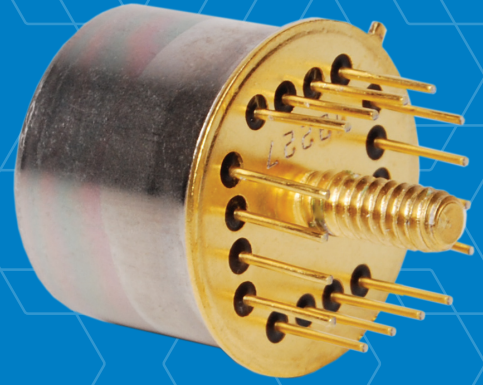




X-RAY APPLICATIONS

SXD15M- 500-CM-T08

Silicon Drift Detector (SDD)



A silicon drift detector for high-resolution X-ray and low-energy gamma-ray spectroscopy that ensures superior performance and reliability in industrial applications requiring precise radiation detection.

The Mirion Silicon Drift Detector (SSD) with proprietary PIPS® technology is a spectroscopy subsystem sensitive to X-rays and low-energy gamma rays. It comprises a hermetically sealed silicon drift detector element with a low noise CMOS and a Peltier cooler. The X-PIPS detector has an internal multilayer collimator for an improved peak-to-background ratio.

This product range is intended to be integrated in handheld and bench top XRF systems. Mirion designs, manufactures and assembles products in house, which has made us the select partner for industrial clients.

FEATURES

- ✓ Silicon Drift Detector (SDD)
- ✓ Be Window (12.5 μm)
- ✓ CMOS Preamplifier
- ✓ Peltier Cooler

PERFORMANCE

- ✓ Active Area: 25 mm²
- ✓ Collimated Active Area: 15 mm²
- ✓ Thickness: 0.5 mm
- ✓ Resolution <132 eV (FWHM)*
- ✓ Energy Range: 1 to 30 keV
- ✓ $\Delta T > 75\text{K}$ at 30 °C heat sink temperature

SXD15M-500-CM-T08 SDD

Model	Collimated Active Area (mm ²)	Collimator	PTB		Energy Resolution FWHM (eV)*	
			Typical	Max	Typical	Max
					@ Optimum Rise Time	
SXD15M-500-CM-T08	15	Multilayer	15000	>12000	127	132

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

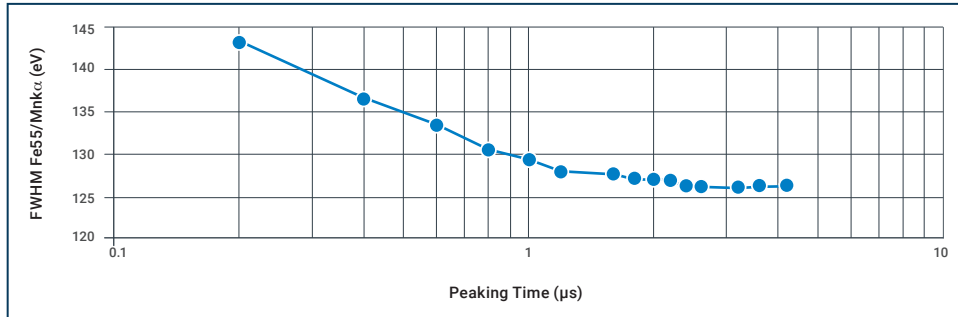


Figure 1: Typical resolution as a function of rise time at -35 °C.

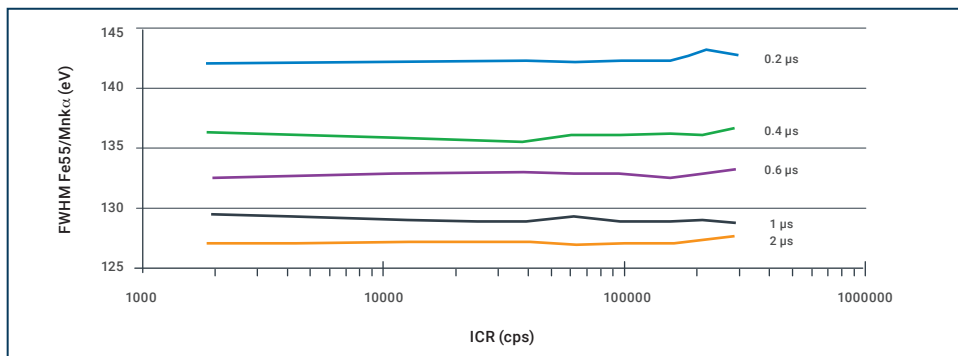


Figure 2: Typical resolution as a function of the incoming count rate at -35 °C.

