for forward sweep. The SS of FinFET cannot overcome the limitation of 60 mV/decade, however, the SS of NCFinFET has about 5 points that overcomes this limitation. Fig. 7 plots the gate leakage current of FinFET and NCFinFET devices. Experimental result shows clearly that the gate leakage current of NCFinFET is similar to that of FinFET, thus, the steep switching characteristic of NCFinFET does not come from the gate leakage current since the value of gate leakage current is lower than ~10^{-11} A for $V_{GS} > 0$ V.

4. Conclusion

Performance related to steep switching and device reliability of NC FinFET is experimentally demonstrated. Because of the negative capacitance effect, the subthreshold slope (both average and minimum subthreshold slope) is highly enhanced, compared to the baseline FinFET device only. For the reliability issue of NC FinFET device in terms of the gate leakage current, the gate leakage current of NC FinFET is experimentally demonstrated by using Keithley-4200A SCS equipment. We clearly demonstrated that the gate leakage current of NC FinFET is similar to that of FinFET device, thus, the steep switching characteristic of NC FinFET device does not originate from the leakage current.

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