pin TO-46 package with options of micro lens cap or an AR coated flat window. They are also available in standard fiber receptacles such as FC, ST, SC and SMA. For availability in chip form please contact our sales department.



### APPLICATIONS

- High Speed Optical Communications
- Single/Multi-Mode Fiber Optic Receiver
- Gigabit Ethernet/Fibre Channel
- SONET/SDH, ATM

### FEATURES

- Silicon Photodiodes
- High Responsivity
- Large Sensing Area
- Low Capacitance @ 3.3V
- Low Cost

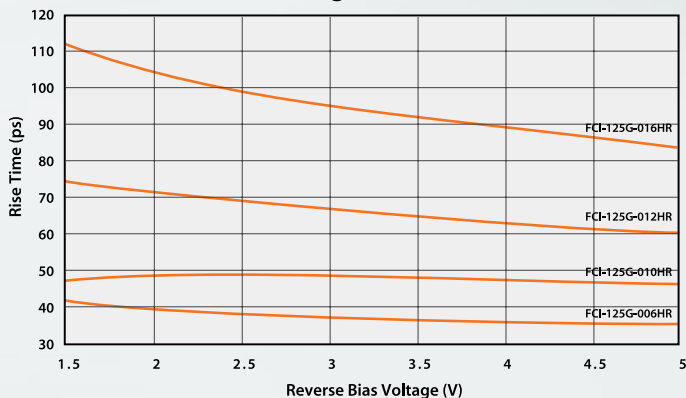
### Absolute Maximum Ratings

PARAMETERS	SYMBOL	MIN	MAX	UNITS
Storage Temperature	T <sub>stg</sub>	-55	+125	°C
Operating Temperature	T <sub>op</sub>	-40	+75	°C
Soldering Temperature	T <sub>slid</sub>	---	+260	°C

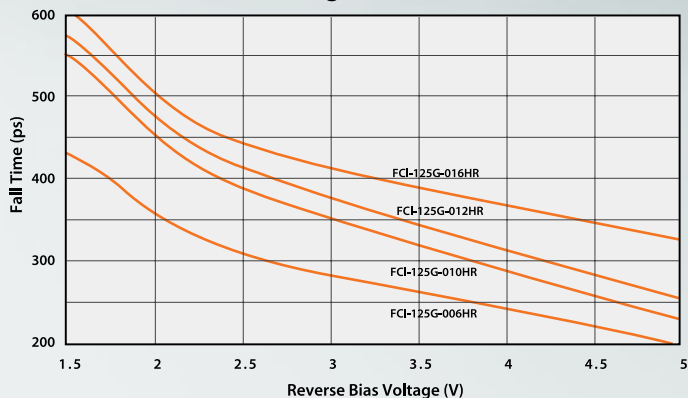
### Electro-Optical Characteristics

PARAMETERS	SYMBOL	CONDITIONS	FCI-125G-006HRL				FCI-125G-010HRL			FCI-125G-012HRL			FCI-125G-016HRL			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX		
Active Area Diameter	AA <sub>φ</sub>	---	---	150	---	---	250	---	---	300	---	---	400	---	μm	
Responsivity (Flat Window Package)	R <sub>λ</sub>	λ=850nm	---	0.36	---	---	0.36	---	---	0.36	---	---	0.36	---	A/W	
Dark Current	I <sub>d</sub>	V <sub>R</sub> = 3.3V	---	20	500	---	25	500	---	30	500	---	40	500	pA	
		V <sub>R</sub> = 5.0V	---	30	500	---	35	500	---	40	500	---	50	500		
Capacitance	C <sub>j</sub>	V <sub>R</sub> = 3.3V	---	0.66	---	---	0.96	---	---	1.16	---	---	1.73	---	pF	
		V <sub>R</sub> = 5.0V	---	0.65	---	---	0.94	---	---	1.13	---	---	1.70	---		
Rise Time	t <sub>r</sub>	20% to 80% R <sub>L</sub> =50Ω λ=850nm	V <sub>R</sub> = 3.3V	---	38	---	---	50	---	---	69	---	---	100	---	ps
			V <sub>R</sub> = 5.0V	---	35	---	---	47	---	---	60	---	---	84	---	
Fall Time	t <sub>f</sub>	80% to 20% R <sub>L</sub> =50Ω λ=850nm	V <sub>R</sub> = 3.3V	---	313	---	---	429	---	---	436	---	---	449	---	ps
			V <sub>R</sub> = 5.0V	---	200	---	---	246	---	---	265	---	---	329	---	
Max. Reverse Voltage	---	---	---	---	20	---	---	20	---	---	20	---	---	20	V	
NEP	---	---	---	8.60E-15	---	---	9.29E-15	---	---	9.93E-15	---	---	1.11E-14	---	W/√Hz	

