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[54] DISLOCATION DENSITY REDUCTION IN GALLIUM ARSENIDE ON SILICON HETEROSTRUCTURES

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[57] **ABSTRACT**

A method of forming gallium arsenide on silicon heterostructure including the use of strained layer superlattices in combination with rapid thermal annealing to achieve a reduced threading dislocation density in the epilayers. Strain energy within the superlattices causes threading dislocations to bend, preventing propagation through the superlattices to the epilayer. Rapid thermal annealing causes extensive realignment and annihilation of dislocations of opposite Burgers vectors and a further reduction of threading dislocations in the epilayer.

20 Claims, 8 Drawing Sheets