

2 Specifications

2.1 Pixel characteristics

Table 1: Pixel characteristics

Parameter	Specification	Remarks
Pixel architecture	4-transistor active pixel sensor	Allows for both rolling and synchronous shutter.
Pixel size	6.7 μm x 6.7 μm	The resolution and pixel size results in a 2/3" optical format.
Resolution	1280 x 1024	
Pixel rate	40 MHz	Using a 40 MHz system clock.
Shutter types	- Rolling - Snapshot	- Continuous imaging. - Triggered synchronous shutter with integration and readout separate in time.
Full frame rate	27.5 frames/second	Depending on shutter type and integration time.

2.2 Electro-optical specifications

2.2.1 Overview

Table 2: Electro-optical specifications

Parameter	Specification	Remarks
FPN (on chip corrected)	< 0.2% RMS	Synchronous (snapshot) shutter. Rolling curtain shutter.
PRNU	<10% p-p	2% RMS.
Conversion gain	17.6 $\mu\text{V}/\text{electron}$	@ output.
Output signal amplitude	1.1V 1.8V	Unity gain. Maximum output signal amplitude.
Saturation charge	62.500 e-	
Sensitivity	592 V.m ² /W.s	Average white light.
	3.29 V/lux.s	Visible band only (180 lx = 1 W/m ²).
	8.46 V/lux.s	Visible + NIR (70 lx = 1 W/m ²).
Peak QE * FF Peak SR * FF	>30% 0.16 A/W	Average QE*FF = 25-30%. Average SR*FF = 0.12 A/W. See spectral response curve.
Optical cross talk	8%	Cross talk to the nearest neighbor.
Dark current (@ RT)	7.22 mV/s or ~ 410 e-/s	Auto saturation time in the order of 150s.
Noise electrons	< 40 e-	Synchronous shutter. Rolling curtain shutter.
S/N ratio	1600:1 (64 dB)	Synchronous shutter. Rolling curtain shutter.

Parameter	Specification	Remarks
Spectral sensitivity range	400 – 1000 nm	
Parasitic sensitivity	< 1%	I.e. sensitivity of the storage node during read out (after integration).
Power dissipation	230 mWatt	Typical.

2.2.2 Spectral response curve

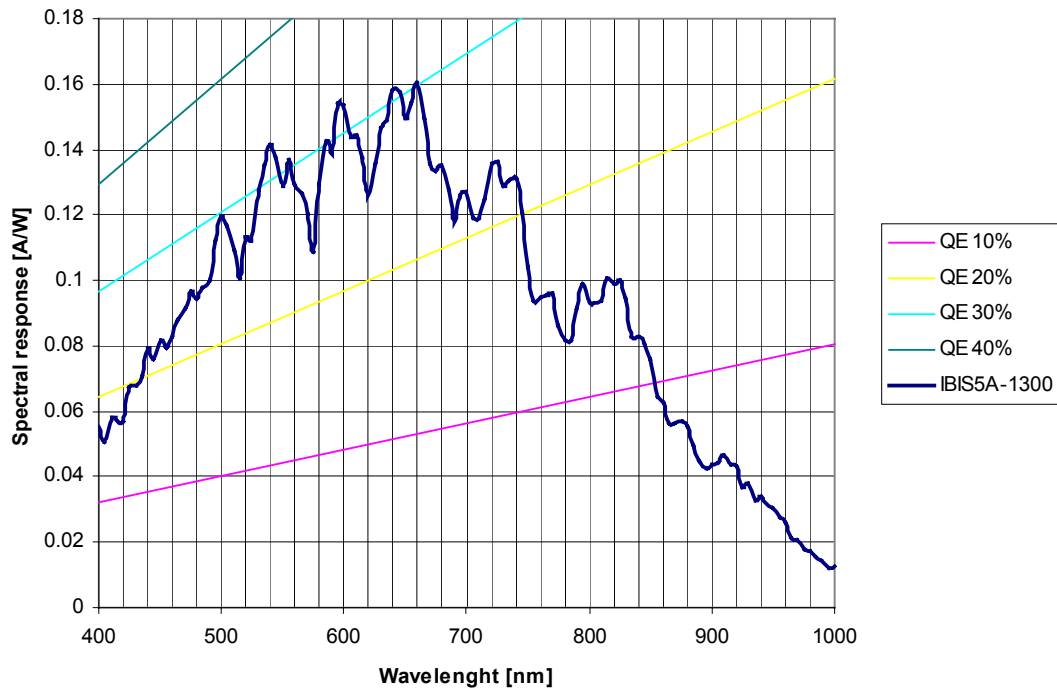


Figure 1: Spectral response curve

Figure 1 shows the spectral response characteristic. The curve is measured directly on the pixels. It includes effects of non-sensitive areas in the pixel, e.g. interconnection lines. The sensor is light sensitive between 400 and 1000 nm. The peak QE * FF is approximately 30% between 500 and 700 nm. In view of a fill factor of 50%, the QE is thus larger than 60% between 500 and 700 nm.