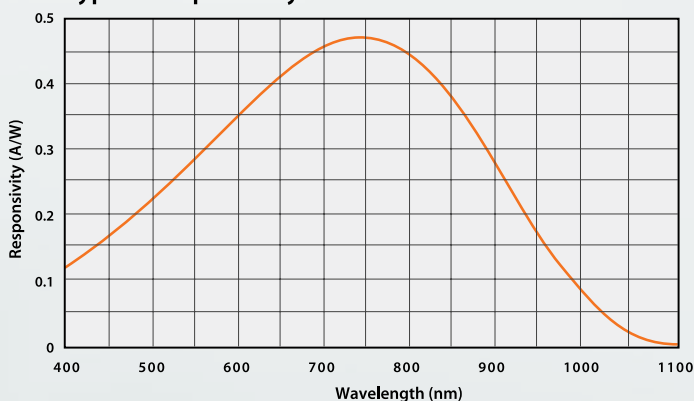
### Rise Time vs. Bias Voltage



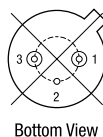
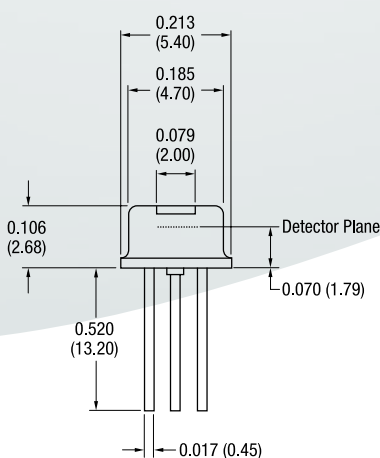
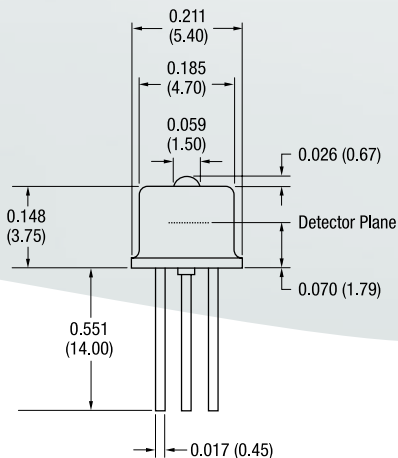
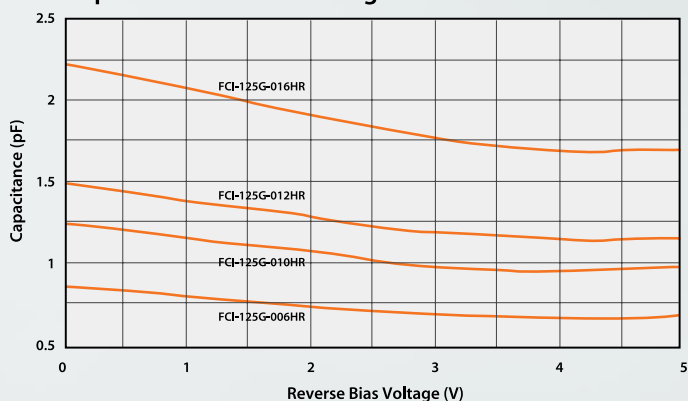
### Fall Time vs. Bias Voltage



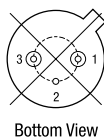
### Typical Responsivity



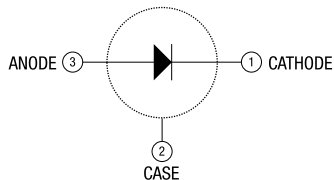
### Capacitance vs. Bias Voltage



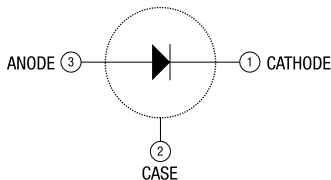
Bottom View



Bottom View



Pin Circle Diameter = 0.100 (2.54)



Pin Circle Diameter = 0.100 (2.54)

#### Notes:

- All units in inches (mm).
- All tolerances: 0.005 (0.125).
- Please specify when ordering the flat window or lens cap devices.
- The flat window devices have broadband AR coatings centered at 850nm.