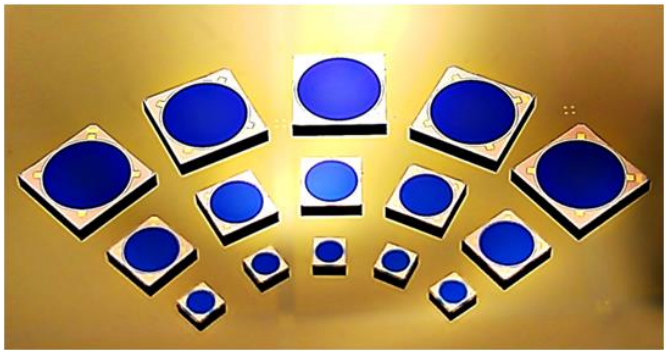
InGaAs PIN Photodiode Chip (1.7 µm Wavelength Cutoff)

FEATURES

- Highly reliable planar device
- SWIR-only or VIS-SWIR operation
- Low leakage current
- High shunt resistance
- High responsivity
- Low stray absorption

APPLICATIONS

- Power monitoring
- Spectral analysis
- Light detection and ranging (LIDAR)
- Remote temperature sensors
- Humidity detection
- Ice/Slush detection
- Gas leak detection
- Single-Photodiode SWIR detection
- Covert IR sensing
- Optical powering



GENERAL DESCRIPTIONS

MODEL NO.		PIN1000-17(V)-D	PIN2000-17(V)-D	PIN3000-17-D
PARAMETER	UNIT	VALUE		
Spectral Range	µm	0.9 - 1.7 / 0.6 - 1.7		0.9 - 1.7
Aperture Size[1,2]	µm	Ø 950	Ø 1850	Ø 3000
Chip Dimension				
Length	µm	1070 ± 15	2055 ± 15	3285 ± 15
Width	µm	1070 ± 15	2055 ± 15	3285 ± 15
Thickness	µm	300 ± 20	300 ± 20	300 ± 20

[1] Standard aperture of Ø 500 µm with TO-46 package is also available. Please contact us for further information.
[2] We also provide services for custom-designed apertures in various sizes and shapes or in array format. Please contact us for further information.

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SPECIFICATIONS (T_{AMB} = 23°C)

