



# FPA640x512\_P15-C (Badger-C)

## NEAR INFRARED (0.9 - 1.7 $\mu\text{m}$ ) 640x512 InGaAs Focal Plane Array

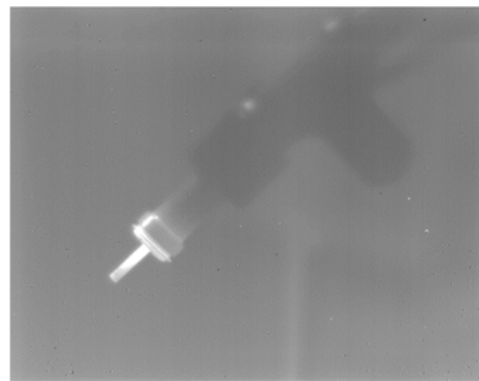
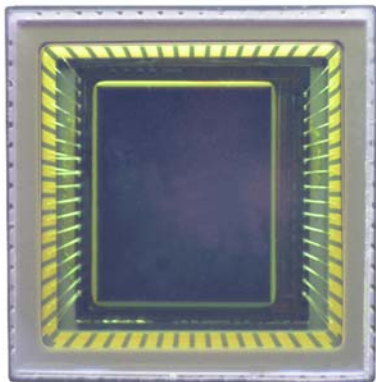
### FEATURES

- 640 x 512 Array Format
- 0.9  $\mu\text{m}$  - 1,7  $\mu\text{m}$  Spectral Range
- Light Weight 64CLCC Package
- Typical Pixel Operability > 99.9 %
- Quantum Efficiency > 70 %
- Room Temperature Operation
- Built-in Temperature Sensor
- Snapshot ITR<sup>1</sup>/IWR<sup>2</sup> and IMRO<sup>3</sup> Readout Modes
- 2, 4 or 8 Outputs with up to 18 MHz Pixel Rate
- Windowing Capability

### APPLICATIONS

- Near-infrared Imaging
- Covert Surveillance
- Semiconductor/Solar Panel Inspection
- Medical Science and Biology
- Fiberoptic Assembly and Testing
- See through Fog/Smoke
- Ice/Slush/Moisture Mapping
- Industrial Thermal Imaging
- Astronomy and scientific

<sup>1</sup>ITR: Integrate-Then-Read - <sup>2</sup>IWR : Integrate-While-Read - <sup>3</sup>IMRO : Integration with Multiple ReadOut



### GENERAL DESCRIPTIONS

PARAMETER	UNIT	VALUE
Sensor Technology	--	Planar InGaAs PIN
Spectral Range	$\mu\text{m}$	0.9 – 1.7
Actual Pixel Array	--	640 x 512
Effective Pixel Array	--	636 x 508
Pixel Pitch	$\mu\text{m}$	15
Image Size	mm	9.6 x 7.68
Package Type	--	64-pin Ceramic LCC
Package Size L x W x T	mm	18 x 18 x 2
Weight	g	1.7



## SPECIFICATIONS ( $T_{AMB} = 22^{\circ}\text{C}$ )

PARAMETER		UNIT	TYPICAL VALUE	COMMENTS
Dark Current <sup>1,2</sup>		fA (= 6250 e <sup>-</sup> /s)	≤ 30	Photopixel Biased @ -0.5 V Mean Value
Quantum Efficiency (QE <sub>EFF</sub> ) <sup>1,2</sup>		%	≥ 70	λ = 1.0 μm - 1.6 μm
Response Nonuniformity <sup>1,2</sup>		%	≤ 5	At 50 % Full Well
Response Nonlinearity <sup>1,2</sup>		%	≤ 2	15 % - 85 % Well Occupation Range
Charge Capacity <sup>2,3</sup>	@ High Gain, 46.2 μV/e <sup>-</sup>	Me <sup>-</sup>	0.041	ROIC Specifications
	@ Mid Gain, 16.2 μV/e <sup>-</sup>		0.118	
	@ Low Gain, 1.39 μV/e <sup>-</sup>		1.380	
Readout Noise Floor <sup>3</sup>		e <sup>-</sup>	≤ 35	In High Gain Mode, ROIC Specifications
Noise-Equivalent Irradiance (NEI)		ph# / cm <sup>2</sup> s	≤ 2.1 x 10 <sup>10</sup>	High Gain, Integration Time = 3.33 ms, λ = 1.55 μm
Mean Detectivity		cm√Hz / W	≥ 3.0 x 10 <sup>12</sup>	
Output Swing		V	2.3	
Minimum Integration Period <sup>2</sup>		μs	< 1	
Pixel Operability <sup>1,4</sup>		%	≥ 99.9	Percentage of Pixels with QE <sub>EFF</sub> Deviation within ±20% (QE <sub>EFF</sub> Mean)

