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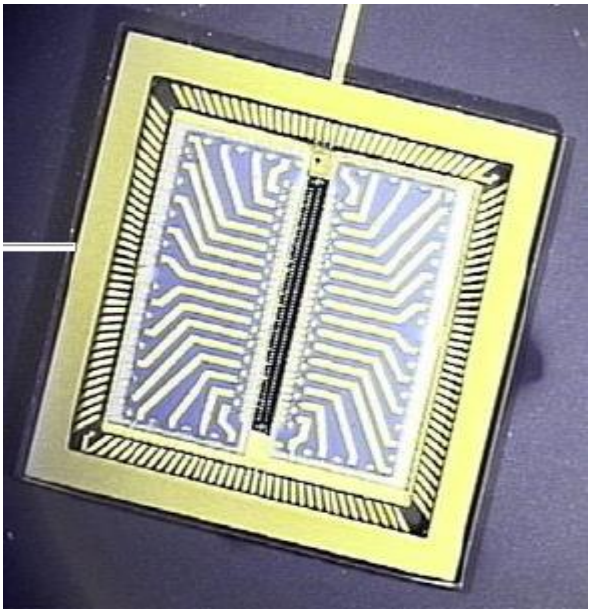
InGaAs APD Array 1 x 128 IGA128-APD



Description

The backside-illuminated operation of the IGA128-APD array provide both higher responsivity and lower capacitance than competing frontside-illuminated APD arrays. The IGA128-APD is custom engineered for reduced excess noise, which allows this APD array to achieve higher sensitivity, better signal-to-noise performance, and lower bit error rates than conventional APD arrays.

Features

* Low-capacitance high sensitivity back-side illuminated design
* 950-1700nm response
* Reduced excess noise design from conventional APDs
* Operation up to a multiplication gain of M=20
* Custom devices available upon request

Applications

* Laser range finder, Lidar
* High speed optical communications
* Laserscanner

Overall Dimensions

* Package 40mm x 40mm +,- 0,4mm Length and Width
  3,05mm Height, Pin Length 4,6mm, Pin- dia 1,27mm
* Pin-Pitch 2,54mm

PRELIMINARY DATA ONLY

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Electro-Optical Characteristics & Max. Ratings, @ +25°C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Active diameter	A			36*36		um/pixel
Gap/ Separation（center to center）				1.16		mm
Pitch		Element to element		44		um
Operating Gain	M		1	10	20	
Bandwidth				5.0		GHz
Reverse breakdown voltage	$V_{(BR)}$	I_R=100μA Ev=0lx, Id>0.1mA,T=294K	44	49	55	V
⊿Vbr/⊿T			30	34	39	mV/K
Junction Capacitance	C_J	M>3, V_R=V_{BR}*0.9, f=1M		35		fF
Photo sensitivity@M-=10	S_R	λ_p=1.55um, M=10	9.1	10.1	10.4	A/W
		λ_p=1.064um, M=10	6.6	7.3	7.8	
Spectral Application Range	λ_{range}		950	1000-1600	1750	nm
Spectral Response-Peak	λ_p			1064-1550		nm

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Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Excess Noise Factor		M=5		2.5		
		M=10		3.9		
		M=20		7.9		
Noise Spectral Density		M=10		0.37		PA/ √ Hz
Dark Current		M=10, T=298K	1	1.8	2	nA
Operation Voltage	V	0.9*$V_{(BR)}$				
Max. Instantaneous Input Power		10nS, 1064nm signal at a 20Hz PRF with M=10			125	um/pixel
Absolute Reverse Current		3mA				
Absolute Forward Current		5mA				
Operating temperature		-40~+80℃				
Storage temperature		-80~+125℃				