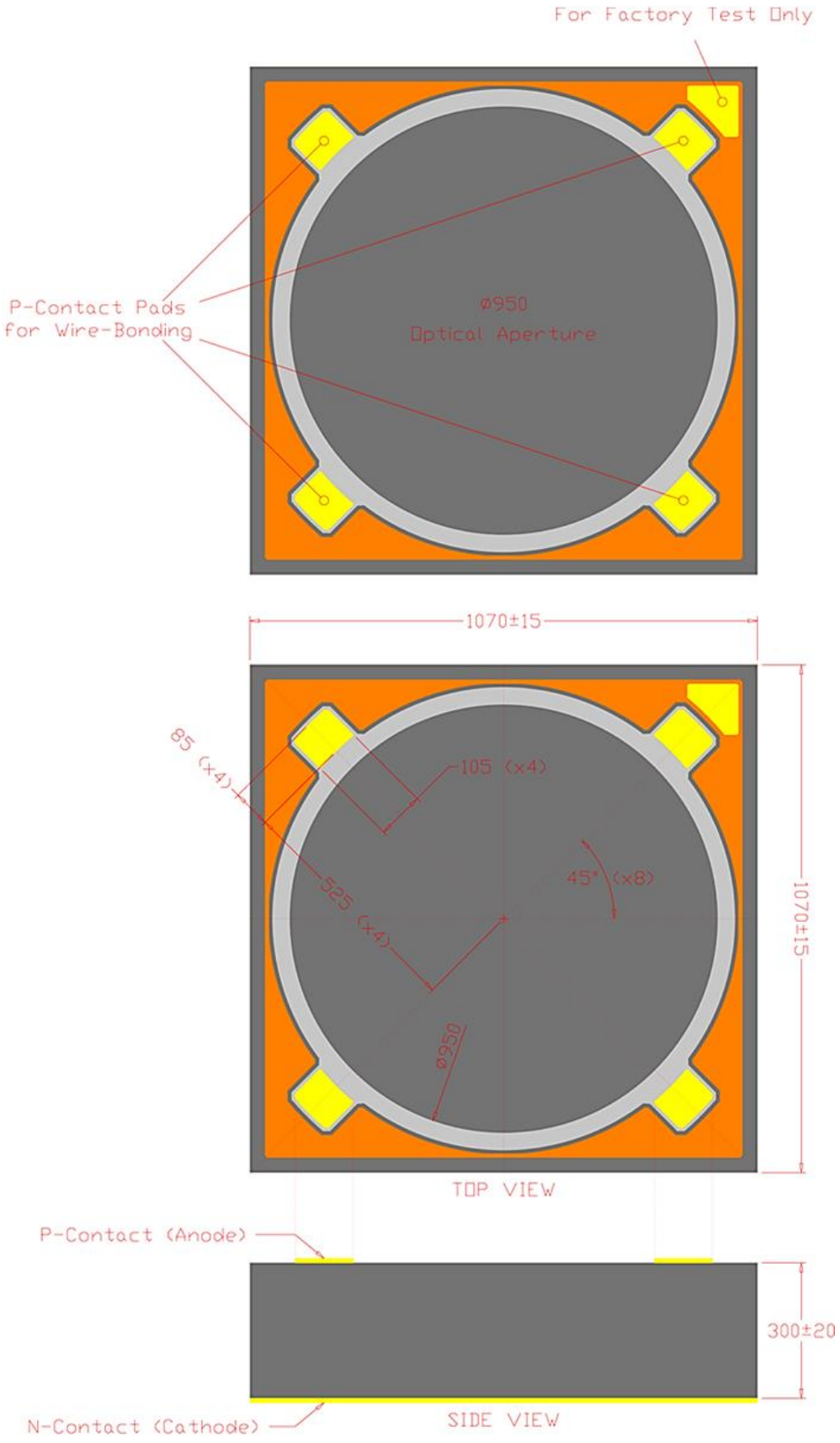
Model No.		PIN1000-17-D			PIN1000-17V-D			PIN2000-17-D			PIN2000-17V-D			PIN3000-17-D		
Spectral Range[1] (µm)		0.9 - 1.7			0.6 - 1.7			0.9 - 1.7			0.6 - 1.7			0.9 - 1.7		
Parameter	Unit	Min.	Typ.	Max	Min.	Typ.	Max	Min.	Typ.	Max	Min.	Typ.	Max	Min.	Typ.	Max
Dark Current @ -5 V	nA	---	2	5	---	2	5	---	10	20	---	10	20	---	15	30
Shunt Resistance @ -10 mV	MΩ	25	100	---	20	80	---	10	40	---	5	20	---	5	20	---
Capacitance @ 1 MHz																
@ 0 V	pF	---	120	150	---	120	150	---	360	500	---	360	500	---	900	1200
@ -5 V		---	60	75	---	60	75	---	200	250	---	200	250	---	500	600
3dB Bandwidth @ -5 V, 50 Ω	MHz	30	40	---	30	40	---	12	15	---	12	15	---	5	6	---
Responsivity @ 0 V																
@ 0.65 µm	A/W	---	---	---	0.20	0.30	---	---	---	---	0.20	0.30	---	---	---	---
@ 0.85 µm		0.10	0.20	---	0.35	0.45	---	0.10	0.20	---	0.35	0.45	---	0.10	0.20	---
@ 1.30 µm		0.85	0.95	---	0.80	0.90	---	0.85	0.95	---	0.80	0.90	---	0.85	0.95	---
@ 1.55 µm		0.95	1.00	---	0.90	0.95	---	0.95	1.00	---	0.90	0.95	---	0.95	1.00	---
Saturation Power[2] @ 1.55 µm, 0 V, -0.2 dB	mW	5.0	7.0	---	0.5	2	---	2.0	4.0	---	0.2	0.5	---	1.5	3.0	---
NEP @ 1.55 µm, 0 V, 1 KHz	10^{-14} W/√Hz	---	1.2	2.4	---	2.5	5.0	---	2.4	4.8	---	6.0	12.0	---	4.0	8.0

[1] 1.2 – 2.2 µm wavelength range is also available. Please contact us for further information.
[2] Measured at the aperture centre with an $1/e^2$ beam diameter of 250 µm.

