

High electron mobility Si-doped β -Ga₂O₃ MESFETs

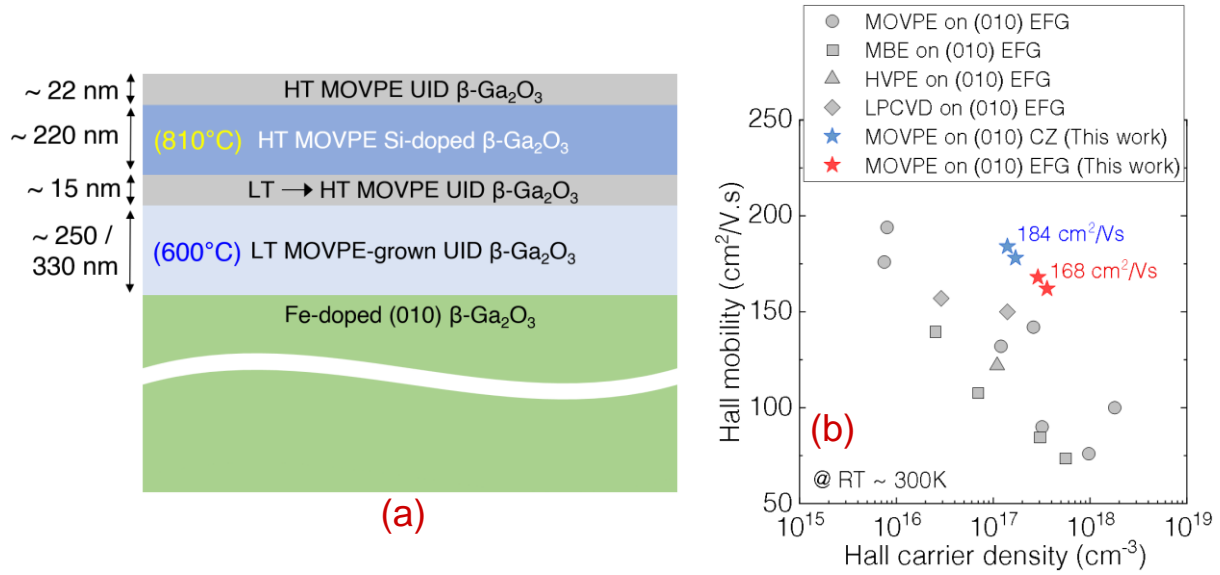


Fig 1: (a) Schematic of β -Ga₂O₃ channel stack with LT buffer. (b) Benchmarking of Hall mobility vs carrier densities with other state-of-the-art values in the literature. Our channel stack shows the highest mobility values for $> 1 \times 10^{17} \text{ cm}^{-3}$ doped films

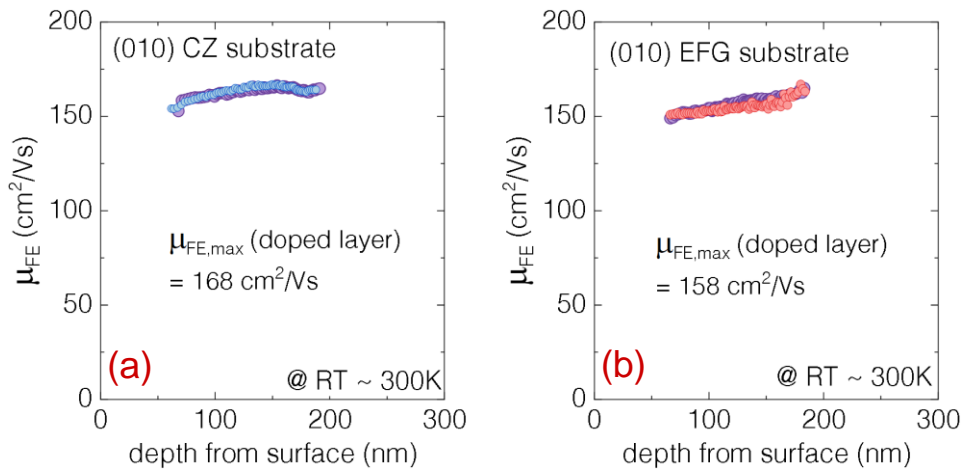


Fig 2: Field-effect mobility extracted from multiple FatFETs ($L_g = 110 \mu\text{m}$) @ $V_{DS} = 0.1\text{V}$ on films grown on (a) (010) CZ substrate (NG Synoptics, USA) and (b) (010) EFG substrate (NCT, Japan).

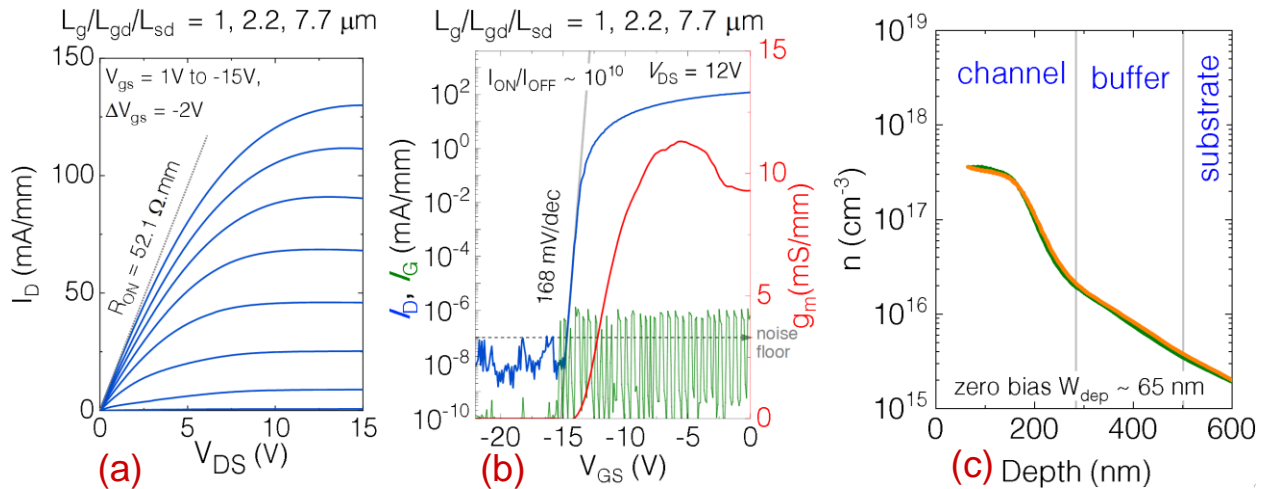


Fig 3: (a) Output and (c) Transfer curves of MESFET on (010) EFG substrate showing max ON current of $\sim 130 \text{ mA/mm}$, $I_{ON}/I_{OFF} \sim 10^{10}$ and ultra-low reverse leakage. (c) Channel charge profile extracted from CV showing no active parasitic channel at the regrowth interface and completely depleted buffer.