

**A BROADBAND TUNABLE THZ WAVE MANIPULATOR AND THE METHOD
TO FORM THE SAME**

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Abstract

This invention relates to semiconductor device comprising a semiconductor substrate having a metasurface layer configured with multiple pairs of finger portions in a repeating arrangement. The multiple pairs of finger portions are electrically configurable to modulate a radiation signal received by the semiconductor device. Each pair of finger portions comprises first and second members where the first member is doped with a first dopant and the second member is doped with a second dopant being different to the first dopant. Any two adjacent first or second members are configured to be separated by at least deep subwavelength to enable the repeating arrangement.

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Figure 2a