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Type II superlattice infrared focal plane arrays: Optical, electrical, and mid-wave infrared imaging characterization. JOHN LITTLE, STEFAN SVENSSON, ARNIE GOLDBERG, STEVE KENNERLY, KIM OLVER, Army Research Laboratory, Adelphi, MD 20783, TRIRAT HONGSMATIP, MICHAEL WINN, PARVEZ UPPAL, BAE Systems, Nashua, NH 03060 — We have studied the infrared optical and temperature dependent electrical properties of 320 x 256 arrays of GaSb/InAs type II superlattice infrared photodiodes. Good agreement between single-pixel and focal plane array measurements of the photon-to-electron/hole conversion efficiency was obtained, and the infrared absorption coefficient extracted from these measurements was found to be comparable to that of HgCdTe with the same bandgap as the type II superlattice. Temperature and voltage dependent dark current measurements and the voltage dependent photocurrent generated by a 300 K background scene were described well using a semi-empirical model of the photodiode. We will show high-quality images obtained from the mid-infrared focal plane array operating at 78 K.

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