



microSilicon X Type 60022

*Shielded silicon diode detector
for all photon fields*

Highlights

- ▶ Shielded diode detector for photon field sizes up to (40 x 40) cm²
- ▶ The shielding reduces the low energy scattered radiation amount in the detector signal
- ▶ Ideal for percentage depth dose measurements, field size independent
- ▶ Excellent dose stability (≤ 0.1 %/kGy at 6 MV)
- ▶ Low dose per pulse dependence

Due to its newly developed shielding, the microSilicon X is perfectly suited for measurements in photon fields up to large field sizes. With its excellent spatial resolution, it is possible to measure very precisely beam profiles, even in the penumbra region.

The improved energy response enables the user to perform accurate, field size independent percentage depth dose measurements. In addition the new design results in a small water equivalent window thickness, which has positive effects on the measurements of output factors.

Specification

Type of product	shielded p-type silicon diode
Application	relative dosimetry in radiotherapy beams
Reference radiation quality	⁶⁰ Co
Nominal sensitive volume	0.03 mm ³
Design	waterproof, disk-shaped sensitive volume perpendicular to detector axis
Reference point ¹	on detector axis, 0.9 mm from detector tip
Direction of incidence	axial
Nominal response	19 nC/Gy
Dose stability	≤ 0.1 %/kGy at 6 MV ≤ 0.5 %/kGy at 18 MV
Temperature response	≤ 0.1 %/K typical
Bias voltage	0 V
Signal polarity	negative

Directional response	$\leq \pm 1$ % for rotation around the chamber axis $\leq \pm 1$ % for tilting of the axis up to $\pm 20^\circ$
Leakage current	$\leq \pm 100$ fA typical
Cable leakage	≤ 1 pC/(Gy·cm)

Materials and measures

Entrance window	0.3 mm RW3 0.01 mm Al 0.48 mm epoxy
Total window area density	92 mg/cm ²
Water-equivalent window thickness	0.9 mm
Sensitive volume	radius 0.75 mm thickness 18 μ m
Outer dimensions	diameter 7 mm length 45.5 mm

Useful ranges

Radiation quality	⁶⁰ Co ... 25 MV photons
Field size	(2 x 2) cm ² ... (40 x 40) cm ²
Temperature	(10 ... 40) °C (50 ... 104) °F
Humidity	(10 ... 80) %, max 20 g/m ³
Air pressure	(700 ... 1060) hPa

Ordering Information

TN60022 microSilicon X, connecting system BNT
TW60022 microSilicon X, connecting system TNC
TM60022 microSilicon X, connecting system M

¹Reference point corresponds to the effective point of measurement.