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(54) Title: GRAPHENE CHANNEL-BASED DEVICES AND METHODS FOR FABRICATION THEREOF

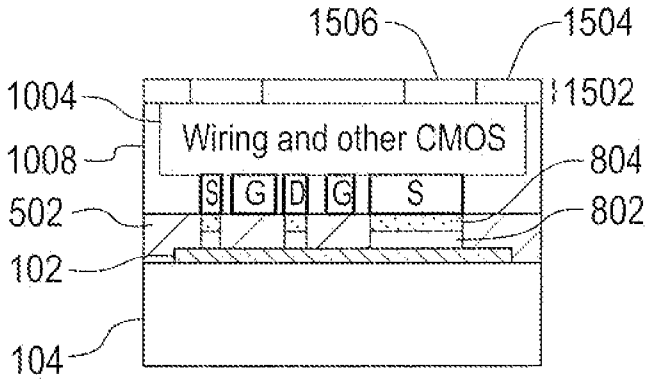


FIG. 15

(57) Abstract: Graphene-channel based devices and techniques for the fabrication thereof are provided. In one aspect, a semiconductor device includes a first wafer having at least one graphene channel formed on a first substrate, a first oxide layer surrounding the graphene channel and source and drain contacts to the graphene channel that extend through the first oxide layer; and a second wafer having a CMOS device layer formed in a second substrate, a second oxide layer surrounding the CMOS device layer and a plurality of contacts to the CMOS device layer that extend through the second oxide layer, the wafers being bonded together by way of an oxide-to-oxide bond between the oxide layers. One or more of the contacts to the CMOS device layer are in contact with the source and drain contacts. One or more other of the contacts to the CMOS device layer are gate contacts for the graphene channel.

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