Mixed-Signal Products

Photodiode Sensors

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www.aeroflex.com/photodiodes

Introduction

Aeroflex Colorado Springs has exclusive license to state-of-the-art patented Direct Wafer Bond, Front Illumination Back Contact silicon photodiode technology to provide sensor products for a variety of applications where light detection is needed. The advantages of direct wafer bonding allows for thick intrinisic regions, sharp dopant transition zones, tunable capacitance and high shunt resistance. The through via technology allows for a high fill-factor for two-dimensional array by eliminating anode contact metal traces.

Aeroflex Plug and Sense^{SM} Solution makes your sensor network smarter and complements detector performance. Aeroflex's photodiode sensors can be combined with our high-channel count mixed-signal amplifiers for a complete Plug and Sense solution. Attributes include:

- Ultra-low power and low noise
- Integrated system assembly
- High resolution data conversion

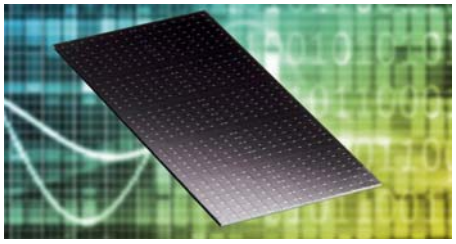
Applications

Aeroflex's Photodiode Sensors have a proven track record in medical, industrial and security applications. Examples include:

- Multi-slice computed tomography
- Explosive detection systems
- Baggage and cargo scanners
- Non-destructive testing/inspection
- Food inspection
- High-energy physics/particle detection
- Nuclear event detection
- Satellite and missile applications
- Encoders

Aeroflex's Photodiode Sensors meet all current array standards for medical and security applications per their current customers:

- High responsivity
- Excellent linearity of response
- Extremely low electrical crosstalk between pixels
- High Rshunt for low noise



Features

- Low noise
  – Shunt resistance >5.0 GOhm
- Full pixel isolation < -174dB dc electrical crosstalk
  - No bleeding of current to adjacent pixels
- Sensitivity range 400nm to 1100nm (UV to Near IR)
- Temperature coefficient of dark current 1.07 times/^{o}C
- Temperature coefficient of sensitivity $\pm$0.05%/^{o}C
- Direct wafer bonding
  - Silicon-silicon bonded substrate
  - Higher resistivity i-layer to improve responsivity
  - Fully depleted at zero bias epi layers

Special Assembly/Custom Designs

Aeroflex will work with customers to meet their special requirements. Aeroflex will also provide fully assembled x-ray detector tiles, with read-out electronics using patented assembly technology and mixed-signal electronics IP.

- Multi-element Si photodiode array
- Multi-element Si array with amplification
- Multi-element Si array with Scintillator (radiation detection)
- Silicon PIN photodiode

Packaging

Plug and Sense packaging includes:

- Flip chip with Under Bump Metallurgy (UBM)
- Flip chip on Flex, PCB or Ceramic
- Hermetic photonic device packaging for space applications

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A passion for performance.

Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven and customer-focused