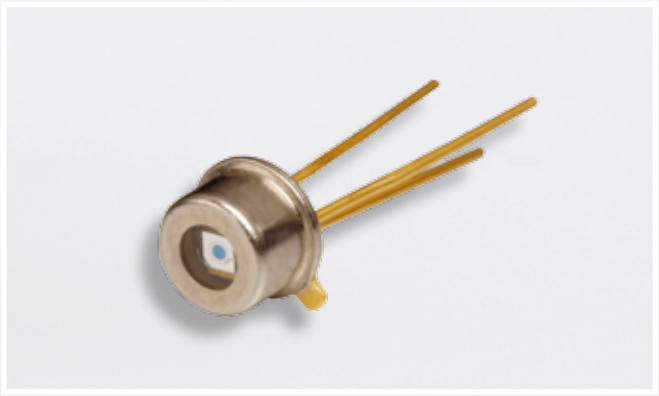
850nm, 1.25Gbps

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

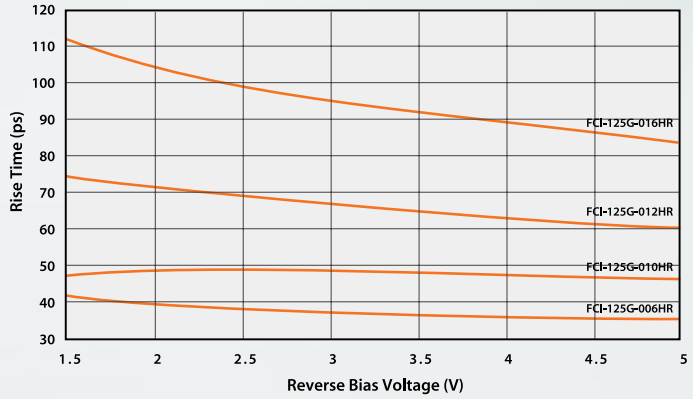
Absolute Maximum Ratings

PARAMETERS	SYMBOL	MIN	MAX	UNITS
Storage Temperature	T_{stg}	-55	+125	°C
Operating Temperature	T_{op}	-40	+75	°C
Soldering Temperature	T_{sld}	---	+260	°C

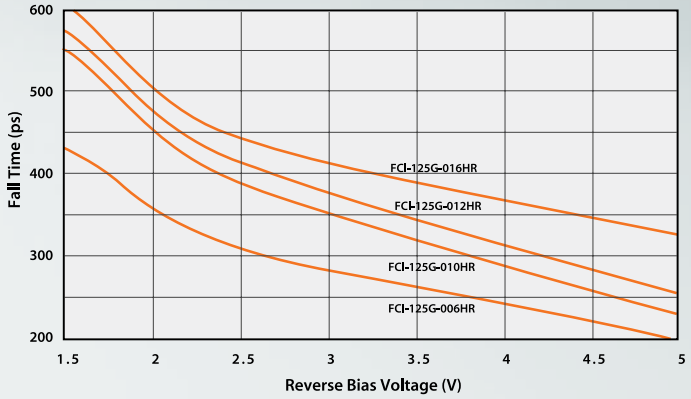
Electro-Optical Characteristics T_A=23°C

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_ϕ	---		---	150	---	---	250	---	---	300	---	---	400	---	µm
Responsivity (Flat Window Package)	R_λ	λ=850nm		---	0.36	---	---	0.36	---	---	0.36	---	---	0.36	---	A/W
Dark Current	I_d	V_R = 3.3V		---	20	500	---	25	500	---	30	500	---	40	500	pA
		V_R = 5.0V		---	30	500	---	35	500	---	40	500	---	50	500	
Capacitance	C_j	V_R = 3.3V		---	0.66	---	---	0.96	---	---	1.16	---	---	1.73	---	pF
		V_R = 5.0V		---	0.65	---	---	0.94	---	---	1.13	---	---	1.70	---	
Rise Time	t_r	20% to 80% R_L=50Ω λ=850nm	V_R = 3.3V	---	38	---	---	50	---	---	69	---	---	100	---	ps
			V_R = 5.0V	---	35	---	---	47	---	---	60	---	---	84	---	
Fall Time	t_f	80% to 20% R_L=50Ω λ=850nm	V_R = 3.3V	---	313	---	---	429	---	---	436	---	---	449	---	ps
			V_R = 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

