Electronic Supplementary Information

Inverted Process for Graphene Integrated Circuits Fabrication on 200mm Wafers

Hongming Lv\textsuperscript{a}, Huaqiang Wu\textsuperscript{a}\textsuperscript{*}, Jinbiao Liu\textsuperscript{b}, Can Huang\textsuperscript{a}, Junfeng Li\textsuperscript{b}, Jiahan Yu\textsuperscript{b}, Jiebin Niu\textsuperscript{b}, Qiuxia Xu\textsuperscript{b}, Zhiping Yu\textsuperscript{a}, He Qian\textsuperscript{a}

\textsuperscript{a} Institute of Microelectronics, Tsinghua University, Haidian District, Beijing, 100084, China. Fax: +86-010-62771130; Tel: +86-010-62782712; E-mail: wuhq@tsinghua.com

\textsuperscript{b} Institute of Microelectronics, Chinese Academy of Sciences, Haidian District, Beijing, China 100029, China.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{graphene_image.png}
\caption{Optical image of the graphene film on 300nm SiO\textsubscript{2} substrate. It is synthesized by APCVD method in this work.}
\end{figure}
Figure S2. Raman spectrum of the graphene film used in this work. The absence of D band indicates good quality of the graphene.

Figure S3. AFM image of the buried gate stack with (a) and without graphene (b). The graphene film on the buried gate stack is smooth (Rq=3.07nm), while the exposed substrate has a coarser surface (Rq=5.22nm).