



Near-Infrared (0.9 -1.7 μm) 640x512 InGaAs Focal Plane Array

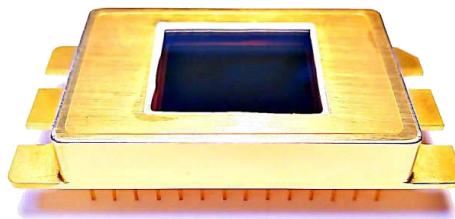
FPA-640x512-TE1-50mm: with 1-Stage Thermoelectric Cooler
FPA-640x512-TE2-50mm: with 2-Stage Thermoelectric Cooler

FEATURES

- 640x512 Array Format
- 0.9 μm - 1.7 μm Spectral Range
- 28-pin Metal DIP Package
- Embedded Thermoelectric Cooler
- Typical Pixel Operability > 99.5 %
- Quantum Efficiency > 70 %

APPLICATIONS

- Near-Infrared Imaging
- Imaging Spectroscopy
- Covert Surveillance
- Semiconductor/Solar Panel Inspection
- Medical Science and Biology
- Fiberoptic Telecommunication
- Astronomy and Scientific
- Ice/Slush/Moisture Mapping
- Industrial Thermal Imaging



GENERAL DESCRIPTIONS

PARAMETER	UNIT	VALUE	
Sensor Technology	--	Planar InGaAs PIN	
Spectral Range	μm	0.9 - 1.7	
Actual Pixel Array	--	640 x 512	
Effective Pixel Array	--	636 x 508	
Pixel Pitch	μm	25	
Image Size	mm	16 x 12.8	
Package Type	--	28-pin Metal DIP Package	
Package Size L x W x T	mm	FPA-640x512-TE1-50mm	50.0 x 25.4 x 6.1 (without pins)
		FPA-640x512-TE2-50mm	50.0 x 25.4 x 7.1 (without pins)
Weight	g	23.0 (± 1.0)	



SPECIFICATIONS (T_a = 25°C)

PARAMETER		UNIT	TYPICAL VALUE	COMMENTS
Dark Current		pA	≤ 0.2	Pixel Bias = -0.1 V
Quantum Efficiency * Fill Factor (QE _{EFF})		%	≥ 70	λ = 1.0 μm – 1.6 μm
Detectivity		Jones cm ² √Hz/W	≥ 7.5 × 10 ¹²	Tint = 16 ms, High Gain, λ = 1.55 μm
Response Nonuniformity		%	≤ 10	At 50 % Full Well
Response Nonlinearity (Max. Deviation)		%	≤ 2	15 % - 85 % Well Occupation Range
Max. Pixel Rate		MHz	10	
Output Gain	High Gain (HG)	μV/e ⁻	23.6 ¹	
	Low Gain (LG)		1.26	
Charge Capacity	@ HG	Me ⁻	0.118 ¹	
	@ LG		1.9	
Pixel Operability ²		%	≥ 99	Dark Current ≤ 20 % Full Well Response Nonuniformity ≤ 20 %
Operating Temperature	FPA-640x512- TE1-50mm	°C	-10	T _{Heatsink} = 20 °C
	FPA-640x512- TE2-50mm		-25	

1 Output gain and charge capacity under high gain mode may vary from lot to lot.

2 Pixel operability is defined within the centre 636x508 regions.

ABSOLUTE MAXIMUM RATINGS (T_a = 25°C)

PARAMETER		UNIT	MIN	MAX
Operating Temperature	FPA-640x512-TE1-50mm	°C	-20	+85
	FPA-640x512-TE2-50mm		-40	
Storage Temperature		°C	-40	+85
Power Consumption		mW	---	325 ³

