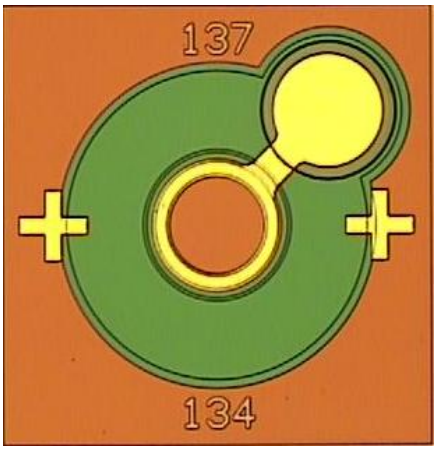
2.5Gbps APD Chip for GPON Application

P/N: DO198_55um_APD



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, low dark current 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
- -40C to 85C 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	47	50	V	
Temperature coefficient of V_{br}	-45°C~+80°C	0.06	0.08	0.11	V/°C	
Dark current	V_{br}-2V	-	1.3	20	nA	
Bandwidth	M=9 , P_o=1uW, 25°C	2.5	-	3.2	GHz	
Capacitance	V_{br}-2V, f=1 MHz, 25°C	-	0.37	0.6	pF	
Wavelength range		1200	1490	1600	nm	
Recommended Operation Bias		V_{br}-2V				
Recommended Alignment Bias		V = V_{br}-5V				

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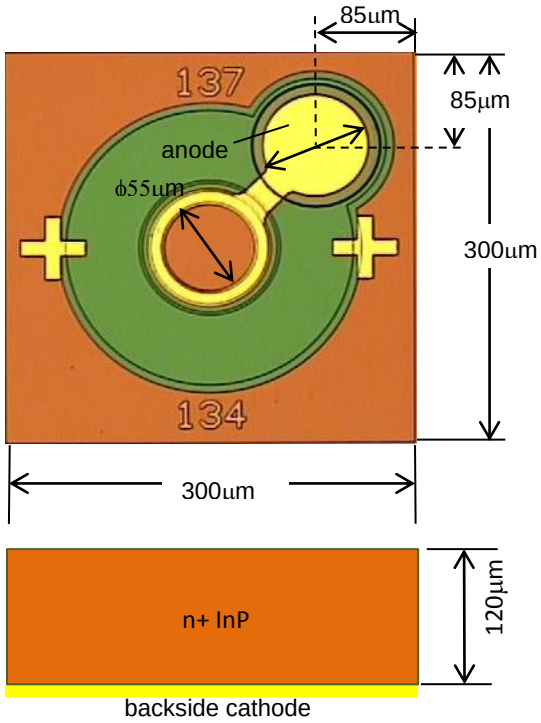
ABSOLUTE MAXIMUM RATING

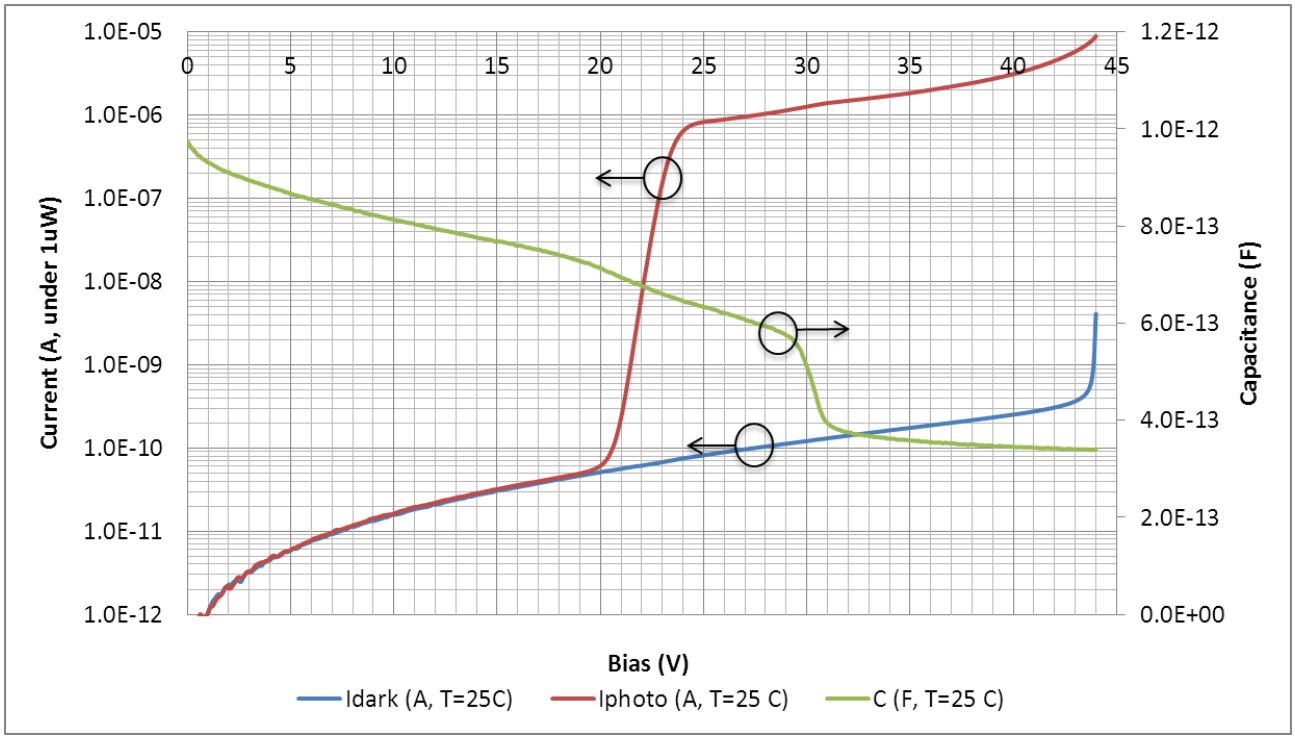
Parameter	Rating
Operating Temperature	-40°C to 85°C
Storage Temperature	-40°C to 125°C
Soldering Temperature	260°C / 10 sec

