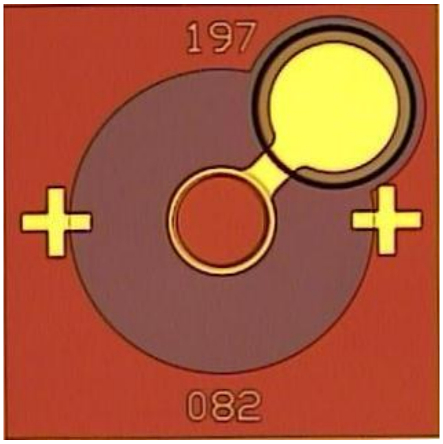
2.5Gbps APD Chip for GPON Application

P/N: DO323_55um_APD

PRELIMINARY DATASHEET



Introduction

This high performance product is a 2.5G APD (avalanche photodiode) chip that features a large 55µm front-side illuminated detection window for easy optical assembly. This product has an excellent reliability and gain at operating voltage, and high sensitivity up to -34dBm with a low-noise TIA. It is designed primarily to be used at 1310nm and 1490nm APD-TIA GPON applications that enable data transmission for today's fiber-to-the-home (FTTH) market.

Key Features

- GCS proprietary design and process technologies
- 55µm optical detection window
- Backside common cathode and topside anode
- -34dBm typical sensitivity with low-noise TIA
- -25°C to 85°C operation range
- High reliability with GCS robust 4" wafer manufacturing with fast cycle-time
- Deliverable in GCS Known Good Die™ with 100% testing and inspection
- Customized layout dimensions available
- RoHS compliant

Applications

- 2.5Gbps GPON receiver
- SONET OC48
- Ethernet

SPECIFICATIONS (T=25C^{O})

	Conditions	Min.	Typical	Max.	Unit	Notes
Responsivity	1550 nm, M=1	-	0.87	-	A/W	
Gain	V_{br}-2V, P_o=1uW		9		-	
Breakdown voltage (V_{br})	I_d=10uA, P_o=1uW	40	45	50	V	
Temperature coefficient of V_{br}	-45°C~+80°C	0.06	0.08	0.10	V/°C	
Dark current	V_{br}-2V	-	40	100	nA	
Bandwidth	V_{br}-2V, P_o=1uW, 25°C	2.5	-	5	GHz	
Capacitance	V_{br}-2V, f=1 MHz, 25°C	-	0.37	0.5	pF	
Wavelength Range		1200	1490	1600	nm	
Recommended operation bias		V_{br}-2V			V	
Recommended alignment bias	25°C	V = V_{br}-5V			V	
Operating bias range (V_{br} -V_p)	25°C	20			V	

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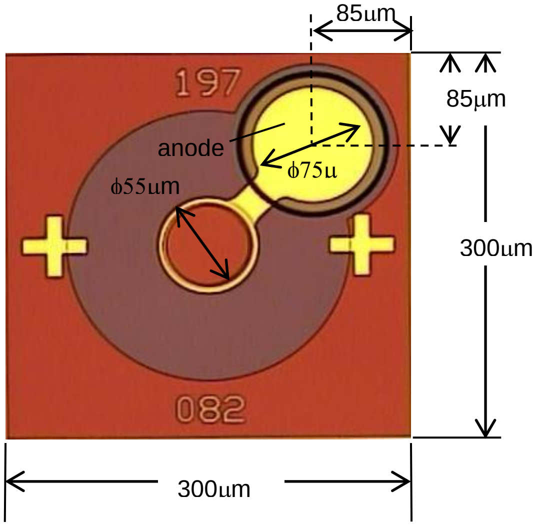
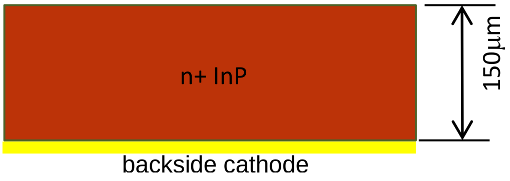
ABSOLUTE MAXIMUM RATING

Parameter	Rating
Operating Temperature	-25°C to 85°C
Storage Temperature	-40°C to 125°C
Soldering Temperature	260°C / 10 sec
Forward Current	5mA
Reverse Current	3mA

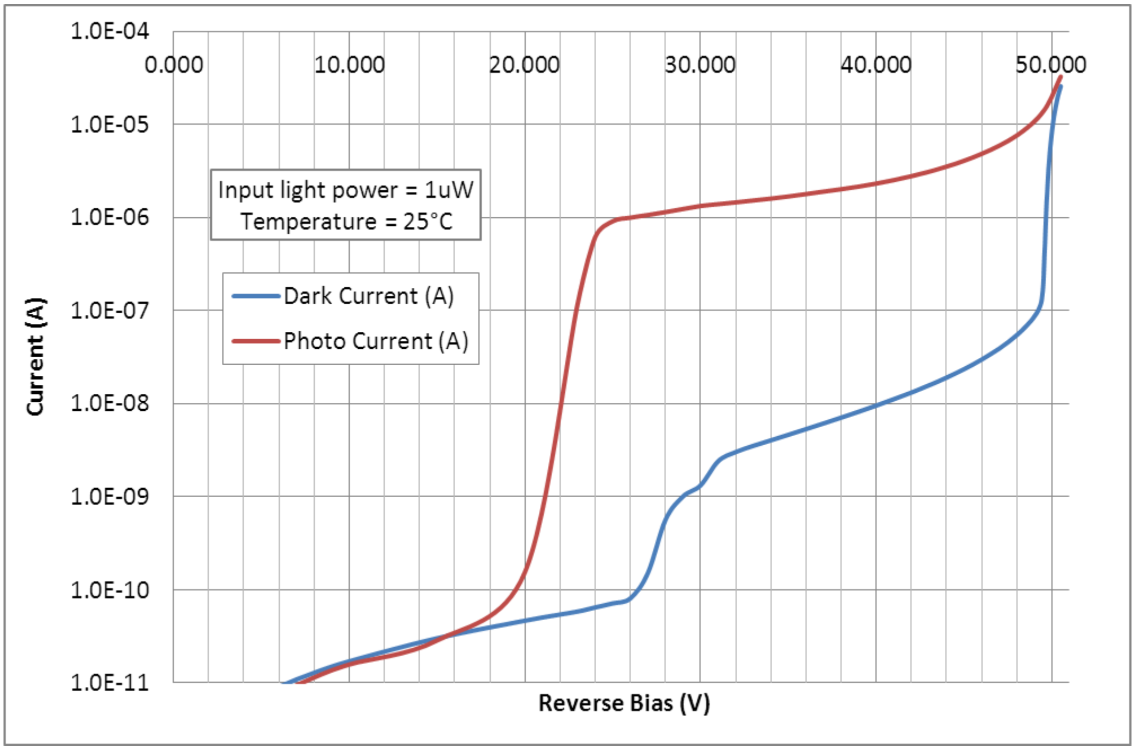


DIMENSIONS

(Unit: um)	Min.	Typical	Max.
Detection window		55	
Bonding pad diameter		75	
Die height	140	150	160
Die width	290	300	310
Die length	290	300	310



Typical Performance at 25°C



Dark Current and Photo Current vs. Voltage at 25°C

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