Abstract Submitted
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Heat Removal with Graphene Lateral Heat Spreaders[1] S. SUBRINA, D. KOTCHETKOV, S. GHOSH[2], A.A. BALANDIN, Nano-Device Laboratory, Department of Electrical Engineering, University of California Riverside, Riverside, CA 92521 — Device downscaling leads to higher chip power densities. A possible approach for heat removal from the localized hot spots is incorporation to chips of materials with high thermal conductivity. Recently, graphene and few-layer graphene (FLG) were proposed for heat removal owing to their superior thermal conductivity [1]. To evaluate the feasibility of this approach we simulated numerically heat propagation in SOI-based chip with and without graphene layers. It was found that incorporation of graphene or FLG can lead to substantial reduction of the hot spot's temperature [2]. The obtained results and are important for the design of graphene heat spreaders and interconnects [3].

[1] A.A. Balandin, et al., Nano Lett., 8, (2008); S. Ghosh, et al., Appl. Phys. Lett., 92, (2008)
[2] S. Subrina, et al., Electron Dev. Lett., December (2009)
[3] A.A. Balandin, "New materials can keep chips cool," IEEE Spectrum, October 2009

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