Table 1. Layer details of the AlGaAs wafer from which the diodes were fabricated.

Figure 1. Calculated quantum efficiency of the photodiodes used in this work (solid line). For comparison, the quantum efficiencies of the photodiodes used in refs. [9,17] are also shown (long dashes and short dashes, respectively).

Figure 2. Measured leakage currents of the devices as functions of applied reverse bias. Diode 1 – diamonds; Diode 2 – × symbol; Diode 3 – stars; Diode 4 – + symbol; Diode 5 – long dash; Diode 6 – short dash; Diode 7 – squares; Diode 8 – triangles; Diode 9 – circles.

Figure 3. ^{55}Fe spectrum obtained with Diode 3 reverse biased at 5 V. The dashed lines are the fitted Mn Kα and Kβ peaks.

Figure 4. Measured FWHM at 5.9 keV for Diodes 1 – 9 when reverse biased at 5 V (circles) and Diodes 1 – 6 when reverse biased at 10 V (squares). Also shown at the mean FWHM at each reverse bias (long dashes and short dashes, respectively).

Figure 5. Computed noise contributions for the diodes reverse biased at 5 V. Total FWHM – diamonds; Stray capacitances and dielectrics – short dashes; Known dielectrics – stars; Series white noise – triangles; Calculated charge trapping – + symbol; Parallel white noise – squares; Fano noise – circles; 1/f noise – × symbol.