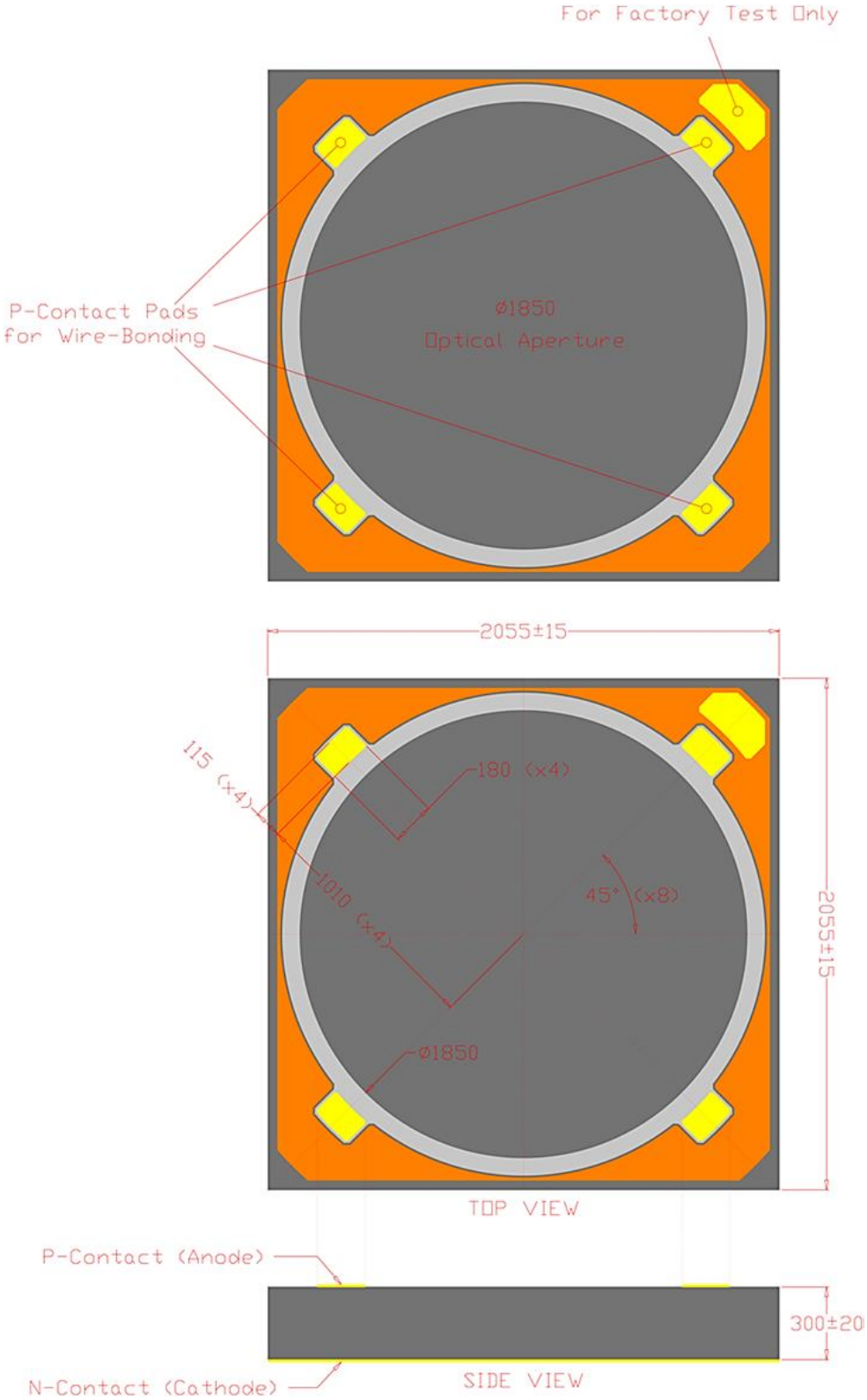
ABSOLUTE MAXIMUM RATINGS (T_{AMB} = 23°C)

