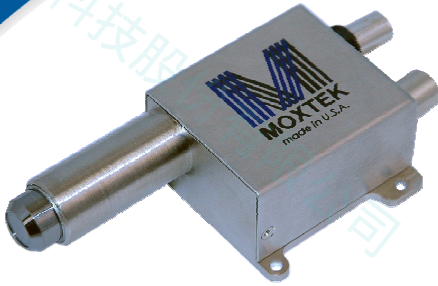


# X-RAY Detectors

## XPIN™ Si-PIN Diode X-ray Detector



**XPIN-BT**

### Applications

#### Portable/Benchtop XRF

- RoHS/WEEE
- Light element analysis
- Metallurgy
- Alloy sorting
- Scientific research
- Nuclear monitoring
- Quality control
- Brand protection
- Coating analysis
- Plastic additive analysis
- Soil analysis
- OSHA compliance
- Contamination sampling
- Archeology
- Art authentication
- Forensics - Mobile crime labs

The XPIN™ is MOXTEK's next generation EDXRF detector, achieving resolutions  $\leq 170\text{eV}$  ( $6\text{mm}^2$ ) and  $\leq 230\text{eV}$  ( $13\text{mm}^2$ ) FWHM ( $\text{Fe}^{55}$ ,  $5.9\text{KeV}$  @  $-35^\circ\text{C}$ ,  $8\mu\text{sec}$  shaping). The XPIN combines a  $625\mu\text{m}$  thick silicon PIN diode, an ultra-low-noise JFET, and a high performance two-stage thermoelectric cooler to achieve a stable output signal over high count rates. The XPIN preamp provides a low-noise signal output to an analog or digital pulse shaping amplifier.

### Features

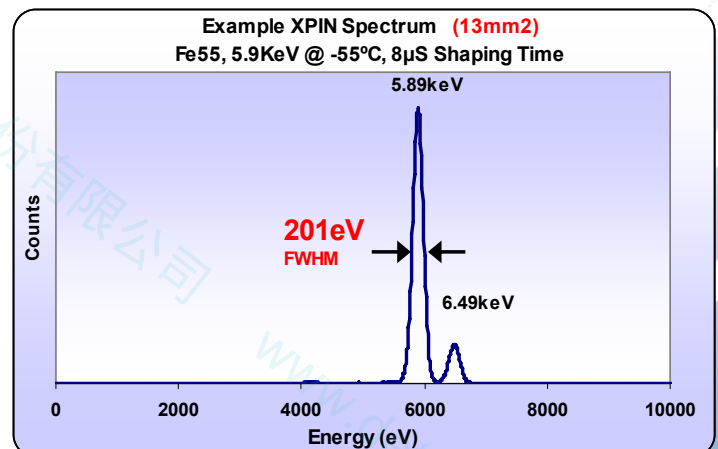
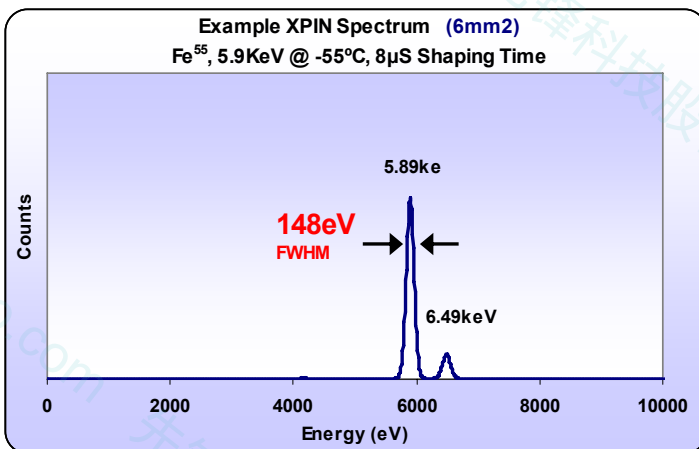
- Si-PIN Diode
- Small, compact design
- Two-stage thermoelectric cooler
- Stable resolution
- $8\mu\text{m}$  DuraBeryllium® window
- Wide ambient temperature range
- Multilayer Collimator
- Multiple snout lengths
- Vacuum seal option

### Benefits

- Low cost
- Close coupling of detector/source, portable
- No liquid nitrogen, fast cooling
- Low calibration maintenance
- Lt-element identification, Corrosion resistant
- Industrial applications
- Minimal stray peaks
- Flexible instrument design
- Vacuum/He compatibility

### Standard Package Includes:

- XPIN detector
  - Si-PIN diode
  - Two stage thermoelectric cooler
  - Ultra-low-noise JFET
  - DuraBeryllium™ window
  - Preamplifier with input/output connectors
  - Chamfered endcap
  - 1.50" Snout Length (3 options available)
  - Integrated temperature controller



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Preliminary

## XPIN-BT

### Detector Specifications

- Diode Active Area: 6 mm<sup>2</sup> or 13mm<sup>2</sup>
- Diode Thickness: 625μm
- Detector Window: 8μm or 25μm thick DuraBeryllium
- Collimator Material: W/Co/Ti/Al
- \* Energy Resolution: 6mm<sup>2</sup>: < 170eV FWHM  
13mm<sup>2</sup>: < 230eV FWHM

- \*Peak to background: 6mm<sup>2</sup>: 3600/1 @ 1keV (typical)  
13mm<sup>2</sup>: 3000/1 @1keV (typical)

\* Conditions: 8 μsec shaping time, MXDPP-200, -35°C, Fe55, 5.9 KeV, 7000 CPS

Weight: 140 grams (1.50" snout length)

Standard Warranty: One year.

