FPA640x512_P15-TE1 InGaAs Imager

NEAR INFRARED (0.9 µm - 1.7 µm) IMAGE SENSOR

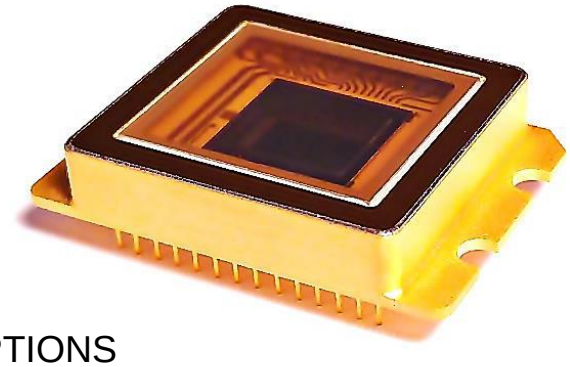
FEATURES

- 640 x 512 Array Format
- 0.9 µm - 1,7 µm Spectral Range
- 28-pin Metal SDIP Package
- Embedded Thermoelectric Cooler
- Typical Pixel Operability > 99.5 %
- Quantum Efficiency > 65 %
- Built-in Temperature Sensor
- Snapshot ITR[1]/IWR[2] and IMRO[3] 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 Telecommunication
- See through Fog/Smoke
- Ice/Slush/Moisture Mapping
- Industrial Thermal Imaging
- Astronomy and scientific

[1]ITR: Integrate-Then-Read - [2]IWR : Integrate-While-Read - [3]IMRO : Integration with Multiple ReadOut



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	15
Image Size	mm	9.6 x 7.68
Package Type	--	28-pin Metal SDIP Package
Embedded Cooler	--	1-Stage TEC
Package Size L x W x T	mm	36.1 x 25.4 x 6.3 (without pins)
Weight	g	17.0 (±1.0)

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SPECIFICATIONS (T_a = 20°C)

PARAMETER		UNIT	TYPICAL VALUE	COMMENTS
Dark Current[1.2]		fA	≤ 50	VDETCOM = 3.6 V, ITS[3] = 20°C
Quantum Efficiency (QEFF) [1.2]		%	≥ 65	λ = 1.0 µm - 1.6 µm
Response Nonuniformity[1.2]		%	≤ 10	At 50 % Full Well
Response Nonlinearity[1.2]		%	≤ ±0.25	15 % - 85 % Well Occupation Range
Output Gain	High Gain (HG)	µV / e^-	99.9	ROIC Design Value
	Mid Gain (MG)		20.0	
	Low Gain (LG)		1.33	
Charge Capacity	@ HG	Me^-	0.019	ROIC Design Value
	@ MG		0.096	
	@ LG		1.44	
Readout Noise	@ HG	e^-	< 30	ROIC Design Value (Without Photodiode)
	@ MG		< 55	
	@ LG		< 500	
Output Swing		V	2.3	
Minimum Integration Period[2]		µs	< 1	
Pixel Operability[1.2]		%	≥ 99.5	Percentage of Pixels with QEFF Deviation within ±20%*(QEFF Mean)
Operation Temperature[3]		°C	-10	$T_{Heatsink}$[4] = 20°C

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. Readings from integrated temperature sensor (ITS).
4. Adequate heatsink and thermal interface material are the prerequisites for stable operation.

ABSOLUTE MAXIMUM RATINGS (T_a = 20°C)

PARAMETER	UNIT	MIN.	MAX.
Operation Temperature[1,2]	°C	-20	+85
Storage Temperature[2]	°C	-40	+85
Power Consumption[3]	mW	--	200

1. Adequate heatsink and thermal interface material are the prerequisites for stable operation.
2. Non-condensing environment.
3. Without turning on the cooler