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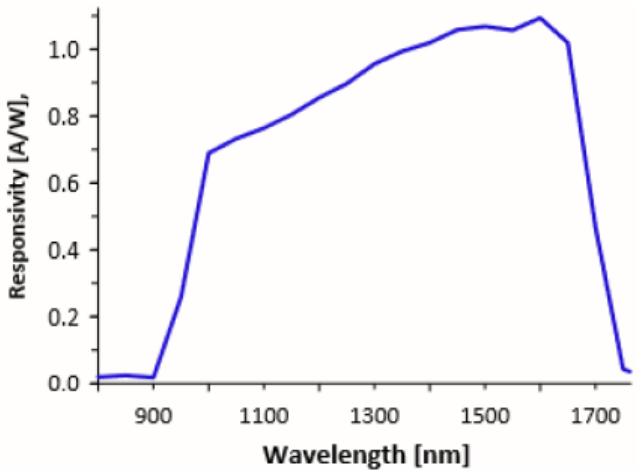
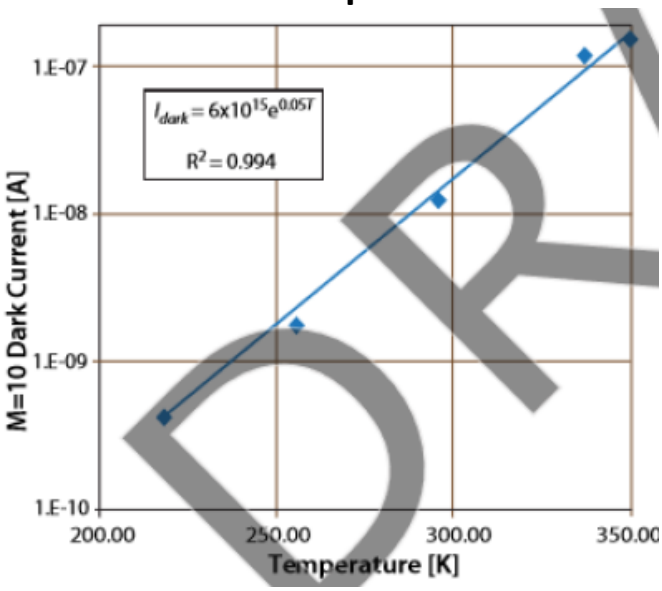
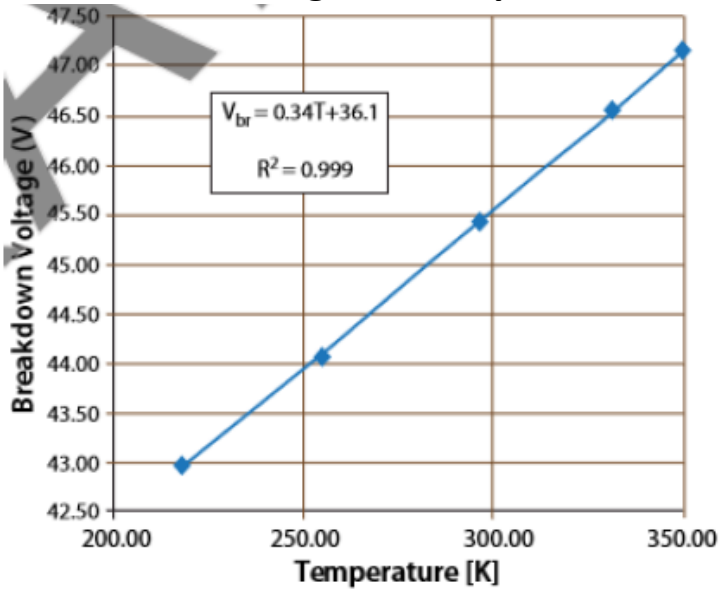
Spectral response @ M = 10 PRELIMINARY DATA ONLY