1. These items are defined for central effective pixel array (636x508). Their values correspond to default operation conditions.
2. Contact us for further information.
3. These values are ROIC-version dependent.
4. FPA with pixel operability lower than 99.9% (< 99.9%) is categorized as a test-grade device, which, if available in stock, can be provided on request

## ABSOLUTE MAXIMUM RATINGS

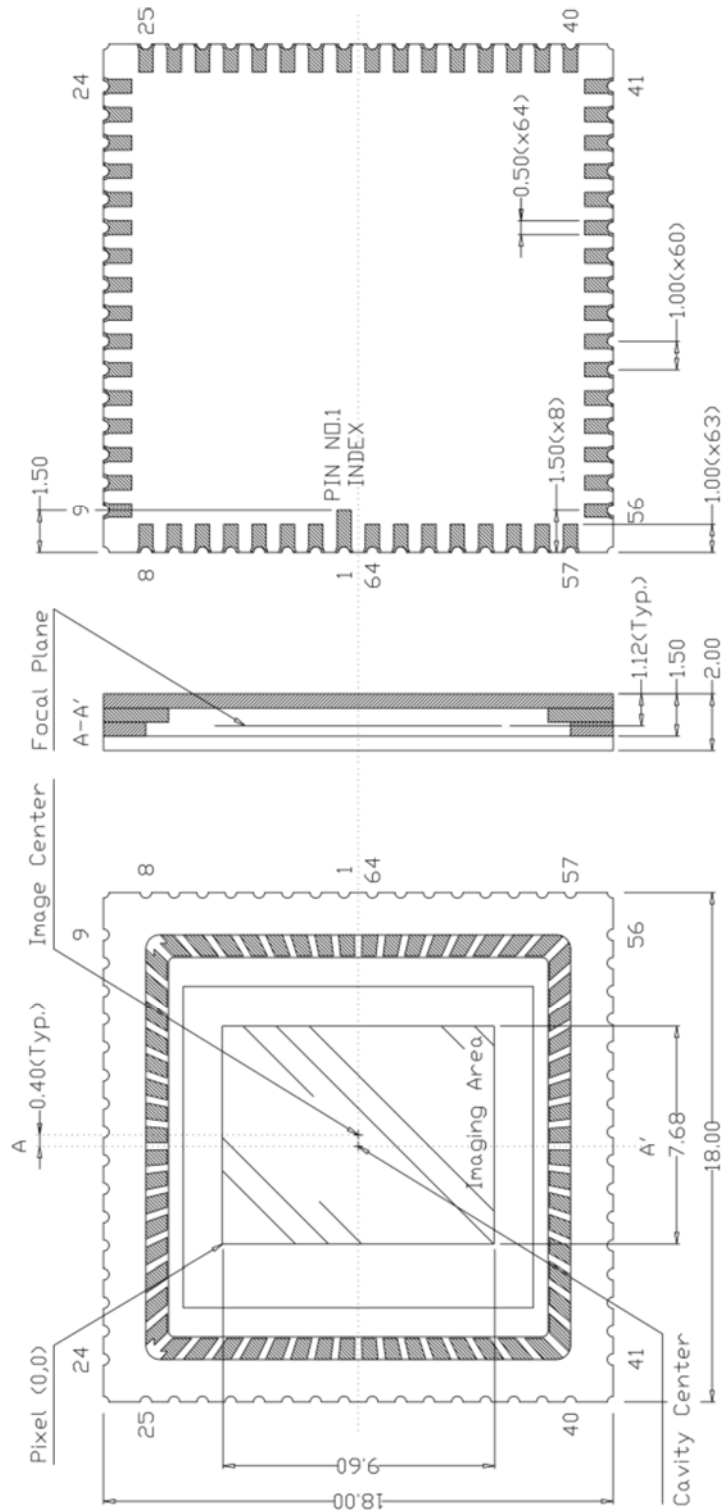
PARAMETER	UNIT	MIN.	MAX.
Operation Temperature <sup>5</sup>	°C	-40	+71
Storage Temperature <sup>5</sup>	°C	-40	+80
Power Consumption	mW	--	200

