

# Design Specifications

## CMOS Image Sensors

*(For High-Speed Optoelectronics projects, for Mixed-Signal IC projects, or for help with this questionnaire, please contact your Forza account manager.)*

	<b>Present Sensor</b>	<b>Proposed Sensor</b>	<b>Notes / Description</b>
Pixel Array			
Array Size			active
			total
Pixel Size			μm
Optical Format			
Size of Imaging Area			
Chip Size			
Photodetector Type			
Bias Required for Photodetector			volts
Pixel Type			3T, 4T, other
Responsivity			V/lux-sec at 550nm wavelength
Frame Rate			FPS
Power Consumption			mW
Dynamic Range			dB
Pixel Read Noise			electrons RMS at 16x
FPN			% RMS
PRNU			% RMS at 50% full well
Conversion Gain			μV/e-

Pixel Full Well Capacity			electrons
Peak QE x FF			% at 550nm
Dark Current			
@ 30 degrees celsius			e/sec
@ 60 degrees celsius			e/sec
ADC Type			
ADC Resolution			bits
ADC DNL			LSB
ADC INL			LSB
Pre-ADC Gain			
Pre-ADC Gain Steps			bits
Offset Correction			bits
Supply Voltage			
			digital core
			analog
			I/O
Shutter Type			
Operating Temperature			degrees celsius
Input Interface			
Output Interface			
Input Clock			MHz
Technology			µm CMOS process

1. What is the photodetector type (photovoltaic, photoconductive, phototransistor, etc.)?
2. What are the bias requirements (reverse bias voltage range, bias current, etc.)?
3. How does the bias need to be adjusted (by array, by column, by row, by pixel, etc.)
4. Does the photodetector source or sink current into the readout node?
5. What is the capacitance of the photodetector (per unit area, per pixel size, etc.)?
6. What is the series resistance of the photodetector (per unit area, per pixel size, etc.)?
7. What is the responsivity (in terms of A/W, or V/lux-sec, or other measure)?
8. What is the spectral range?
9. What is the dark current at 30 C?
10. How does the dark current vary w/ temperature (doubles every 7 degrees C, every 10 degrees C, etc.)?
11. What is the lag (% residual signal after 1 frame, after 5 frames)?
12. Desired pixel size range (1.75um, 2.2um, 10um, other).
13. Desired dynamic range (60dB, 72dB, 100dB, other).
14. Desired fabrication process.
15. Is a color filter required?
16. Is a microlens required?
17. What array resolution is required (VGA, XGA, 10 Mpixel, etc.)?
18. What frame rate is desired?
19. Integration time range.
20. What shutter type is required (rolling shutter, frame shutter)?