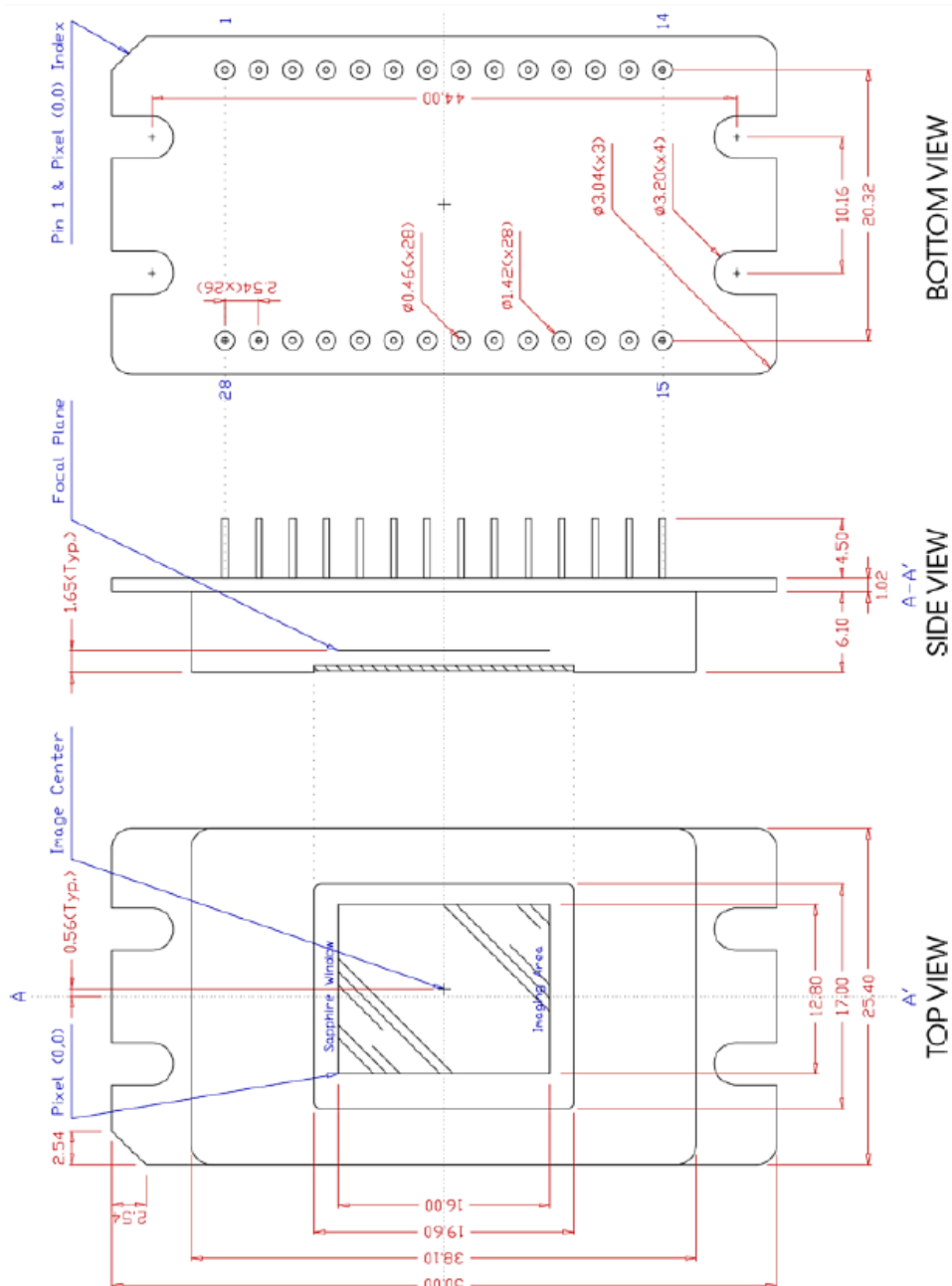
3 without turning on the coder.