Model No.		PIN1000-17-D		PIN1000-17V-D		PIN2000-17-D		PIN2000-17V-D		PIN3000-17-D	
PARAMETER	Unit	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Reverse Voltage	V	---	20	---	10	---	15	---	10	---	10
Reverse Current	mA	---	10	---	2	---	10	---	2	---	10
Forward Current	mA	---	10	---	5	---	10	---	5	---	10
Operation Temperature	°C	-40	+85	-40	+85	-40	+85	-40	+85	-40	+85
Storage Temperature	°C	-40	+85	-40	+85	-40	+85	-40	+85	-40	+85

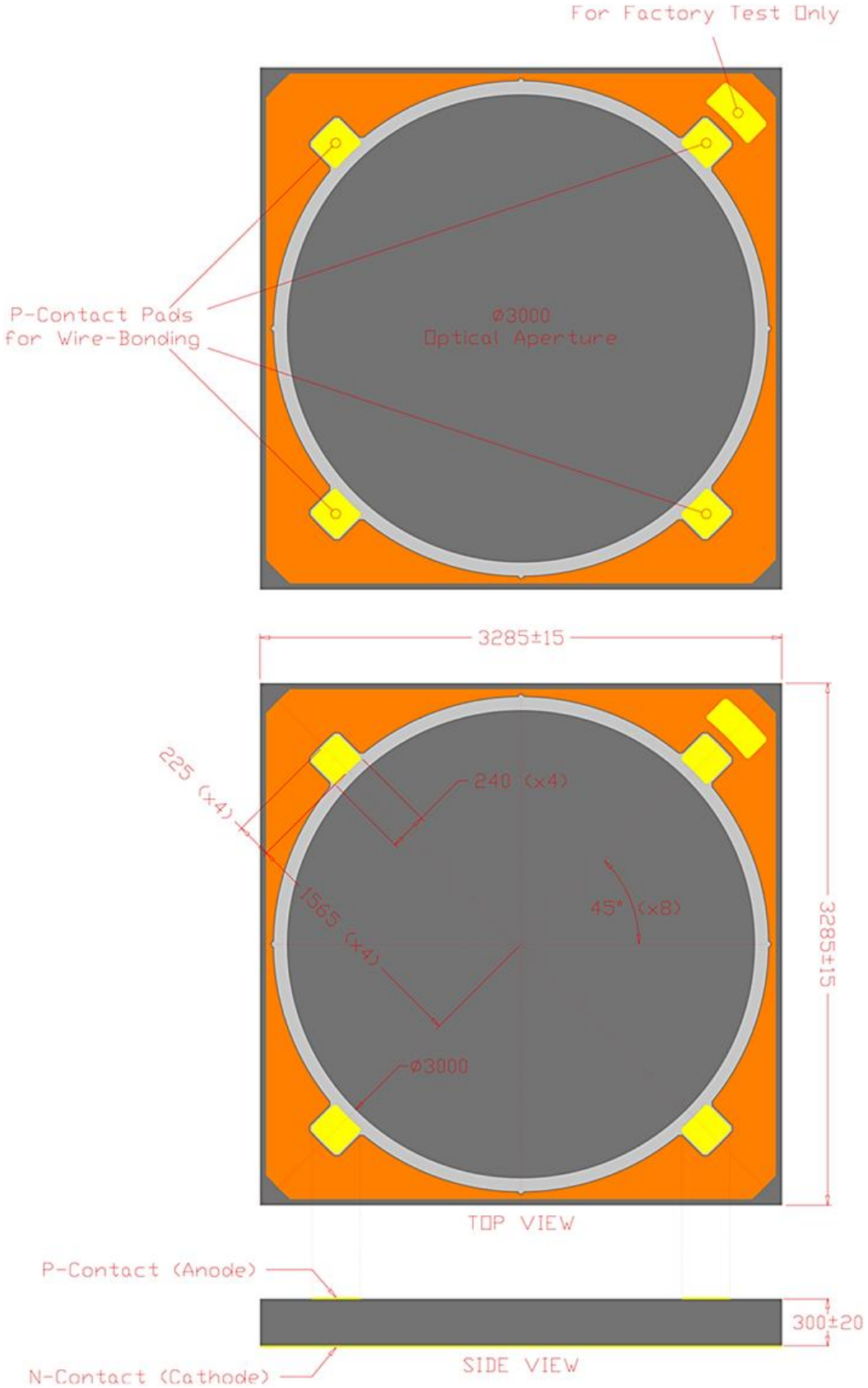
Chip Diagram of PIN1000-17-D (Unit: µm)



