InGaAs Φ 200μm APD Chip



Description

InGaAs Avalanche Photodiode (APD) chips are semiconductor devices that are designed to detect weak optical signals in the infrared region. They are used in a variety of applications, such as fiber optic communications, LIDAR, and sensing. An APD is a type of photodiode that incorporates an internal gain mechanism, which allows it to achieve higher sensitivity than a standard photodiode. The gain is achieved through a process called avalanche multiplication, where a single photon creates an electron-hole pair, which then undergoes impact ionization, producing additional electron-hole pairs. This process results in an amplified output signal. InGaAs APDs are particularly useful for detecting wavelengths between 800 and 1700 nm.LD-PD is a company who design and manufacture InGaAs APD Chips.

Application

- Distance measurement
- Spatial light transmission
- OTDR
- Low-light-level detection

E/O Characteristics

Electro-Optical Characteristics (@ Tc=22±3℃)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Response Spectrum	λ	—		950 ~ 1700		nm
Responsivity	Re	λ=1550nm	0.90	1.00	—	A/W

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		Pin=1μW, M=1				
Multiplication factor	M	λ=1550nm Pin=1μW, VR=VBR-3	10.00		—	—
		λ=1550nm Pin=1μW, VR=VBR-1	30.00	—	—	—
Dark Current	Id	VR=VBR-3, Pin=0μW	—	8.00	50.00	nA
-3dB Cut-off frequency	BW	M=10 RL=50Ω	0.60	1.25	—	GHz
Reverse Breakdown Voltage	VBR	IR =10μA, Pin=0μW	35.00		50.00	V
Capacitance	C	VR=VBR-3, f=1MHz	—	1.80	2.00	pF
Temperature Coefficient of VBR	γ	IR=10μA, Pin=0μW -55℃~+85℃	0.07	0.11	0.15	V/℃

Absolute Maximum Rating

Parameter	Symbol	Min.	Max.	Unit
APD Voltage supply	VPD	—	VBR	V
Operating Temperature	TC	-40	+85	ºC
Storage Temperature	TSTG	-55	+125	ºC
Forward Current	IF	—	5	mA
Reverse Current	IR	—	3	mA

Typical Performance Curves (@ Tc=22±3℃)

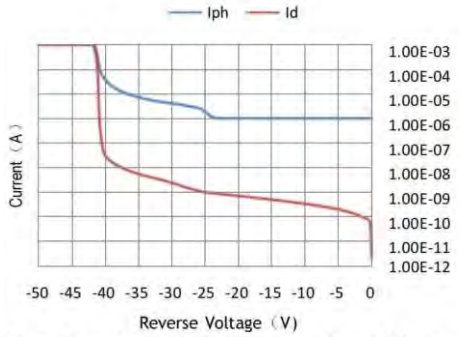


Figure 1 Photo Current and Dark Current vs. Reverse Voltage

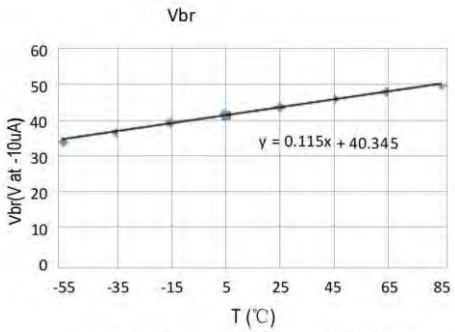


Figure 2 Breakdown Voltage vs. Temperature

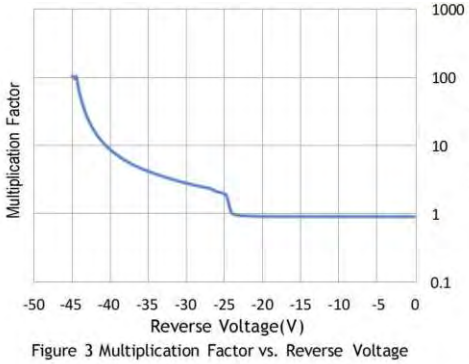


Figure 3 Multiplication Factor vs. Reverse Voltage

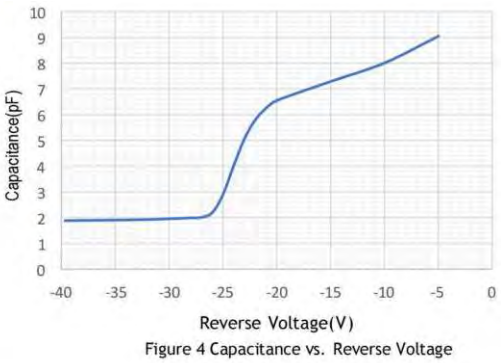
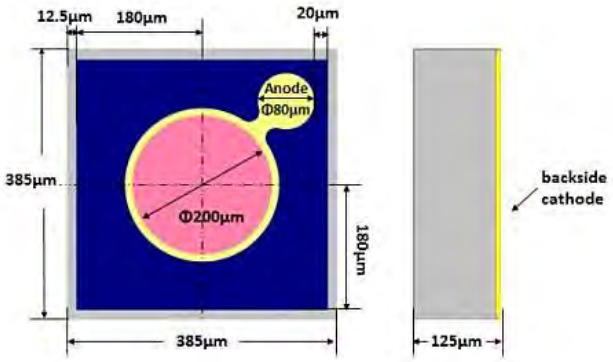


Figure 4 Capacitance vs. Reverse Voltage

Outline Diagram and Die Dimensions



Parameter	Min.	Typ.	Max.	Unit	Notes
Die Width	375	385	395	µm	
Die Length	375	385	395	µm	
Thickness	115	125	135	µm	
Detection Window	—	200	—	µm	
Bonding Pad Diameter	—	80	—	µm	Au metal