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Two Dimensional Phonon Transport in Graphene INSUN JO, Department of Physics, The University of Texas at Austin, JAE HUN SEOL, ARDEN L. MOORE, MICHAEL T. PETTES, Department of Mechanical Engineering, The University of Texas at Austin, LUCAS LINDSAY, Department of Physics - Boston College, NATALIO MINGO, Laboratoire d'Innovation pour les Technologies des Energies Nouvelles et les Nanomatériaux, Commissariat à l'Énergie Atomique Grenoble, DAVID BROIDO, Department of Physics - Boston College, ZHEN YAO, Department of Physics, The University of Texas at Austin, LI SHI, Department of Mechanical Engineering, The University of Texas at Austin — We present thermal conductivity measurements of monolayer graphene exfoliated on a silicon dioxide substrate at different temperatures. A nanofabricated resistance thermometer device is developed to measure the thermal conductance of graphene and supporting 300nm thick SiO_2 layer, which allows us to extract the thermal conductivity of graphene while supported on this layer. The measured value is as high as 600 W/mK near room temperature, which is lower than that of suspended graphene, 1500-5800 W/mK, but still higher than those of metal interconnects. Theoretical calculations show that the strong interface-scattering of flexural modes across the graphene-oxide interface is responsible for the decreased value.

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