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

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**ABSTRACT**

A method of metallizing a solid-state device including a substrate and at least one graphene channel on the substrate includes applying a first metal deposition stage for depositing at least one first metallic structure, the metallic structure partially occupying the graphene layer and the substrate, wherein a metal deposition technique which does not use plasma is used to deposit the metallic structure; applying a second metal deposition stage for depositing at least one second metallic structure on a region of the first metallic structure not deposited on the graphene channel. A solid-state device includes at least two metallic structures, one partially occupying the graphene layer and the substrate and one partially deposited on a region of the at least one first metallic structure which is not deposited on the graphene channel. A method of packaging in a socket a die having at least one graphene-based solid-state device is related.

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