

Room temperature high efficiency CdTe radiation detector

CdTe & CZT DETECTORS

CdTe & CdZnTe are large band gap semiconductors, presenting high atomic number Z as well as a high density.

This gives them certain advantages over other detectors like :

- * **Room temperature** operation and storage, what means that vacuum and cryostat are no longer necessary, thus avoiding stability problems.
- * **No high voltage**, a biasing in the range 10-100V/mm is sufficient.
- * **Very high efficiency** : 2mm absorption depth of CdTe or CdZnTe are equivalent to 10mm of Ge in gamma ray detection.
- * In imaging applications : possibly to associate a large number of detectors or pixels and to distinguish between primary and scattered events.
- * **Good energy resolution**, especially with pixel structures (« pixel effect »).
- * **Low cost**.

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Standard Detectors Grades & Sizes

COUNTERS

TYPE	AREA (mm ²)	THICKNESS (mm)	BIAS VOLTAGE (V)	CURRENT (nA)
C.1.1.1.	1X1	1	5 - 50	10 - 100
C.2.2.1.	2X2	1	5 - 50	10 - 100
C.2.2.2.	2X2	2	5 - 50	10 - 100
C.5.5.1.	5X5	1	5 - 50	10 - 100
C.5.5.2.	5X5	2	5 - 50	30 - 100
C.5.5.3.	5X5	3	5 - 50	30 - 200
C.5.5.5.	5X5	5	5 - 100	50 - 200
C.10.10.1.	10X10	1	5 - 50	30 - 200
C.10.10.2.	10X10	2	5 - 50	30 - 300
C.10.10.5.	10X10	5	5 - 100	50 - 500

Standard grade : $P/V < 1.5$ - Ultimate grade : $1.5 < P/V < 2$

SPECTROMETERS

TYPE	AREA (mm ²)	THICKNESS (mm)	BIAS VOLTAGE (V)	ENERGY RESOLUTION at 122keV (⁵⁷ Co) (FWHM)
S.1.1.1.S	1X1	1	30 - 50	6 - 10 keV
S.1.1.1.U	1X1	1	30 - 50	< 5 keV
S.2.2.1.S	2X2	1	30 - 50	6 - 10 keV
S.2.2.1.U	2X2	1	30 - 50	< 5 keV
S.2.2.2.S	2X2	2	30 - 50	8 - 12 keV
S.2.2.2.U	2X2	2	30 - 50	5 - 8 keV
S.5.5.1.S	5X5	1	30 - 50	6 - 10 keV
S.5.5.1.U	5X5	1	30 - 50	< 5 keV
S.5.5.2.S	5X5	2	50 - 100	8 - 12 keV
S.5.5.2.U	5X5	2	50 - 100	6 - 8 keV

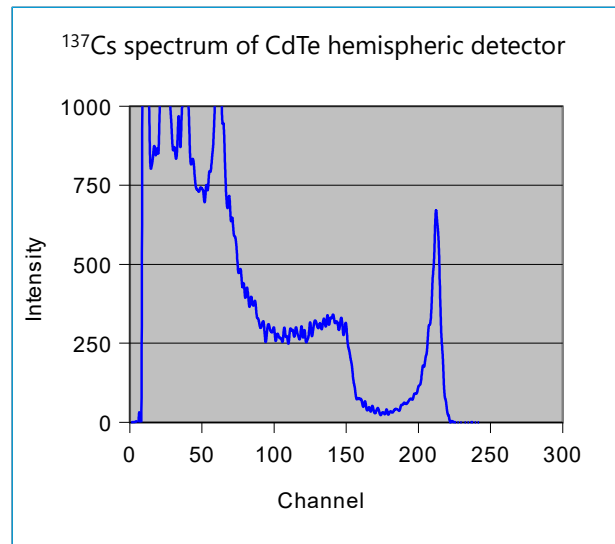
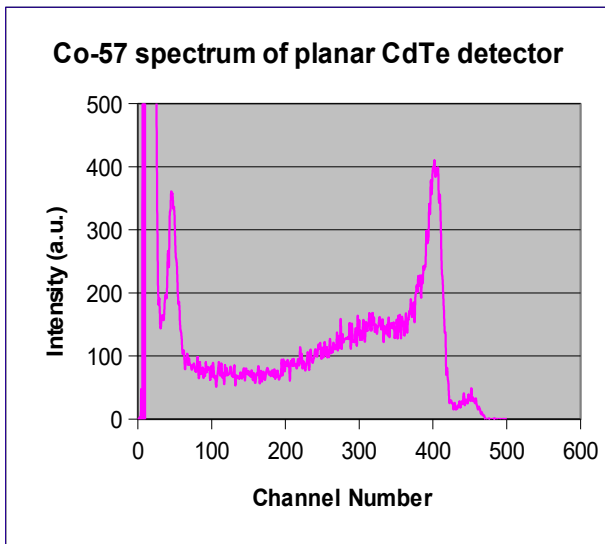
Standard grade : $2 < P/V < 3$ - Ultimate grade : $P/V \geq 3$

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HEMISPHERICAL DETECTORS

TYPE	AREA (mm ²)	THICKNESS (mm)	BIAS VOLTAGE (V)	ENERGY RESOLUTION at 661keV (¹³⁷ Cs) (FWHM)
SO8W	5X5	2	200 – 350	≤ 5 %
SO21W	10X10	5	800 – 1200	≤ 5 %

EXAMPLES OF GAMMA RAY SPECTRAL RESPONSE (Co-57 & Cs-137)



CdTe and CdZnTe detectors of both COUNTER and SPECTROMETER grade, with active sizes ranging from 1 to 500 mm for planar and hemispherical structures.

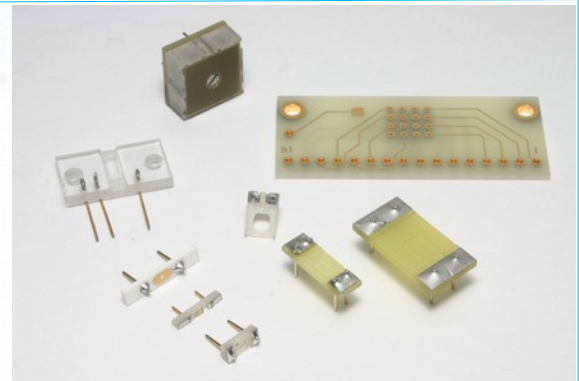
DIFFERENT TYPES OF MOUNTING AVAILABLE :



BNC HOUSING



TO39 BOX



PCB & CERAMIC HOLDER