5. In non-condensing environment.



## PACKAGE OUTLINE

64 Ceramic LCC. The FPA Serial Number is printed on the bottom of the LCC.  
(Unit: mm)

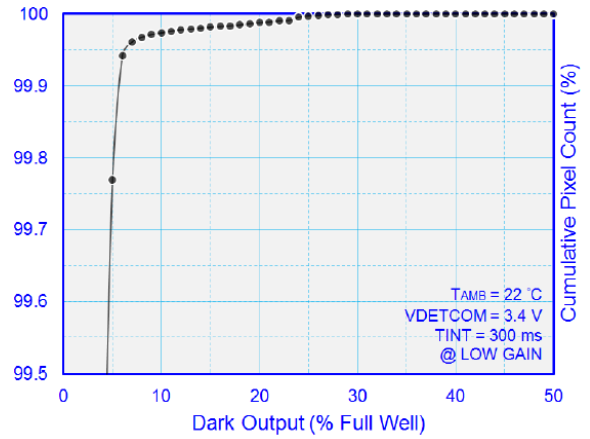
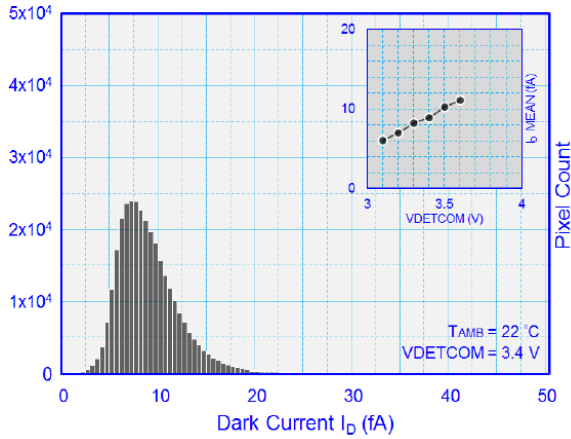


Note: ANDANTA can provide lidless versions per customer requests. Lidless FPAs can reap the benefits from less window interference and the adoption of proximate optical filter(s).

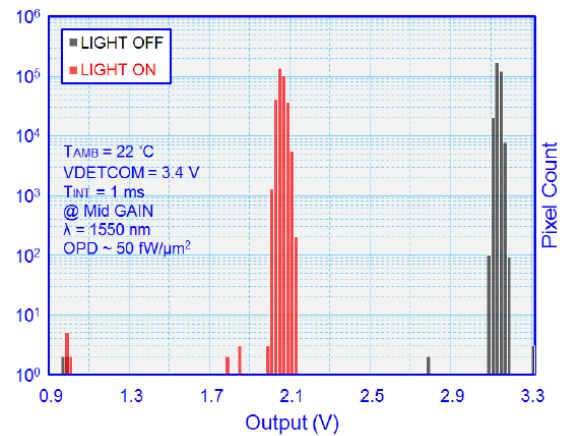
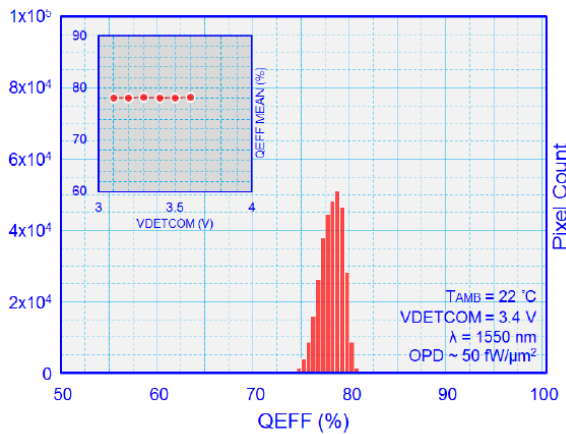


## EXAMPLE CURVES

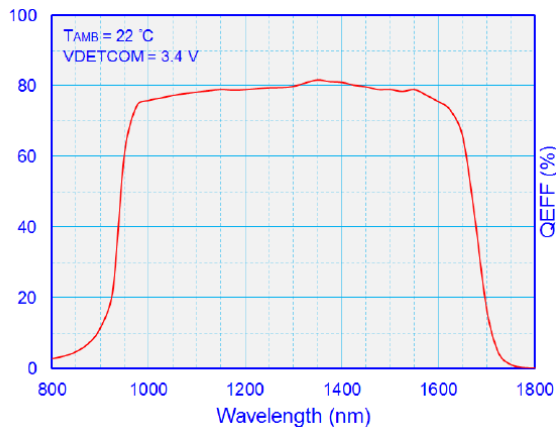
### Histograms of Dark Condition



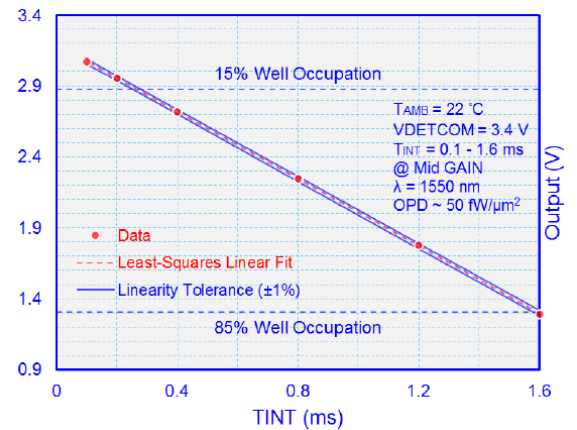
### Histograms of Illuminated Condition



### QEFF Spectrum



### QEFF Linearity



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