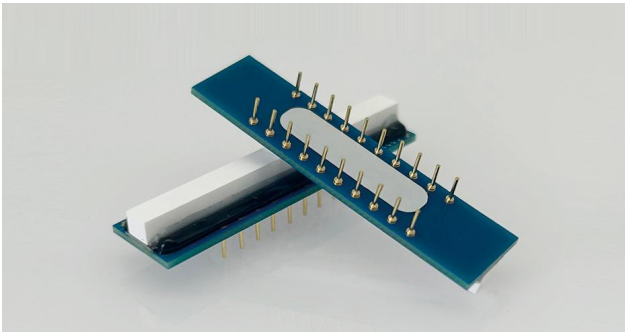
# EHEC/LEG-2.5P

## 1.Overview



EHEC/LEG-2.5P is a linear detector array (LDA) product, made by 16-element front side illumination (FSI) single crystal silicon photodetectors. The silicon photodetector has ultra-low dark current, low terminal capacitance, and high photosensitivity covered a broad spectrum, suitable for varieties of applications especially in non-destructive X-ray inspection. Wide and narrow board size, coupling with different high performance scintillator, such as GOS screen and CsI scintillator, EHEC/LEG-2.5P can be used directly for single or dual-energy imaging. Well-designed assembly process for easy to integrate and long term reliability.

## 2.Features

- Wide light spectrum range from 350~1100nm with peak response at ~950nm.
- Element size: 2.1(W) x 2.8(H) mm / one element
- Element pitch: 2.5mm (x 16 pixels)
- Mounted on two size of board:
  40.2 x 20.0 mm (wide board for low energy)
  40.2 x 10.2 mm (narrow board for high energy)
- Support dual energy imaging(when used in an upper and lower two-layer combination)
- Coupled with GOS screen for low energy, and CsI array for high energy. Other scintillators like CWO, GOS ceramic, are optional.
- Detectable energy range: 30 keV to 200 keV.
- Arranging with two or more modules in a row for long size line detector

## 3.Application

- Car inspection
- Security inspection
- Non-destructive testing
- Thickness measurement
- Industrial process control
- Mineral sorting
- Waste sorting

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# 4.Technical Parameter

| Si photodiode arrays (no scintillator) | | | |
|---|---|---|---|
| **Parameter** | **Symbol** | **Spec.** | **Unit** |
| Element pitch | P | 2.5 | mm |
| Element effective width | W | 2.1 | mm |
| Element effective height | H | 2.8 | mm |
| Number of elements | - | 16 | |
| Chip length | Length | 40.0 | mm |
| Chip width | Width | 5.0 | mm |

| Electrical and optical characteristics | | | | |
|---|---|---|---|---|
| **Parameter** | **Symbol** | **Condition** | **Spec.** | **Unit** |
| Spectrum response range | λ | | 350-1100 | nm |
| Peak sensitivity wavelength | $\lambda_p$ | | 950 | nm |
| Photosensitivity | S | @550nm | Typ.0.4, Min 0.36 | A/W |
| Dark current | $I_D$ | @-10mV | Typ. 7, Max 40 | pA |
| Terminal Capacitance | $C_t$ | @0V, f=10kHz | Typ. 55, Max 70 | pF |

| GOS scintillator screen | | | |
|---|---|---|---|
| **Parameter** | **Symbol** | **Spec.** | **Unit** |
| Thickness of GOS | T | 0.35 | mm |
| Length | L | 40.1 | mm |
| Width | H1 | 3.4 | mm |

| CsI scintillator | | | |
|---|---|---|---|
| **Parameter** | **Symbol** | **Spec.** | **Unit** |
| Length | L | 40.1 | mm |
| Width | H1 | 3.4 | mm |
| Thickness | T1 | 4.0 (for high energy) | mm |
| CsI element pitch | P | 2.5 | mm |
| CsI element width | W | 2.2 | mm |
| CsI element height | H | 3.0 | mm |
| CsI element thickness | T | 3.0 (for high energy) | mm |

| Performance of scintillator | | | |
|---|---|---|---|
| **Parameter** | **GOS** | **CsI（Tl）** | **Unit** |
| Peak emission wavelength | 512 | 550 | nm |
| Refractive index | 2.2 | 1.79 | - |
| Decay constant | 3 | 1 | us |
| Afterglow | 0.01 | ＜1 | %@20ms |
| Density | 7.34 | 4.51 | $g/cm^3$ |
| Sensitivity non-uniformity | ±15 | ±15 | % |

# 5.Drawings(unit: mm)