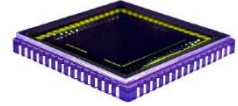




Near Infrared 0.9-1.7um 640x512 InGaAs Focal Plane Array

FPA15C640A



Overview

The Lasermate Imaging Sensors FPA15C640A is a 640x512 pixel focal plane array (FPA) with 15um pixel pitch covering the near infrared (NIR) region with selectable number of outputs (2, 4 or 8) and windowing capability which may be read out at up to 18MHz pixel rate.

Features

- 640x512 pixel array format with 15um pixel pitch
- 0.9um-1.7um spectral range
- Lightweight 64CLCC package
- Typical pixel operability >99.9%
- Quantum efficiency >70%
- Room temperature operation
- Built-in temperature sensor
- Snapshot ITR/IWR and IMRO readout modes
- 2, 4 or 8 outputs with up to 18MHz pixel rate
- Windowing capability

Applications

- Near Infrared imaging
- Covert surveillance
- Semiconductor/Solar panel inspection
- Medical science and biology
- Fiber optic assembly and testing
- See through fog/smoke
- Ice/slush/moisture mapping
- Industrial thermal imaging
- Astronomy and scientific

General Description

Parameters	Value
Sensor technology	Planar InGaAs PIN
Spectral range	0.9-1.7um
Actual pixel array	640x512
Effective pixel array	636x508
Pixel pitch	15um
Image size	9.6mmx7.68mm
Package type	64-pin Ceramic LCC
Package size (LxWxT)	18mmx18mmx2mm
Weight	1.7g

Absolute Maximum Ratings

Parameters	Min.	Max.	Unit
Operating temperature ⁽¹⁾	-40	+71	°C
Storage temperature ⁽¹⁾	-40	+80	°C
Power consumption	-	200	mW

⁽¹⁾ In non-condensing environment.

Specifications (T_{AMB}=22°C)

Parameters	Typ.	Unit	Conditions
Dark current ⁽²⁾	≤30	fA (=6250 e ⁻ /s)	Photopixel biased @ -0.5V Mean value
Quantum Efficiency * Fill Factor (QE_{EFF}) ⁽²⁾	≥70	%	λ=1.0um-1.6um
Response nonuniformity ⁽²⁾	≤5	%	At 50% full well
Response nonlinearity ⁽²⁾	≤2	%	15%-85% well occupation range
Charge capacity ⁽³⁾	@ High Gain, 46.2uV/e ⁻	0.041	Me ⁻ ROIC specifications
	@ Mid Gain, 16.2uV/e ⁻	0.118	
	@ Low Gain, 1.39uV/e ⁻	1.380	
Readout noise floor ⁽³⁾	<35	e ⁻	In High gain mode
Noise-Equivalent Irradiance (NEI) ⁽²⁾	≤2.1x10 ¹⁰	ph#/cm ² -s	In High Gain Mode
Mean detectivity ⁽²⁾	≤3.0x10 ¹²	cm-VHz/W	Integration Time = 3.33ms, λ=1.55um
Output swing	2.25	V	
Minimum integration period ⁽²⁾	<1	us	
Pixel operability ^{(2) (4)}	≥99.9	%	Percentage of pixels with QE _{EFF} deviation with +/-20%*(QE _{EFF} Mean)

