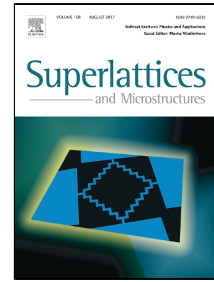


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## 320×256 high operating temperature mid-infrared focal plane arrays based on type-II InAs/GaSb superlattice

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### Abstract

320×256 mid-infrared focal plane arrays, together with linear arrays and single element devices, were fabricated based on type-II InAs/GaSb superlattice. At 77K, the diode shows 50% cut-off wavelength of 4.8 $\mu$ m and peak quantum efficiency of 38% at 3.7 $\mu$ m without any bias dependence. The dominant dark current mechanisms at different temperatures are identified by  $R_0A$  analysis. At 160K,  $R_0A$  of  $2.2 \times 10^3 \Omega \text{ cm}^2$  and specific detectivity of  $1.8 \times 10^{11} \text{ cm Hz}^{0.5}/\text{W}$  are demonstrated. Infrared imaging with an integration time of 5ms demonstrates noise equivalent temperature difference of 12.3mK and 34.2mK, separately at 90K and 120K.

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**Keywords:** Mid-infrared, Focal plane arrays, InAs/GaSb superlattice, HOT

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