Dark Current vs. Temperature



Breakdown Voltage vs. Temperature



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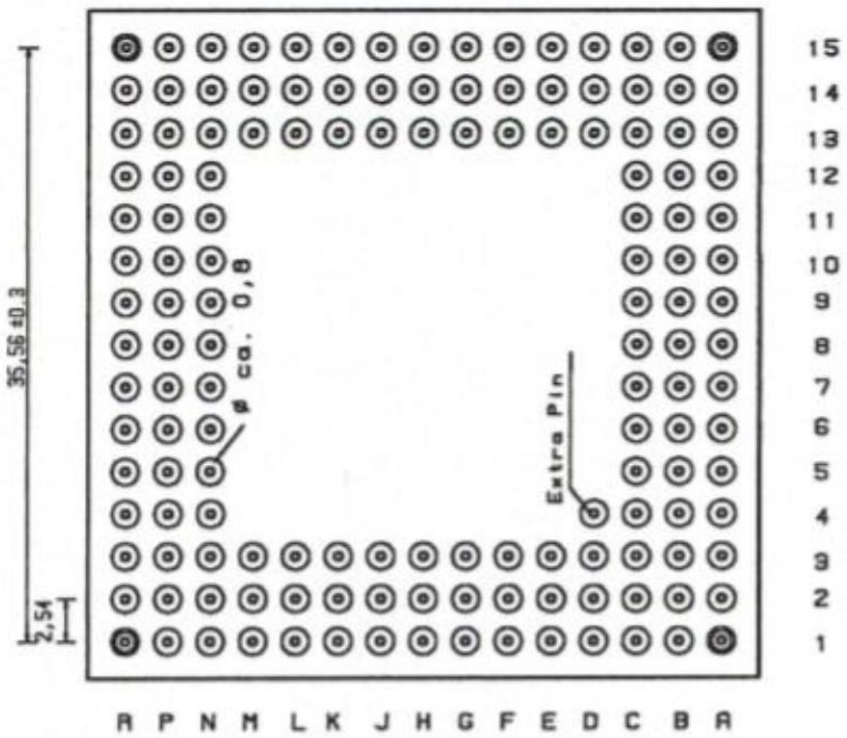
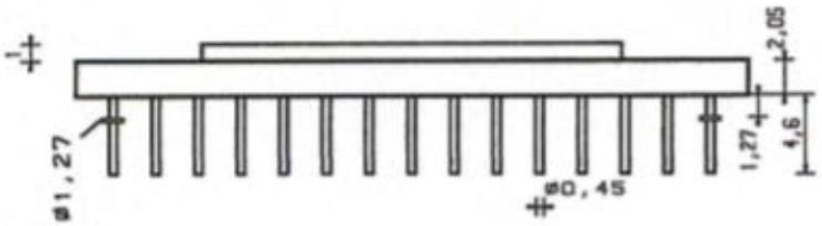
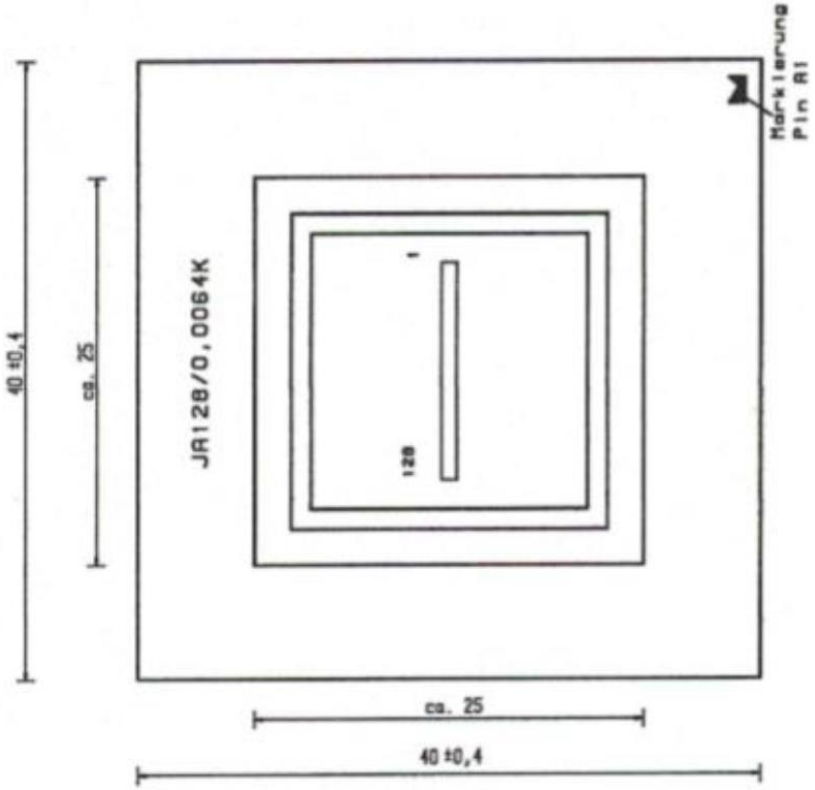
Package