PACKAGE OUTLINE (Unit: mm)

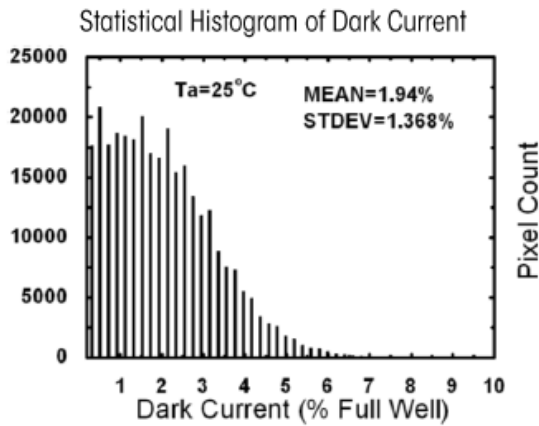
FPA-640x512-TE₂-50mm

PIN DEFINITION			
1	NC	28	VND
2	VNEGOUT	27	VPD
3	TEC+	26	TEC-
4	OUTA	25	RESET_B
5	OUTB	24	CLK
6	OUTC	23	LSYNC
7	OUTD	22	FSYNC
8	OUTR	21	DATA
9	VPOSOUT	20	FIELD
10	VOS	19	TEMP
11	VOUTREF	18	VPOS_CORE
12	VREF	17	VDETCOM1
13	VNEG	16	VNEG_CORE
14	VPOS	15	NC

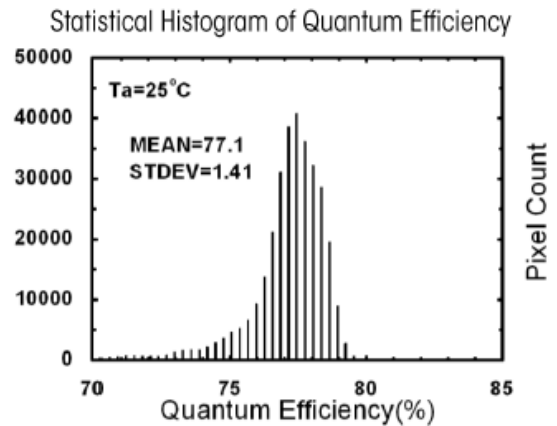




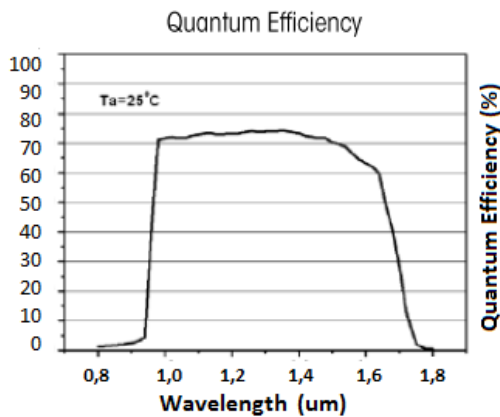
EXAMPLE CURVES



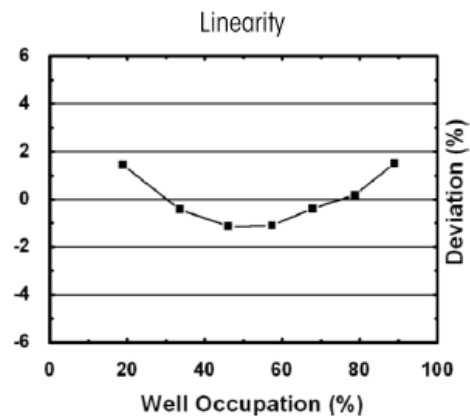
Test Conditions:	
Illumination	Dark
Wavelength	---
Gain	LG
Integration Time	16 ms
Remark	Effective Screen



Test Conditions:	
Illumination	Nonuniformity $\leq \pm 0.15\%$
Wavelength	1310 nm
Gain	LG
Integration Time	5 ms, 50% Full Well
Remark	Effective Screen



Test Conditions:	
Illumination	Nonuniformity $\leq \pm 0.15\%$
Wavelength	Broadband
Gain	LG
Integration Time	5 ms, 50% saturation
Remark	Effective Screen Array Average



Test Conditions:	
Illumination	Nonuniformity $\leq \pm 0.15\%$
Wavelength	1310 nm
Gain	LG
Integration Time	---
Remark	Effective Screen Array Average

Please do additionally consult the Standard FPA640x512 respectively FPA640x512-TE₂ data sheet concerning Bias Input, Digital Pattern Input, Video Output, Advanced Function, TEC-data, Cooler performance and Outx-Waveforms.

Copyright © 2017 ANDANTA GmbH. The information in this document is subject to change without notice. All rights reserved.