

## XE550™ Si-PIN Diode X-ray Detector



### 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 XE550™ detector is a compact, low-cost EDXRF detector. The XE550 combines a silicon PIN diode, a MOXTEK ultra-low-noise JFET, and a high performance two-stage thermoelectric cooler to achieve a stable output signal over high count rates. The XE550 preamp provides a low-noise signal output to a customer-supplied analog or digital pulse shaping amplifier.

### Features

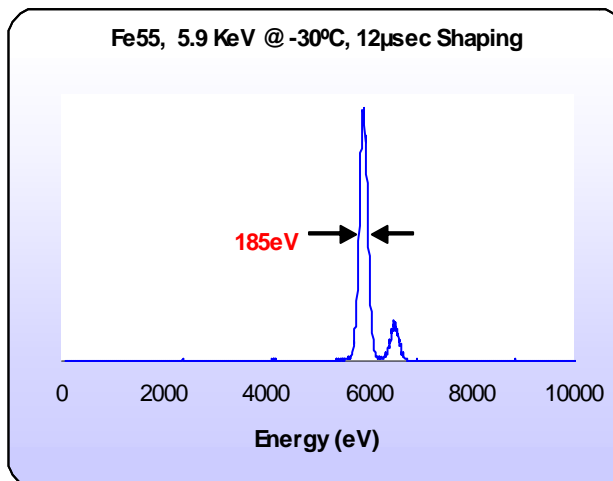
Si-PIN Diode  
 Small, compact design  
 Two-stage thermoelectric cooler  
 High count rates  
 Stable resolution  
 Low energy detection  
 Wide ambient temperature range  
 Portable

### Benefits

Low cost  
 Close coupling of detector to source  
 No liquid nitrogen, fast cooling  
 Minimal peak shift  
 Low calibration maintenance  
 Light element identification  
 Industrial applications  
 Field use

### Standard Package Includes:

- XE550 detector
  - Si-PIN diode
  - Two stage thermoelectric cooler
  - MOXTEK ultra-low-noise JFET
  - DuraBe™ beryllium window
  - Preamp with input/output connector
  - TO-8 header



XE550 Resolution



452 West 1260 North  
 Orem, UT 84057  
 P 801.225.0930  
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**Mechanical Specifications**

- Diode Active Area: 5 mm<sup>2</sup>
- Diode Thickness: 500µm
- Detector Window: 8µm, 25µm, or 100µm thick DuraBeryllium
- Cooling: 3.5V DC max; 1.4V @ 0.13A for -30°C typical
- Collimator Material: Ag, W, Al
- Energy Resolution: < 220eV (Fe<sup>55</sup>, 5.9 KeV @ -30°C, 12µsec shaping)
- Peak to background: > 800 (1 KeV, 12µsec shaping)
- Weight: 166 grams (0.36 lbs)
- Standard Warranty: One year.

**Preamp Specifications**

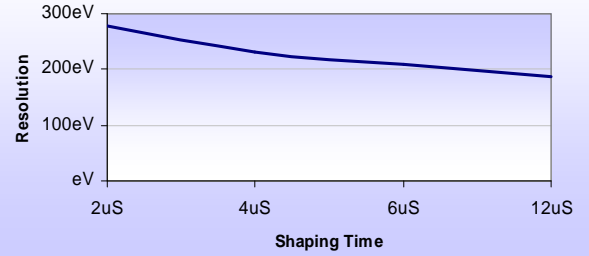
**Inputs**

- Preamp Power: ±4.75V to ±5.25V (5% tolerance)
- Cooler Power: +0 to max +3.5V, 1.3V typical at -30°C, max current 0.5A
- High Voltage Bias: 120 VDC typical, 130 VDC maximum

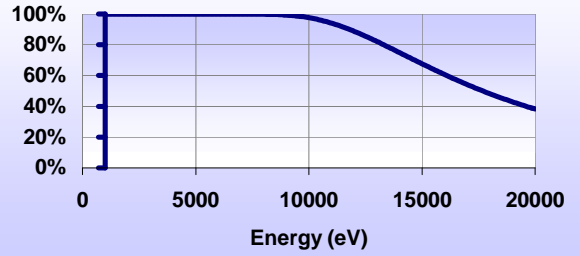
**Outputs**

- Preamp output swing: -2V to 2 V
- Charge conversion gain: 1 mV/KeV minimum, 10 mV/KeV maximum
- Pulse reset negative ramp voltage swing +2V to -2V

**Average Resolution vs Shaping time  
50% deadtime**



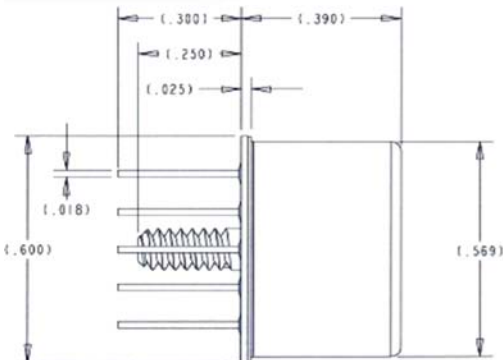
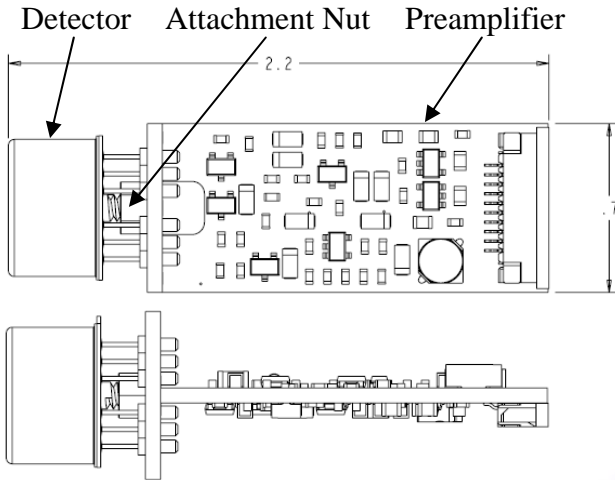
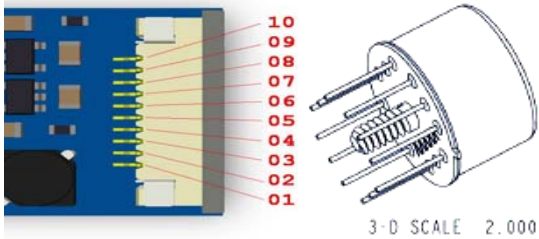
**Detector Absorption vs. Energy**



**XE550 Ordering Information**

*Please contact MOXTEK for price and delivery information.*

**Preamp Pin-out & Mechanical Drawing**



Pin ID	Description	Pin ID	Description
1	TEC -	6	SIGNAL
2	TEC +	7	THERMISTOR
3	+ 5V	8	GROUND
4	- 5V	9	NOT CONNECTED
5	GROUND	10	HV BIAS



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