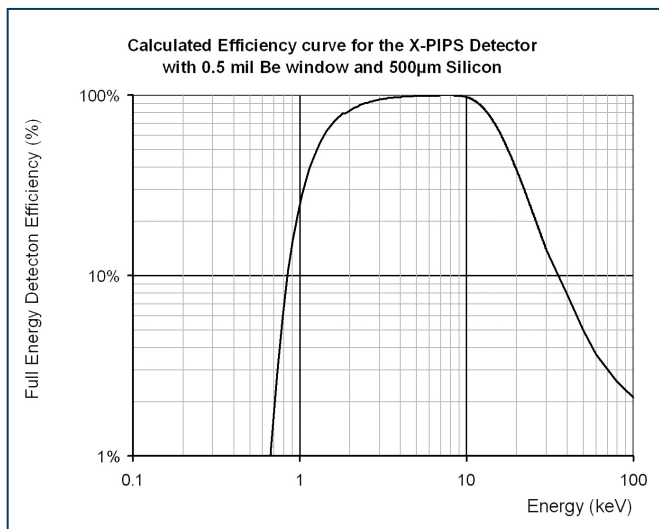


Figure 3: Calculated efficiency curve.

SXD15M-500-CM-T08 SDD

SPECIFICATIONS

SYSTEM REQUIREMENTS:

DETECTOR BIAS

- HV/P+: -225 V 30 μ A
- Ground: 0 V
- LV: 3.9 M Ω to GND 30 μ A

CMOS PREAMPLIFIER

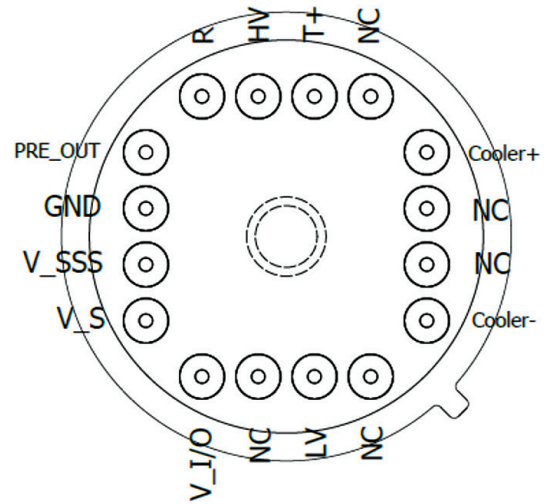
- V_S: +2 V 1 mA
- V_I/O: +3.3 V 1 mA
- V_SSS: -4.5 V 1 mA
- GND: 0 V 2 mA
- PRE_OUT: between 0.8 V and 3 V

TEC

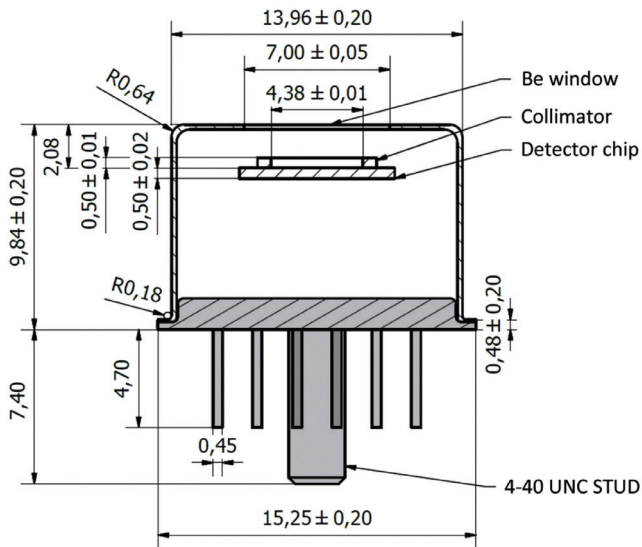
- Max voltage: 3.6 V
- Max current: 0.4 A
-

TEMPERATURE SENSOR

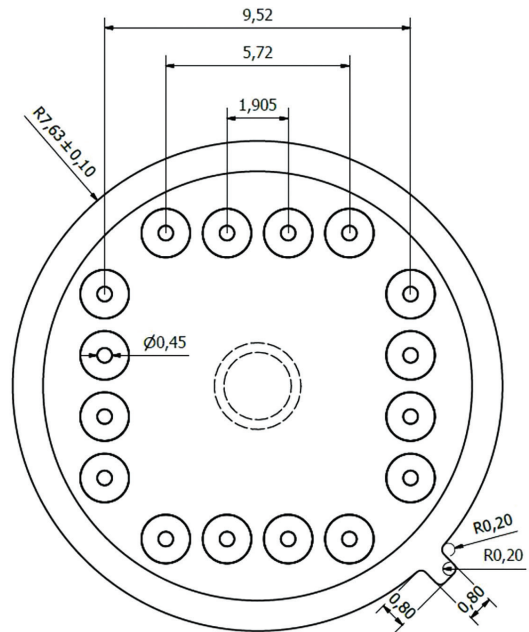
- T+: 45 μ A
- Slope: -2.227 mV/ $^{\circ}$ C
- V (0 $^{\circ}$ C): 629 mV



Pin configuration (top view)



Detector geometry



Footprint (top view)



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