

10 Gbps Ge PIN photodiode

Part Number: GI5A-7050

Product Description: This product is a top-side illuminated Germanium on Silicon PIN photodiode chip that features very low capacitance, high responsivity, acceptable dark current, and wide spectrum response. This product is intended primarily for high-speed (up to 10 Gbps) optical receivers applications operating at 850 nm – 1600 nm. The chip has both p- and n- contacts on the top surface allowing the user to choose either p-ground or n-ground configurations.

Absolute Maximum Ratings (T = 25°C):

Parameter	Symbol	Unit	Value
Forward Current	I_F	mA	5
Reverse Voltage	V_R	V	20
Reverse Current	I_R	mA	0.5
Operating Temperature	T_{op}	°C	0 - 90
Storage Temperature	T_{stg}	°C	-40 - 100

Electro-optical Characteristics (T = 25°C, unless noted otherwise):

Parameter	Symbol	Unit	Min.	Typ.	Max.	Test Condition
Aperture	D	μm		50		
Responsivity	R	A/W	0.58 0.88 0.58 0.12	0.62 0.85 0.54 0.10		$V_R = 0.5\text{ V}$ $\lambda = 850\text{ nm}$ $\lambda = 1310\text{ nm}$ $\lambda = 1550\text{ nm}$ $\lambda = 1600\text{ nm}$
Dark Current	I_D	nA		95	350	$V_R = 0.5\text{ V}$
Breakdown Voltage	V_B	V	25			$I_R = 1\ \mu\text{A}$
Capacitance	C	pF		0.18	0.21	$V_R = 0.5\text{ V}$ $f = 1\text{ MHz}$
Rise/Fall Time	τ_r/τ_f	ps		25	35	$V_R = 0.5\text{ V}$ 20-80%
Cut-off Frequency	f_c	GHz	8.7	9.0		$V_R = 0.5\text{ V}$ $R_L = 50\ \Omega$

Chip configuration:

- Both anode and cathode contacts on top (epi) surface.
- Die size (typical): 300 μm (Wide) x 400 μm (Long) x 130 μm (Thickness)
Tolerance: +/-12.5μm
- Bond pad size: 80 x 90 μm square
- P-bondpad on right: GI5A-7050-1, P-bondpad on left: GI5A-7050-2