

DPA-Si-pin is a high-performance new X-ray Silicon Drift Detector, using Peltier electric refrigeration technology, can achieve excellent performance without expensive cryogenic refrigeration system, which is a new breakthrough in X-ray detector production technology.

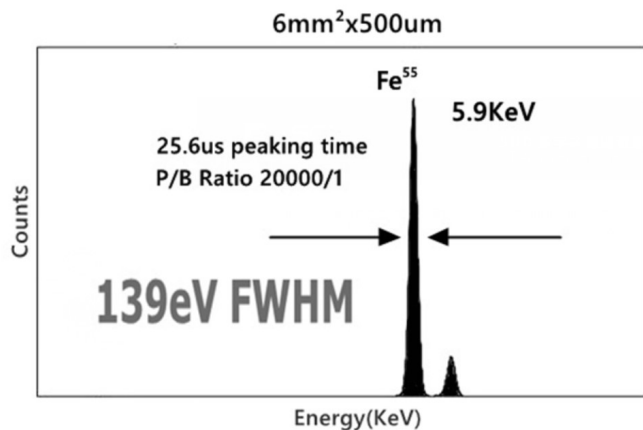
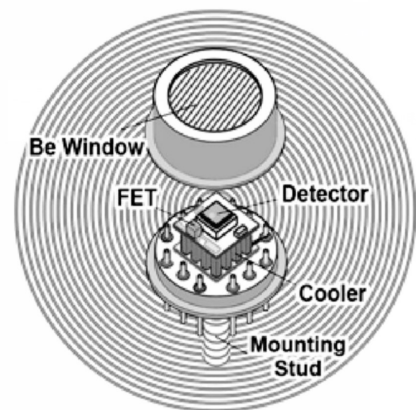
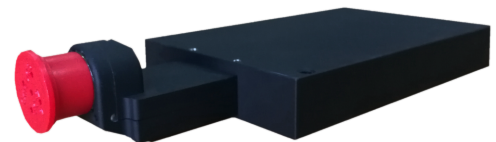


Figure 1. Fe55 Spectrum with DPA-Si-pin Detector



Features:

- 139eV FWHM Resolution @ 5.9 keV
- Silicon Thickness 500 μ m
- Size 6-25mm²
- Energy Range 1Kev-40KeV
- 200,000CPS vs 0.8 μ s
- USB Controlled & RS232 Controlled
- No Liquid Nitrogen



DPA-Si-pin Includes:

- 1 Si-pin Detector and Preamplifier
- 2 Digital Pulse Analyzer (with Power)

Applications:

- X-Ray Fluorescence
- RoHS / WEEE Compliance XRF
- OEM & Special Applications
- Process Control
- Research

General Specifications

Detector Type	DPA-Si-pin
Detector Size	6-25mm ²
Silicon Thickness	500μm
Energy Resolution @5.9keV(Fe55)	139-260eV FWHM
Energy Range	1 Kev-40 Kev, 1.5Kev-25Kev (Efficiency >25%)
Detector Be Window Thickness	1 mil (25 μm) or 0.5 mil (12.5 μm)
Collimator	Internal Multi Layer Collimator (ML)
Charge Sensitive Preamplifier	custom design with reset
Gain Stability	<20 ppm/°C (typical)
Nitrogen	Level 2
Case Size	157.6 x 71 x 26 (mm)
Weight	220g
Total Power	4.2-8.5VDC
Warranty Period	1 year
Lifetime Typical	5 to 10 years, depending on use
Storage & Shipping	Long-term Storage: 10+ years in dry environment Typical Storage & Shipping: -20°C to +50°C, 10 to 90% humidity Operation conditions noncondensing
Operation conditions	0°C -50°C

This DPA-Si-pin detector enables extremely high energy resolution and excellent cost performance. Its high performance, small size, and low cost make it to be an ideal detector for X-ray fluorescence spectrometer.

Note

This Si-pin detector requires positive high voltage, and produces a negative preamplifier output. This is opposite of the standard SDD which requires negative high voltage and produces a positive preamplifier output. Different detector needs corresponds to different DPA hardware setting.

Use of Collimators

Most of detectors contain internal collimators to improve spectral quality. X-rays interacting near the edges of the active volume of the detector may produce small pulses due to partial charge collection.

For some applications, these pulses result in artifacts in the spectrum which obscure the signal of interest. The internal collimator restricts X-rays to the active volume, where clean signals are produced. Depending on the type of detector, collimators can improve peak to background (P/B), eliminate edge effects, and/or eliminate false peaks.

Additional System Information and Performance

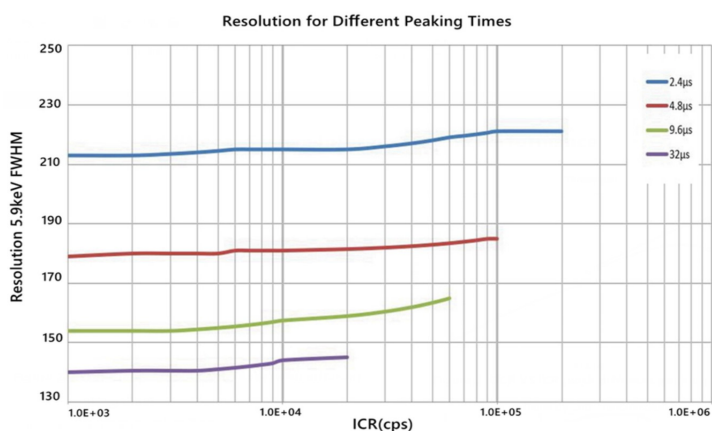


Figure 2. Resolution VS Input Count Rate (with different peaking time)

