

ABSTRACT

GROWN NANOFIN TRANSISTORS

One aspect of the present subject matter relates to a method for forming a transistor. According to an embodiment, a fin of amorphous semiconductor material is formed on a crystalline substrate, and a solid phase epitaxy (SPE) process is performed to crystallize the amorphous semiconductor material using the crystalline substrate to seed the crystalline growth. The fin has a cross-sectional thickness in at least one direction less than a minimum feature size. The transistor body is formed in the crystallized semiconductor pillar between a first source/drain region and a second source/drain region. A surrounding gate insulator is formed around the semiconductor pillar, and a surrounding gate is formed around and separated from the semiconductor pillar by the surrounding gate insulator. Other aspects are provided herein.

Fig. 8