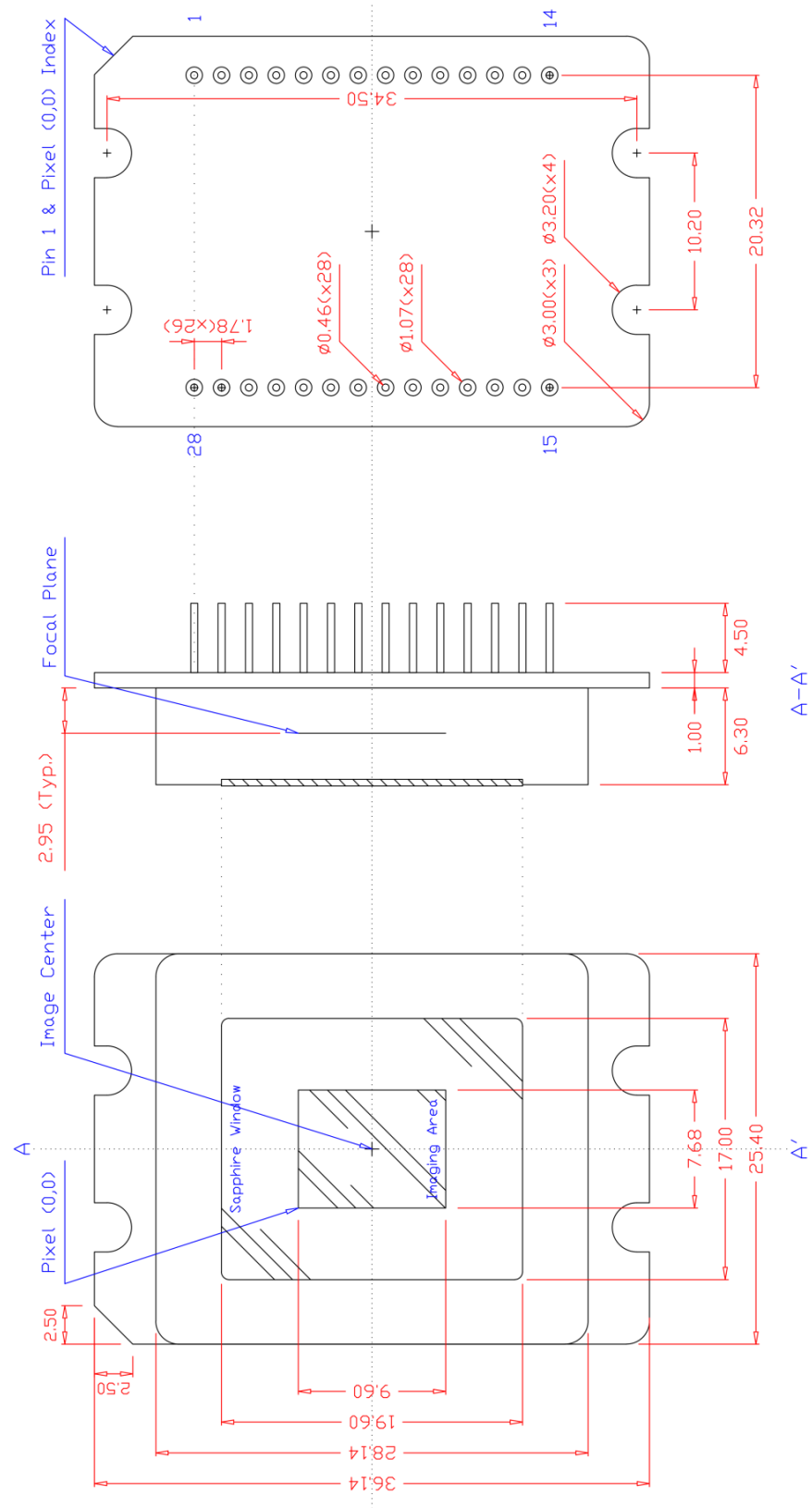
PACKAGE OUTLINE (Unit: mm)

28-pin Metal SDIP Package. The Serial Number is printed on the flank of the package.

