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Far-Infrared Trapping Detector with Nearly Ideal Response SOLOMON WOODS, National Institute of Standards and Technology, JAMES PROCTOR, TIMOTHY JUNG, JORGE NEIRA, Jung Research and Development Corp. — We have developed a cryogenic infrared detector with nearly unity quantum efficiency over the spectral range from 4 μm to 24 μm. This light-trapping device is composed of two Si:As blocked-impurity-band (BIB) detectors in a wedge geometry behind a 1 mm entrance aperture. Operated at a temperature of 10 K, the device exhibits significant responsivity from 2 μm to 30 μm and dark current less than 30 nA. Compared to HgCdTe detectors, these silicon-based trapping devices exhibit higher sensitivity, more uniform spatial response, and a spectral range which extends further into the far-infrared. This trap detector could be particularly useful as a mid-infrared and far-infrared transfer standard, with nearly ideal photodetector response at the 10.6 μm line of CO_2 lasers.

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