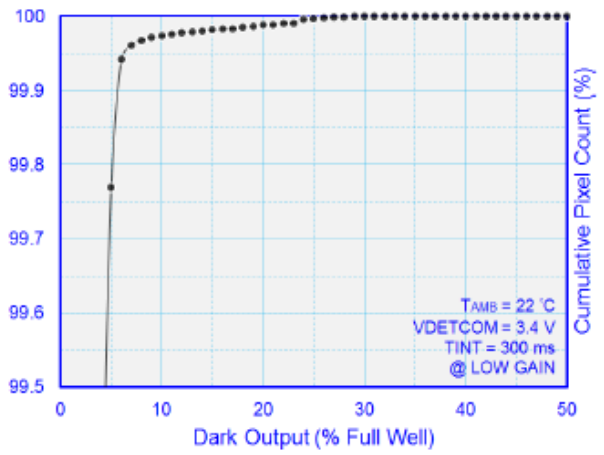
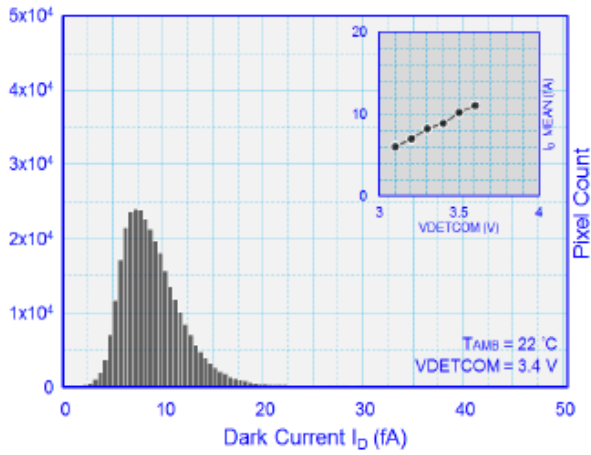
² These items are defined for central effective pixel array (636x508). Their values correspond to default operation conditions.

³ These values are ROIC-version dependent.

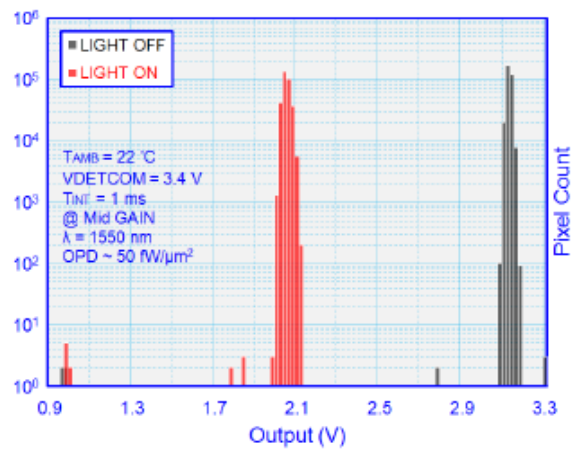
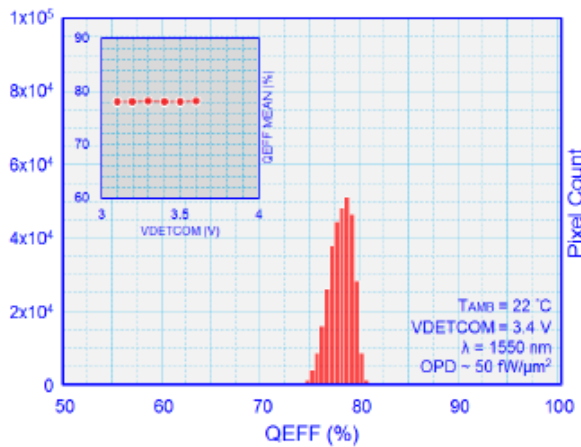
⁴ FPA with pixel operability lower than 99.9% (<99.9% is categorized as a test-grade device, which, if available in stock, can be provided on request.

