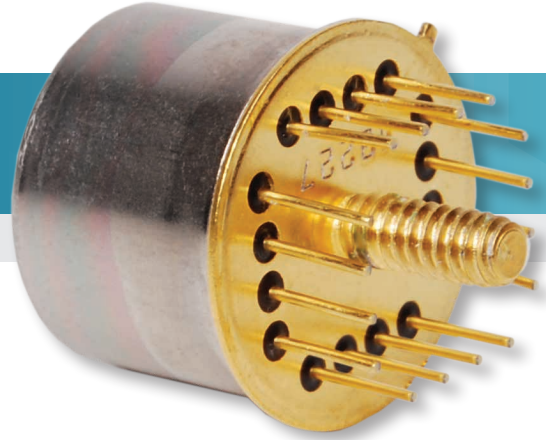




# SXD15M-150-500-TO8

## Silicon Drift Detector (SDD)



### KEY FEATURES

Detector System Includes:

- Silicon Drift Detector (SDD)
- Be Window (12.5  $\mu\text{m}$ )
- Low noise JFET
- Peltier Cooler

### PERFORMANCE

- Active Area – 25 mm<sup>2</sup>
- Collimated Active Area – 15 mm<sup>2</sup>
- Thickness – 0.5 mm
- Resolution <145 eV (FWHM)\*
- Energy Range – 1 to 30 keV
- $\Delta T > 75\text{K}$  at 30 °C heat sink temperature

### DESCRIPTION

The Mirion SDD using the proprietary PIPS<sup>®</sup> technology is a spectroscopy sub-system sensitive to X rays and low-energy gamma rays. It comprises a hermetically sealed silicon drift detector (SDD) element with a low noise FET assembly and a Peltier cooler. This product range is targeted to be integrated in handheld and bench top XRF systems. Mirion develops designs, manufactures and assembles everything in house, which has made us the partner of choice for a good number of industrial partners.

Model	Collimated Active Area (mm <sup>2</sup> )	Collimator	PTB		Energy Resolution FWHM (eV)*	
			Typical	Max	Typical	Max
					@ Optimum Rise Time	
SXD15M-150-500-TO8	15	Multilayer	15000	>12000	135	145

\* Energy resolution is given at 5.9 keV (Mn-K $\alpha$ ), with an ambient temperature ranging from +10 °C to +30 °C, on a digital spectroscopy system with trapezoid shaping filter. Cooled to -35 °C.

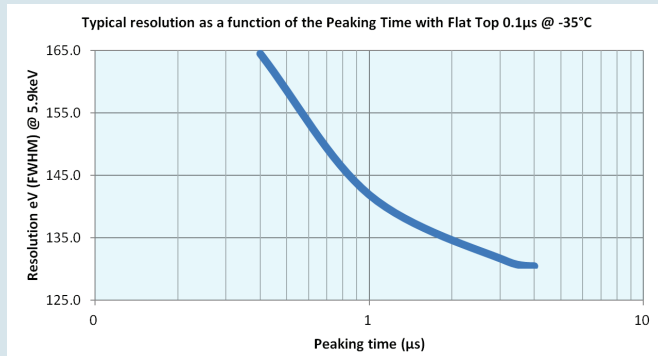


Figure 1 - Typical resolution as a function of rise time at -35 °C.

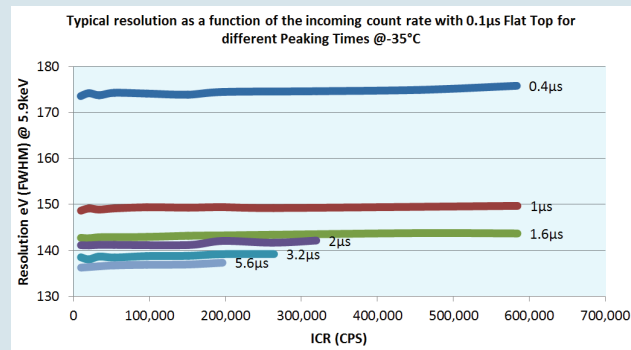


Figure 2 - Typical resolution as a function of the incoming count rate at -35 °C.

