Supporting Information

Thermopower Modulation Analyses of High-Mobility Transparent Amorphous Oxide Semiconductor Thin-Film Transistors

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**Table S1.** The transistor characteristics of the ITZO-TFTs with various ITZO thickness.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ITZO thickness (nm) | *I*ON/*I*OFF | *μ*FE (cm2 V−1 s−1) | *S.S.*(mV decade−1) | *V*th(V) |
| 5 | 1.74 × 109 | 34 | 100 | −2.9 |
| 10 | 4.97 × 109 | 58 | 70 | −5.5 |
| 20 | 3.23 × 109 | 43 | 90 | −5.9 |
| 30 | 2.38 × 108 | 49 | 180 | −12 |
| 40 | 3.51 × 108 | 35 | 120 | −12.9 |
| 50 | 1.65 × 109 | 33 | 150 | −14.5 |



**Figure S1** | Transfer characteristics of the 10-nm-thick a-ITZO TFTs under (a) positive bias stress (PBS) (b) negative bias stress (NBS). The bias stability test was conducted at room temperature, the *V*g was setting as $\pm $20 V with the stress time up to 10000 s. The transfer characteristics curve shifted to the positive/negative direction, the *V*th shift (Δ*V*th) under PBS is + 1.2 V while under NBS is −1.5 V without any passivation.