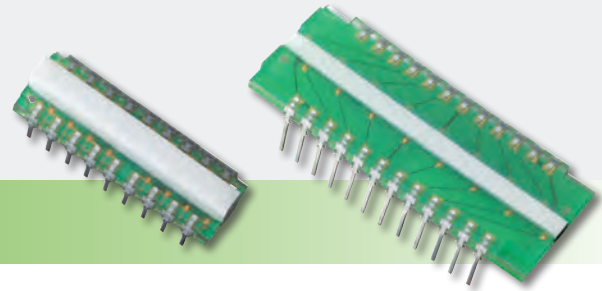


# Photodiode Arrays

## SILICON PHOTODIODE ARRAYS ■

Left: 16 Element, 1.6 mm Pitch  
Photodiode Array With Segmented  
Csi Scintillator

Right: 16 Element, 2.5 mm Pitch  
Photodiode Array With GOS Low  
Energy Screen Scintillator



## Photodiode Arrays – VTA Series

### Applications

- Luggage scanning
- Cargo & container scanning
- Food inspection
- Non-destructive testing

### Features and Benefits

- Various crystal types available (CsI, GOS, etc.)
- Custom chip geometry & pitch
- Single or dual-sided assemblies
- High responsivity and low capacitance
- Onboard electronics available on a custom basis
- Multiple photodiode rows

### Product Description

These photodiode arrays are used to generate an X-ray image by scanning an object line by line. The X-rays are converted into light through the attached scintillator crystal. The light intensity is then measured by the photodiodes. The boards are employing chip-on-board technology with optically adapted scintillator crystals. The listed designs can be ordered as a standard part, but can also be customized to meet the needs of a wide variety of applications. Excelitas custom photodiode arrays give customers the option to choose the:

- active photodiode area
- total number of elements
- overall PCB and photodiode chip dimensions
- photodiode chip geometry and orientation
- electro-optical specifications
- single sided vs. double sided PCB
- alternative substrate materials (e.g. ceramic)
- electrical interface (e.g. connector)

Product Table

### Photodiode Arrays • VTA Series

| Symbol             | Substrate |            | Active Area     | Photodiode Chip Dimensions | Pitch | Number of Elements | Scintillator Crystal Type | Light Current Uniformity @ 540 nm, 30 nW/cm <sup>2</sup> | Dark Current @ H = 0, VR = 10 mV |                   | Junction Capacitance @ H = 0, VR = 0V |                   | Radiometric Sensitivity @ 540 nm |
|--------------------|-----------|------------|-----------------|----------------------------|-------|--------------------|---------------------------|----------------------------------------------------------|----------------------------------|-------------------|---------------------------------------|-------------------|----------------------------------|
|                    | Material  | Dimensions |                 |                            |       |                    |                           |                                                          | typ                              | max               | typ                                   | max               |                                  |
|                    |           |            |                 |                            |       |                    |                           |                                                          |                                  |                   |                                       |                   |                                  |
| Unit               |           | mm         | mm <sup>2</sup> | mm                         | mm    | Elements           | Crystal Type              | %                                                        | I <sub>D</sub> pA                | I <sub>D</sub> pA | C <sub>J</sub> pF                     | C <sub>J</sub> pF | S <sub>R</sub> A/W               |
| VTA2164H-D-NC-00-0 | FR4       | 43.2x67.7  | 1.41            | 1.40x3.50                  | 2.1   | 64                 | Custom                    | ±5                                                       | <10                              | 90                | <100                                  | 200               | 0.30                             |
| VTA1616H-H-SC-01-0 | FR4       | 8.0x25.4   | 2.58            | 1.51x3.25                  | 1.6   | 16                 | CsI                       | ±5                                                       | -                                | 50                | -                                     | 350               | 0.30                             |
| VTA1616H-L-SC-02-0 | FR4       | 16.0x25.4  | 2.58            | 1.51x3.25                  | 1.6   | 16                 | GOS                       | ±5                                                       | -                                | 50                | -                                     | 350               | 0.30                             |
| VTA2516H-H-SC-01-0 | FR4       | 8.0x40.0   | 5.20            | 2.45x3.15                  | 2.5   | 16                 | CsI                       | ±5                                                       | -                                | 50                | -                                     | 600               | 0.30                             |
| VTA2516H-L-SC-02-0 | FR4       | 16.0x40.0  | 5.20            | 2.45x3.15                  | 2.5   | 16                 | GOS                       | ±5                                                       | -                                | 50                | -                                     | 600               | 0.30                             |
| VTA1216H-H-NC-00-0 | FR4       | 10.2x19.0  | 3.44            | 2.30x4.95 (dual cell)      | 1.2   | 16                 | Custom                    | ±5                                                       | -                                | 100               | -                                     | 300               | 0.30                             |
| VTA1216H-L-NC-00-0 | FR4       | 17.8x19.0  | 3.44            | 2.30x4.95 (dual cell)      | 1.2   | 16                 | Custom                    | ±5                                                       | -                                | 100               | -                                     | 300               | 0.30                             |
| VTA0832H-H-NC-00-0 | FR4       | 17.8x25.4  | 0.50            | 1.59x2.34 (dual cell)      | 0.8   | 32                 | Custom                    | ±5                                                       | -                                | 100               | -                                     | 100               | 0.30                             |

Electrical characteristics at T<sub>Ambient</sub> = 25 °C