BOTTOM VIEW

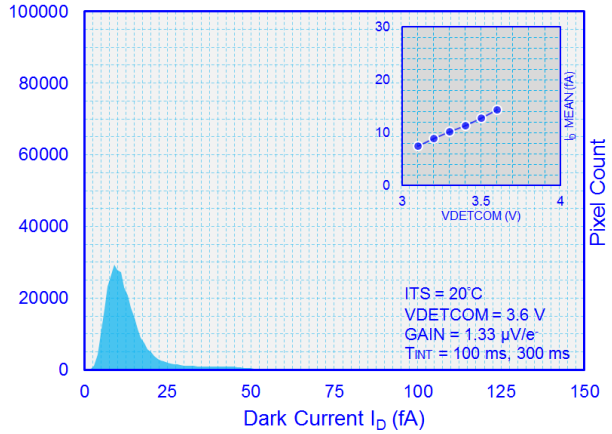
SIDE VIEW

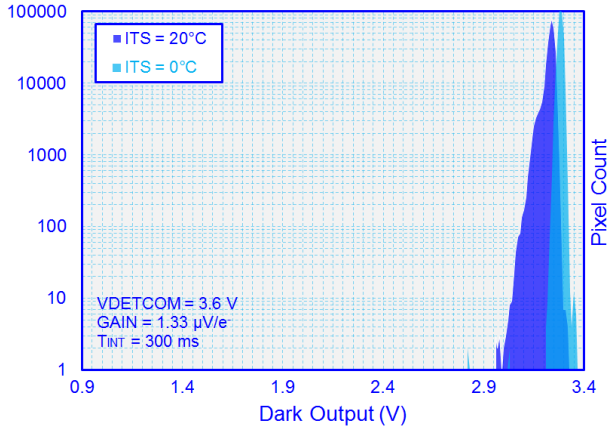
TOP VIEW



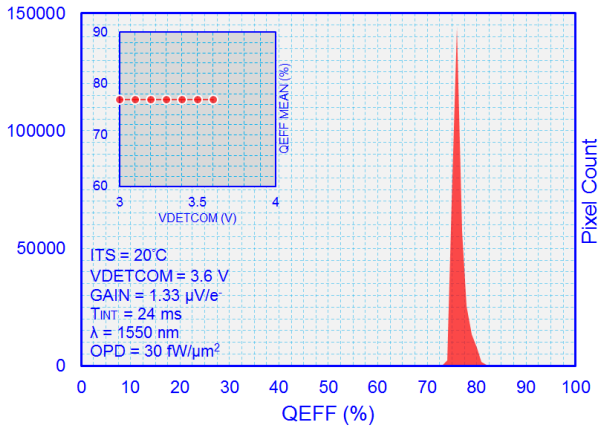
EXAMPLE CURVES

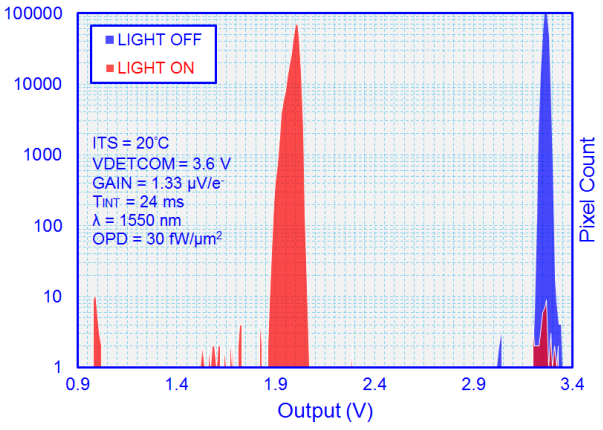
Histograms of Dark Condition



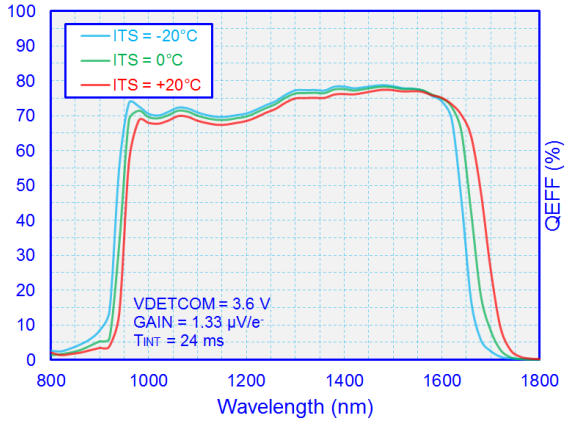


Histograms of Illumination Condition





QEFF Spectrum



Output Linearity