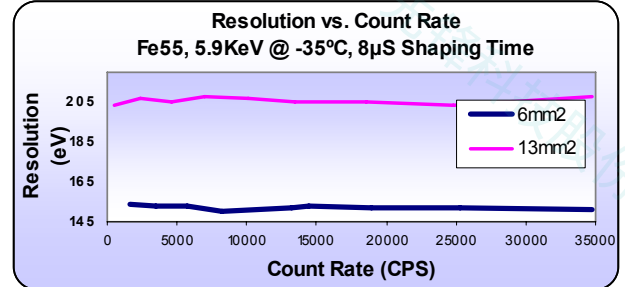
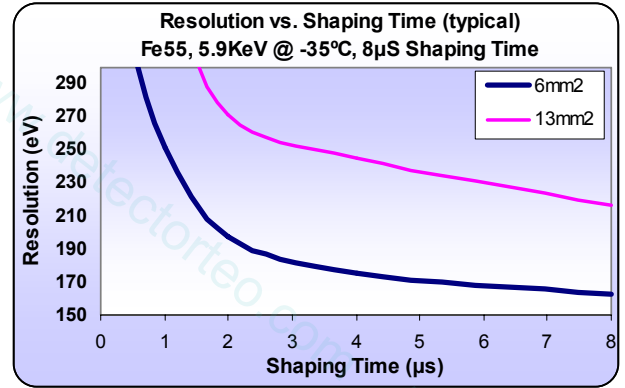
### Preamp Specifications

#### Inputs

- Detector Power: ±8.75V to ±9.25V
- Temp Controller Power: If not operated with MXDPP-200 control: +5V, .25W(typical)
- High Voltage Diode Bias: +130 VDC maximum

#### Outputs

- Preamp power swing: -2V to 2 V
- Charge Conversion Gain: 1 mV/KeV minimum
- Detector Output Signal: Pulse reset negative ramp voltage swing +2V to -2V
- Temperature Control: Ready Signal (open collector)



### XPIN-BT Package Options:



- Snout Lengths: 0.00" standard  
1.50" (3.8cm) standard  
5.50" (14cm) special  
9.50" (24cm) special
- Temperature set: -35°C

### MXDPP-200



### XPIN-BT Accessories



Adapter plate



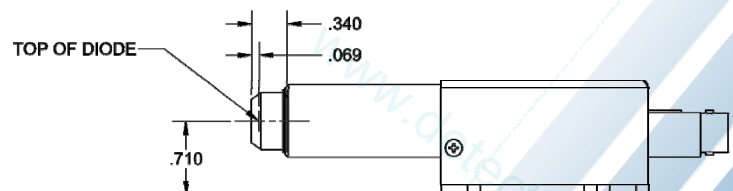
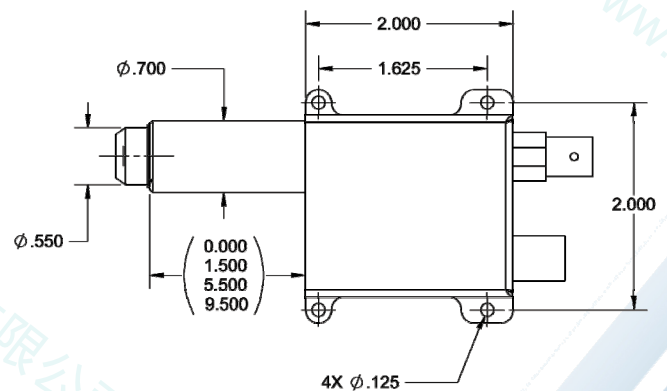
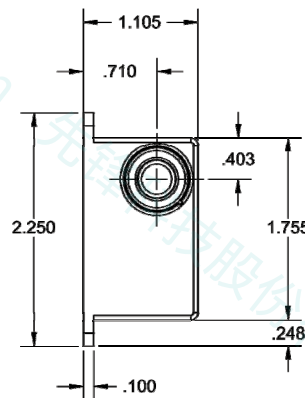
Vacuum options

### Preamp Pin-out & Mechanical Drawing



Lemo Connector	
Pin ID	Description
1	Ready Signal
2	High Voltage
3	Detector Power +
4	Detector Power -
5	Temperature GND
6	Temp Control Power
shield	Detector Ground

BNC Connector	
BNC	Description
BNC	Detector Signal
shield	Signal GND



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