Image Sensor Projects
CMOS Imager with Reconfigurable Pixel Level SRAM-Counter and PWM-Based ADC

Features:
- Time Based DPS
- Asynchronous self-reset
- Programmable frame rate

Die size: 15mm²
Resolution: 32x32 8-bit or 64x32 4-bit
Pixel size: 45µ x 45µ
Fill factor: 20%
Image array area: 95% of chip
Power: 1.6μA/DPS
Dynamic Range: 100dB
Process: 0.35 μm CMOS


High Responsivity CMOS APS with Digital Pixel

- **Technology**: 0.25µm CMOS
- **Pixel Size**: 25 x 30µm
- **Pixel type**: Photodiode APS
- **Fill Factor**: 32%
- **Conversion Gain**: 0.2mV/electron
- **Responsivity**: 1 mA/mW
- **Operating voltage**: 3.0 V

A 1.0V VDD Active-Pixel Sensor for Digital Camera

<table>
<thead>
<tr>
<th>Technology</th>
<th>0.25µm CMOS</th>
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</thead>
<tbody>
<tr>
<td>Pixel Size</td>
<td>12 x 10µm</td>
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<tr>
<td>Pixel type</td>
<td>Photodiode APS</td>
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<tr>
<td>Fill Factor</td>
<td>30%</td>
</tr>
<tr>
<td>Load capacitor of N1</td>
<td>51fF</td>
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<tr>
<td>Output swing</td>
<td>0.55 V</td>
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<tr>
<td>Conversion Gain</td>
<td>3µV/electron</td>
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<tr>
<td>Well capacity</td>
<td>175,000 electrons</td>
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<tr>
<td>Responsivity</td>
<td>120 mA/W</td>
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<tr>
<td>Operating voltage</td>
<td>1.0 V</td>
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</tbody>
</table>

CMOS Imager with Time to First Spike and AER Read-out

Features:
- Time to first spike Imager
- Low Power AER based imager
- Higher radix and fair arbitration
- On-Chip histogram equalization
- On-Chip adaptive quantization

Die size: 10mm²
Resolution: 128x128
Pixel size: 17µ x 17µ
Fill factor: 33%
Image array area: 95% of chip
Power: 10nA/Pixel
Dynamic Range: 100dB

Sample Images and Experimental results
CMOS DNA Micro-Array with Optical Detection

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>Process</td>
<td>0.35μm CMOS</td>
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<tr>
<td>Array Size</td>
<td>64x64 DNA spot</td>
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<tr>
<td>Sensitivity</td>
<td>10pM DNA sample</td>
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<tr>
<td>Dynamic Range</td>
<td>50dB</td>
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<tr>
<td>Supply Voltage</td>
<td>1-5V</td>
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