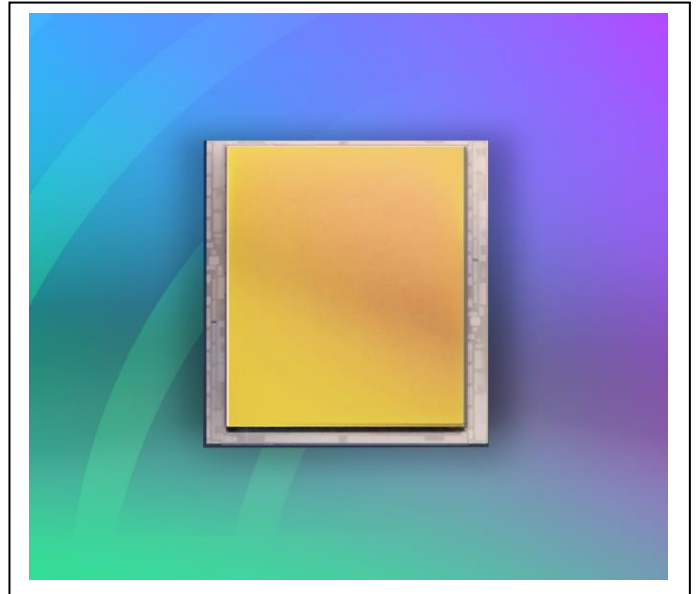


## PIRT1280A1-12

**InGaAs 1280x1024x12 $\mu$ m  
Focal Plane Array**

**Model # PIRT1280A1-InGaAs-1.7-01**

***The Princeton Infrared Technologies, Inc.  
PIRT1280A1 series is the highest frame  
rate Mpixel SWIR imager available  
anywhere!***



This lattice matched InGaAs 2D focal plane array (FPA) allows for high resolution SWIR imaging at high frame rates

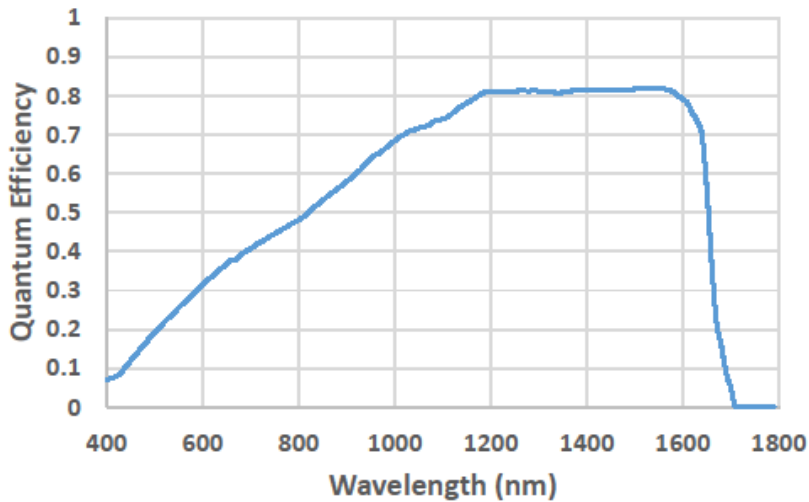
>90fps. This small pitch array, 12 $\mu$ m, combined with the high quantum efficiency of the lattice matched InGaAs detector arrays enables impressive imaging in the SWIR and visible bands. Princeton Infrared Technologies, Inc. offers this low power array by itself on a ceramic submount or with a custom packaging. It is also incorporated in a set of camera electronics for a complete solution in our 1280SciCam.

This advance digital array offers 14 bit digital output with low read noise of <45e-. This combined with the low dark current InGaAs will enable high sensitivity imaging. The all-digital design enables simple integration to camera electronics. Lattice matched InGaAs provides high quantum efficiency response in the shortwave infrared as well as in the visible with response from 0.4 $\mu$ m to 1.7 $\mu$ m. Excellent in high speed machine vision applications as well as long range surveillance where the small pitch is advantageous.

### Features

- **1280x1024 resolution**
- **Small 12 $\mu$ m pitch**
- **Snapshot exposure**
- **No image lag**
- **Low Power <150mW**
- **High frame rate  
>95fps at 1280x1024**
- **Response from 0.4-1.7 $\mu$ m**
- **QE>75% from 1-1.6 $\mu$ m**
- **14 bit A/D on chip**
- **Low Read Noise <45e-**
- **Integration times from 50us to  
>3 minutes**
- **High Dynamic Range >3000:1**

### Quantum Efficiency Curve at 25C



Parameter	Unit	Min	Typical	Max	Comments
Resolution	Resolution		1280x1024		
Pixel Pitch	um		12		
Full Well	e-	35k	50k	65k	
Frame Rate 1280x1024 512x512	Frames/second		95 387		
Data output	Bits	14			Medium Camera Link
Quantum efficiency	Electron/photon		0.75		Using 1.5um light See full QE chart below
Fill Factor	%	99	100		
Responsivity	um	0.4		1.68	At 25C
Integration time At 25C At 0C At -50C	s	5e-6 5e-6 5e-6		0.080 1.010 143.0	Max integration time for half the full well at max dark signal at the given temperature
Dark Signal Rate	ke-/s		180	250 0.160	At 25C At -50C
Read Noise	e-/scan <sup>1/2</sup>		40	45	At 25C
D*	cm-√Hz/W		1.3x10 <sup>13</sup>		At 0C, with 1.5um light at 16ms integration time
Inoperable Pixels	%			0.5	At 25C
Non-Linearity	%			+/-1	Across 98% of dynamic range
Power	mW			<150	At -50C with water cooling

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