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(54) **GRAPHENE DEVICE AND METHOD OF
FABRICATION OF A GRAPHENE DEVICE**

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(57) **ABSTRACT**

A method of fabricating a graphene-based solid-state device include: disposing a layer of an electric conductive material a substrate; depositing a first layer on the electric conductive material, the first layer being made of a first oxide dielectric material; patterning the first layer to expose a portion of the layer of electric conductive material; disposing a graphene layer on the first layer; patterning the graphene layer to define a channel region; applying a lithographic process to define two contact areas in the graphene layer; depositing one metallic contact on each of the defined contact areas; depositing a second layer of an insulating material on the stacked structure, the second layer made of a second oxide dielectric material different from the first of which the first layer is made; and the selectivity to at least one etchant of the first oxide dielectric material is different from the second.