Typical Characteristics

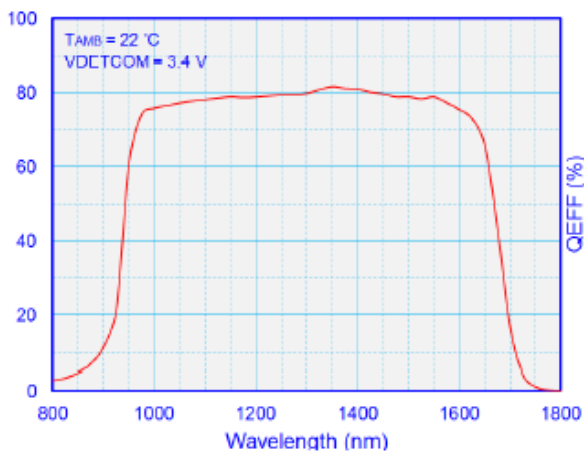
Histograms of Dark Condition



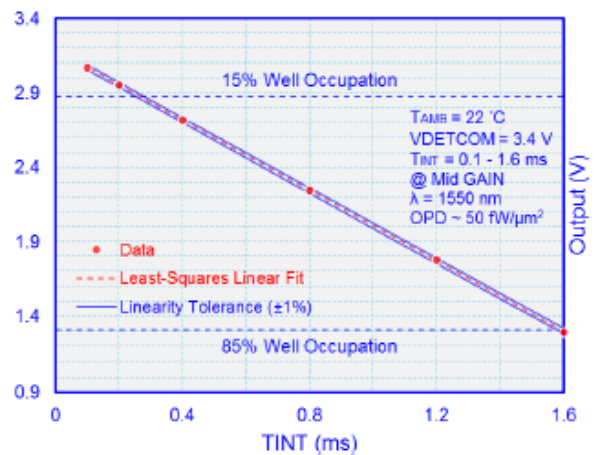
Histograms of Illuminated Condition



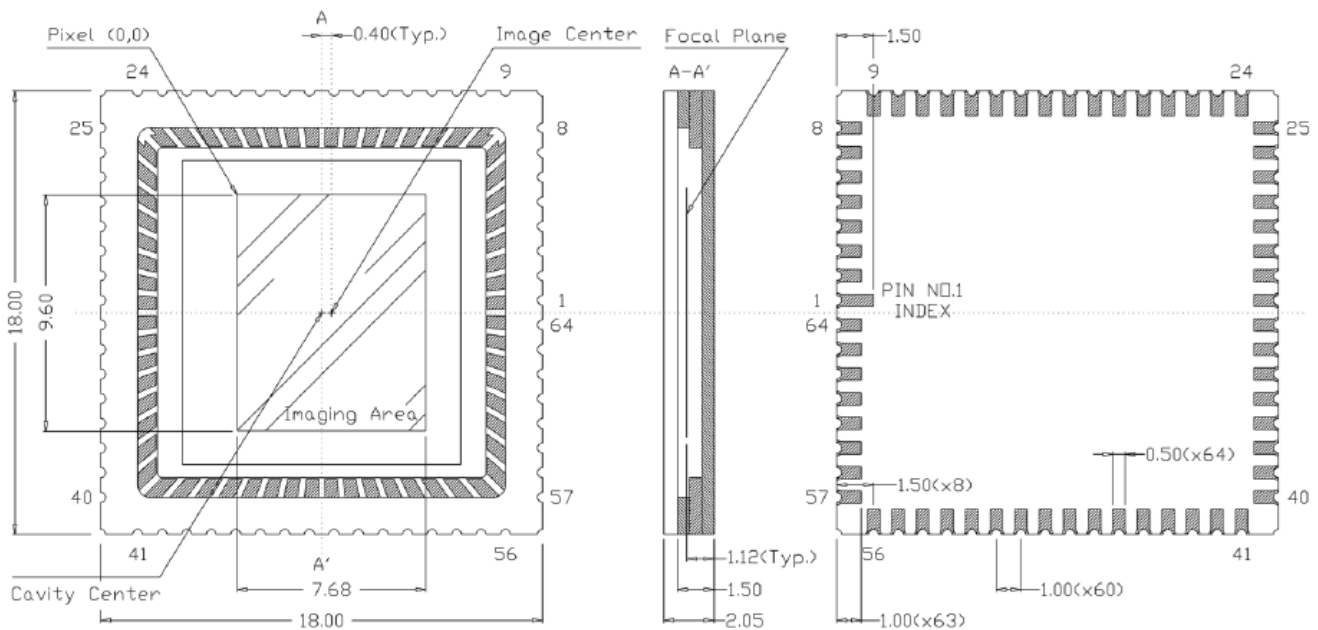
QEFF Spectrum



Output Linearity



Package Outline Dimensions (unit: mm)



Note: Specifications are subject to change without notice.



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