Chip Diagram of PIN2000-17-D (Unit: µm)

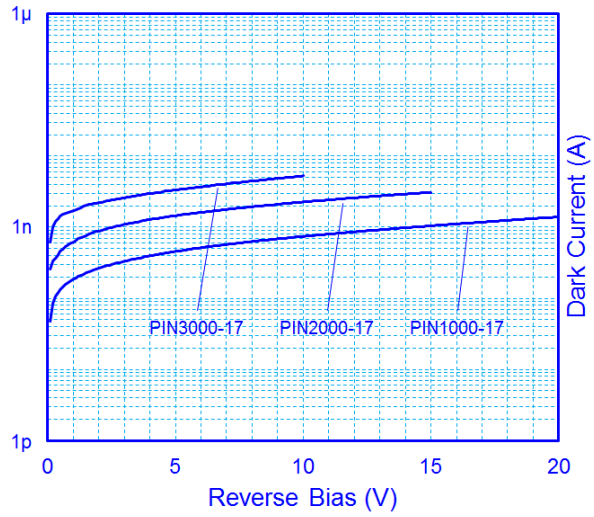


Chip Diagram of PIN3000-17-D (Unit: µm)

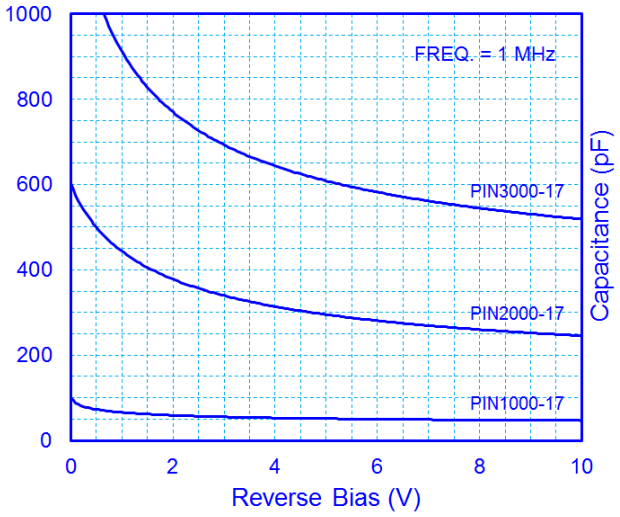


EXAMPLE CURVES (T_{AMB} = 23°C)

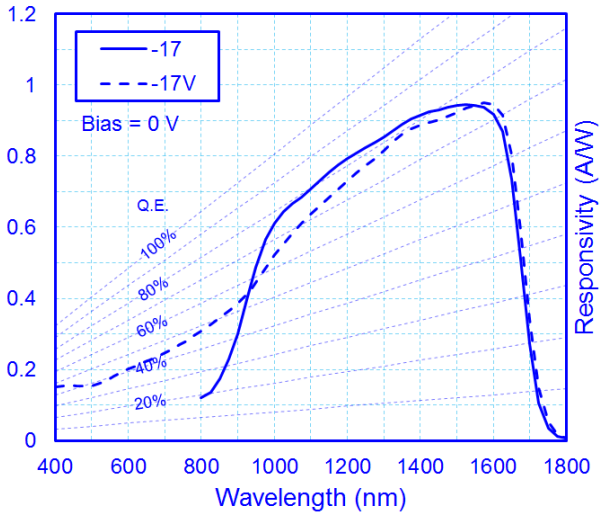
Dark Current



Dark Capacitance



QEFF Spectrum



Response Linearity