

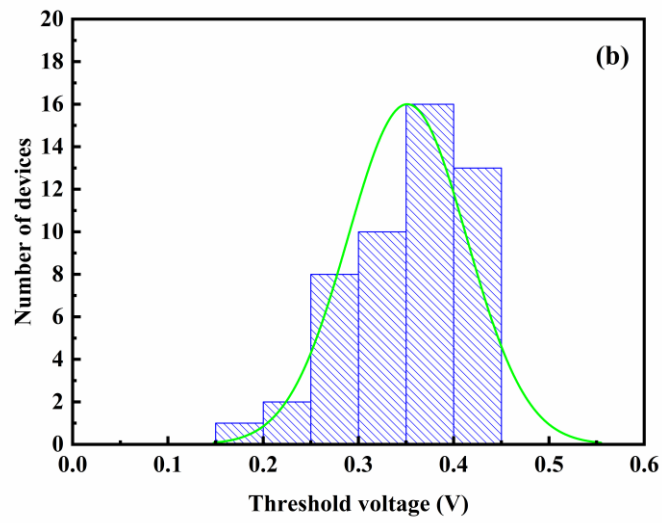
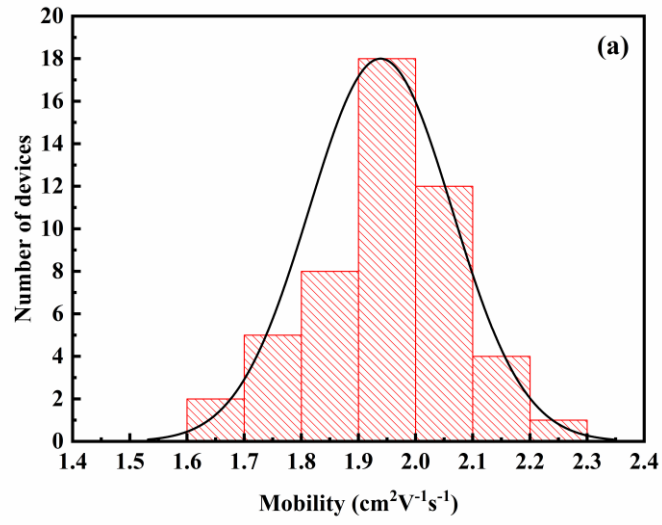
## Supplementary Material

### **Approaching subthreshold-swing limit for thin-film transistors by using a giant-dielectric-constant gate dielectric**

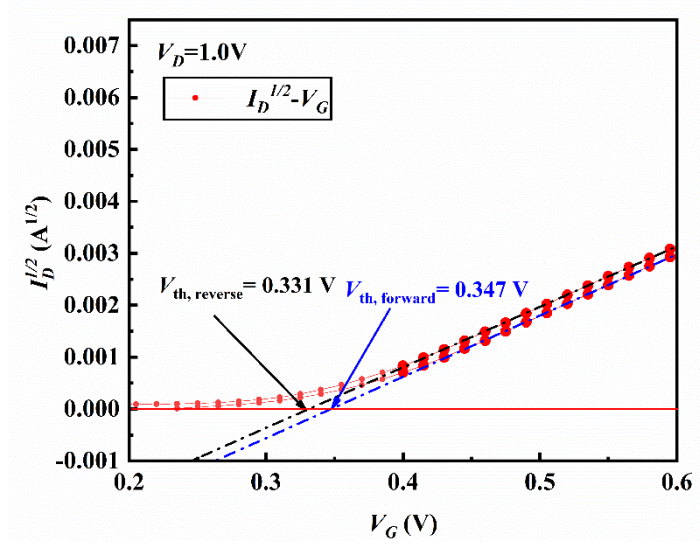
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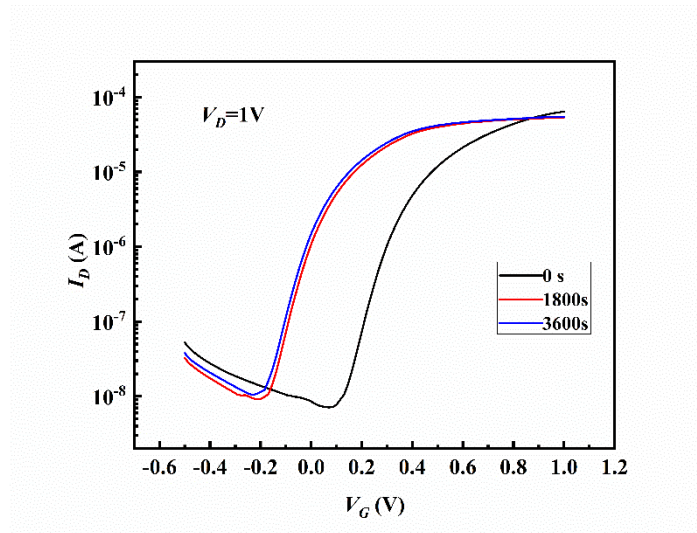
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**Figure S1.** Histograms of the (a) mobility and (b) threshold voltage of the IZO-TFT with the  $\text{In}_{0.0025}\text{Nb}_{0.0025}\text{Ti}_{0.995}\text{O}_2$  insulator.



**Figure S2.** The enlarge transfer curve of the IZO-TFT with the  $\text{In}_{0.0025}\text{Nb}_{0.0025}\text{Ti}_{0.995}\text{O}_2$  insulator. The source-drain current hysteresis was measured by sweeping the  $V_G$  from -0.5 V to 1.0 V and then sweeping back from 1.0 V to -0.5 V. The number of the test points for the gate voltage range from -0.5 V to 1.0 V was 101, and the time between adjacent test points was 0.5 s, so the sweep rate of  $V_G$  was 0.015 V/s. The hysteresis of  $I_D$ - $V_G$  curve is defined by the  $V_{th}$  difference between forward and reverse sweeps ( $\sim 0.016$  V).



**Figure S3.** The variations of time-dependent transfer curves of the IZO-TFT with the  $\text{In}_{0.0025}\text{Nb}_{0.0025}\text{Ti}_{0.995}\text{O}_2$  insulator

under NBS. During the stress  $V_G=-0.5$  V, and  $V_D=1$  V at room temperature.