DIMENSIONS

(Unit: um)	Min.	Typical	Max.
Detection window		55	
Bonding pad diameter		65	
Die height	110	120	130
Die width	290	300	310
Die length	290	300	310



Typical Performance at 25°C



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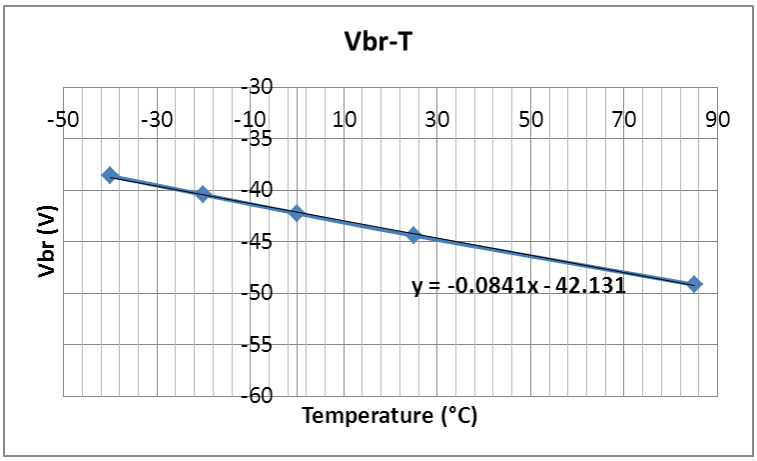
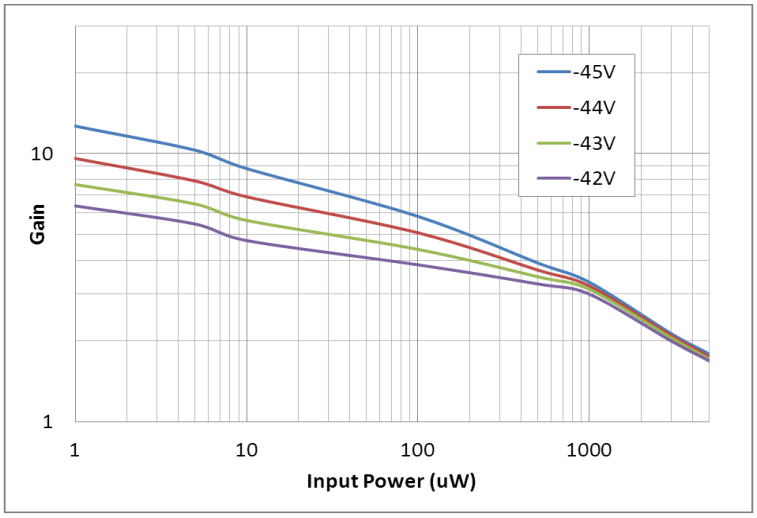
Typical Breakdown Voltage - Temperature



Gain - Power Curve



Bandwidth vs. Voltage

Voltage	Vbr-2V	Vbr-4V	Vbr-6V
Bandwidth	4.73GHz	4.66GHz	4.66GHz

About GCS:

GCS has a long history manufacturing and shipping both GaAs and InGaAs based photo diodes since 2000. Our state of art manufacturing facility is located in Torrance, California, and has about 10,000 square feet of fab space with a capability of about 1200 4-inch wafers per month and expandable to 2000 wafers per month. GCS as a world-class semiconductor device manufacturer has been delivering a total of over 30 million photo diodes with various date rates and applications used for optical communications, which have been deployed in field by top tier optical transceiver companies worldwide.

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