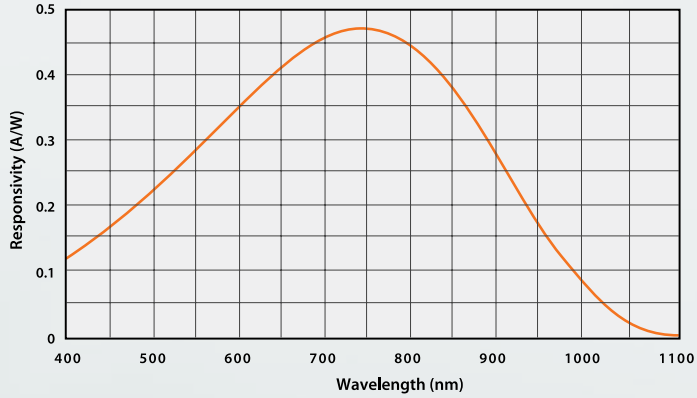
Rise Time vs. Bias Voltage



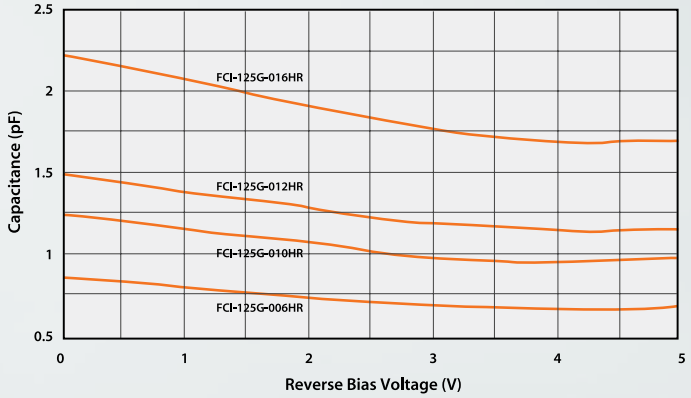
Fall Time vs. Bias Voltage

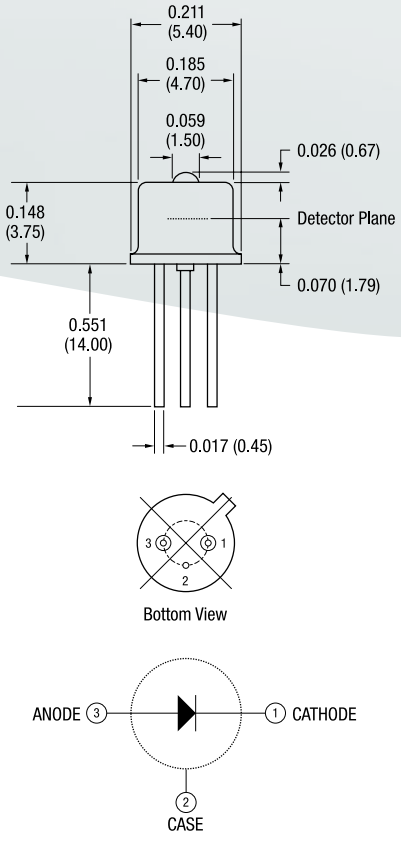


Typical Responsivity

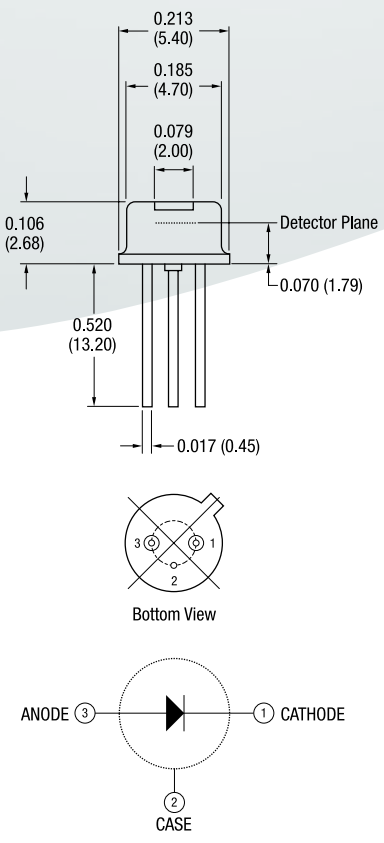


Capacitance vs. Bias Voltage





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.