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Pins

Assignment of PGA pins(JA 128/0,0064K) to linear InGaAs APD photodiode array (IGA128-APD)

Pixel NO.	pin NO
Z1	G1
Z2	J2
Z3	F1
Z4	K2
Z5	G3
Z6	K3
Z7	G2
Z8	L1
Z9	E1
Z10	L2
Z11	F2
Z12	M1
Z13	F3
Z14	N1
Z15	D1
Z16	M2
Z17	E2
Z18	L3
Z19	C1
Z20	N2
Z21	E3
Z22	P1
Z23	D2
Z24	M3
Z25	B1
Z26	N3

Pixel NO.	pin NO
Z27	C2
Z28	P2
Z29	D3
Z30	R1
Z31	A1
Z32	N4
Z33	B2
Z34	P3
Z35	C3
Z36	R2
Z37	C4
Z38	P4
Z39	A2
Z40	N5
Z41	B3
Z42	R3
Z43	C5
Z44	P5
Z45	B4
Z46	R4
Z47	A3
Z48	N6
Z49	A4
Z50	P6
Z51	B5
Z52	R5

Pixel NO.	pin NO
Z53	A5
Z54	P7
Z55	C6
Z56	N7
Z57	B6
Z58	R6
Z59	B7
Z60	R7
Z61	A6
Z62	P8
Z63	A7
Z64	R8
Z65	A8
Z66	R9
Z67	B8
Z68	R10
Z69	A9
Z70	P9
Z71	A10
Z72	P10
Z73	C9
Z74	N10
Z75	B9
Z76	R11
Z77	A11
Z78	P11

Pixel NO.	pin NO
Z79	B10
Z80	R12
Z81	C10
Z82	R13
Z83	A12
Z84	P12
Z85	B11
Z86	N11
Z87	A13
Z88	P13
Z89	C11
Z90	R14
Z91	B12
Z92	N12
Z93	A14
Z94	N13
Z95	B13
Z96	P14
Z97	C12
Z98	R15
Z99	A15
Z100	M13
Z101	B14
Z102	N14
Z103	C13
Z104	P15

Pixel NO.	pin NO
Z105	D13
Z106	M14
Z107	B15
Z108	L13
Z109	C14
Z110	N15
Z111	E13
Z112	L14
Z113	D14
Z114	M15
Z115	C15
Z116	K13
Z117	D15
Z118	K14
Z119	E14
Z120	L15
Z121	E15
Z122	J14
Z123	F13
Z124	J13
Z125	F14
Z126	K15
Z127	G14
Z128	J15
K	H3
K	J3

Pixel NO.	pin NO
K	J1
K	N8
K	N9
K	H13
K	G13
K	G15
K	C8
K	C7
X1	K1
X2	H14
X3	F15
X4	H2
S	H1
S	H15

additional pin(D4) connected with C4

Information in this technical datasheet is believed to be correct and reliable. However, no responsibility is assumed for possible inaccuracies or omission. Specifications are subject change without notice

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