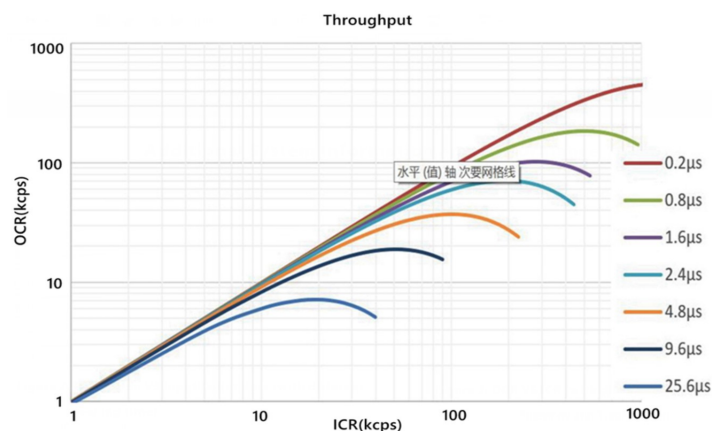


Figure 3. OCR VS ICR (with different peaking time)

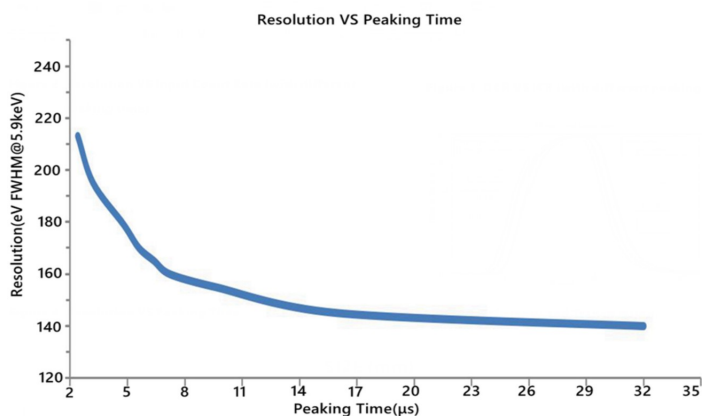


Figure 4. Resolution VS Peaking Time

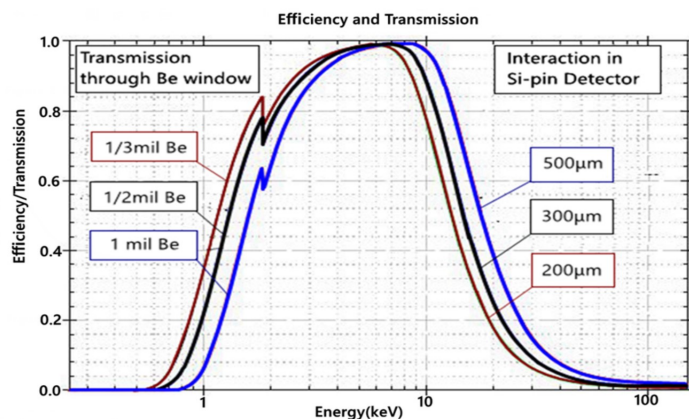
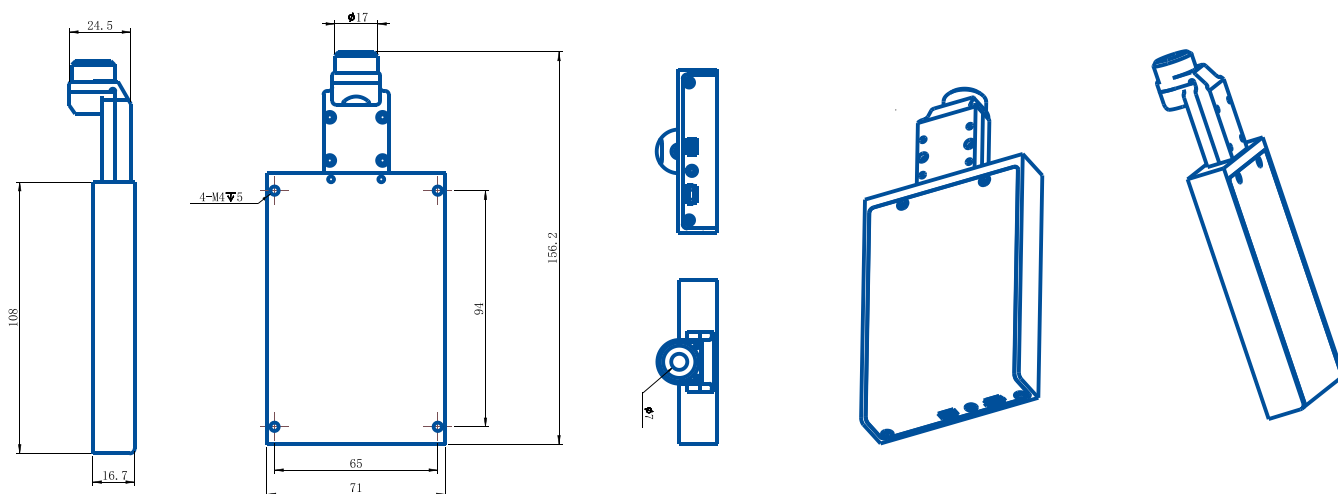


Figure 5. Efficiency and Transmission

SIZE (mm)



Application Spectra (6mm²/500μm Si-pin)