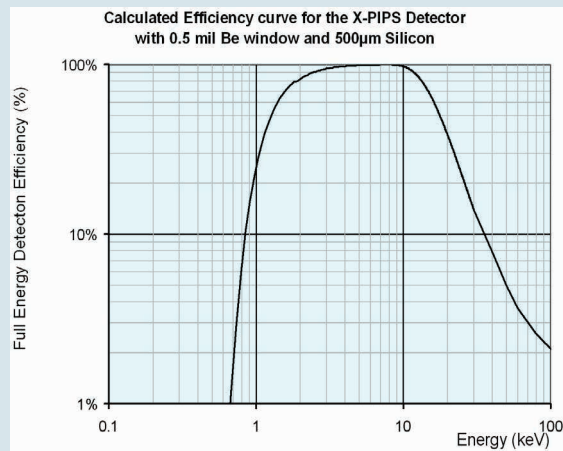


Figure 3 - Calculated efficiency curve.

# Silicon Drift Detector (SDD) (X-PIPS) – 15 mm<sup>2</sup>

## SPECIFICATIONS

### SYSTEM REQUIREMENTS

#### DETECTOR BIAS:

- HV: -250 V 30 μA
- Ground: 0 V
- LV: -90 V 30 μA

#### TEC:

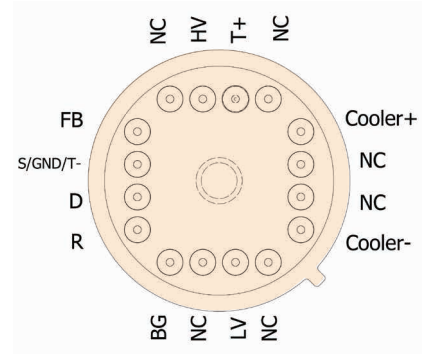
- Max voltage: 3.6 V
- Max current: 0.4 A

#### TEMPERATURE SENSOR:

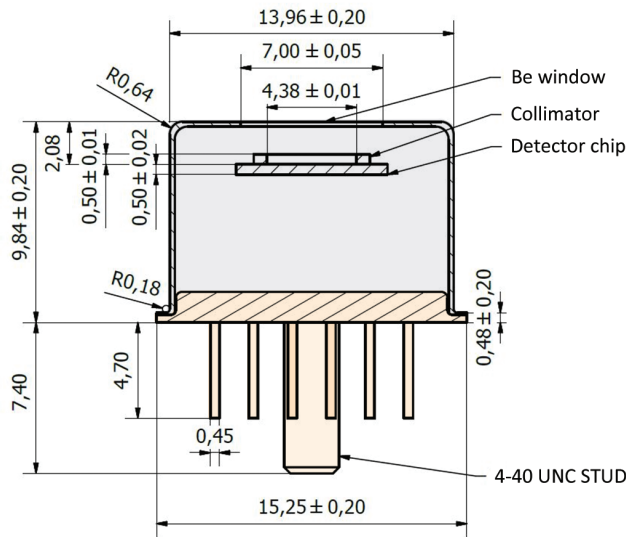
- T+: 45 μA
- Slope: -2.183 mV/°C
- V (0 °C): 636 mV

#### FET:

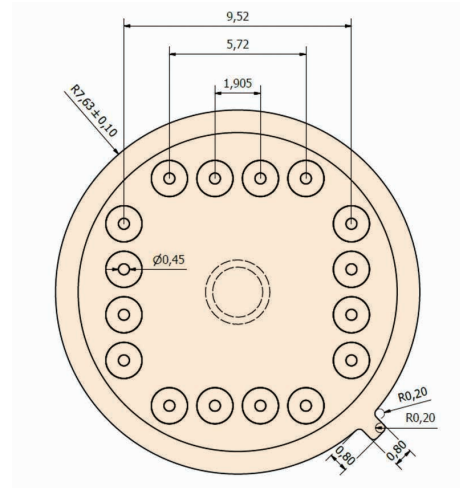
- Drain: 3.0 V 3.0 mA
- Ground: 0 V
- Backgate: -6 V <1 nA
- Reset: 1 V 0.4 μs
- Feedback: 50 fF



Pin configuration (top view)



Detector geometry



Footprint (top view)



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