

Interface Trap-Induced Temperature Dependent Hysteresis and Mobility in β -Ga₂O₃ Field-Effect Transistors

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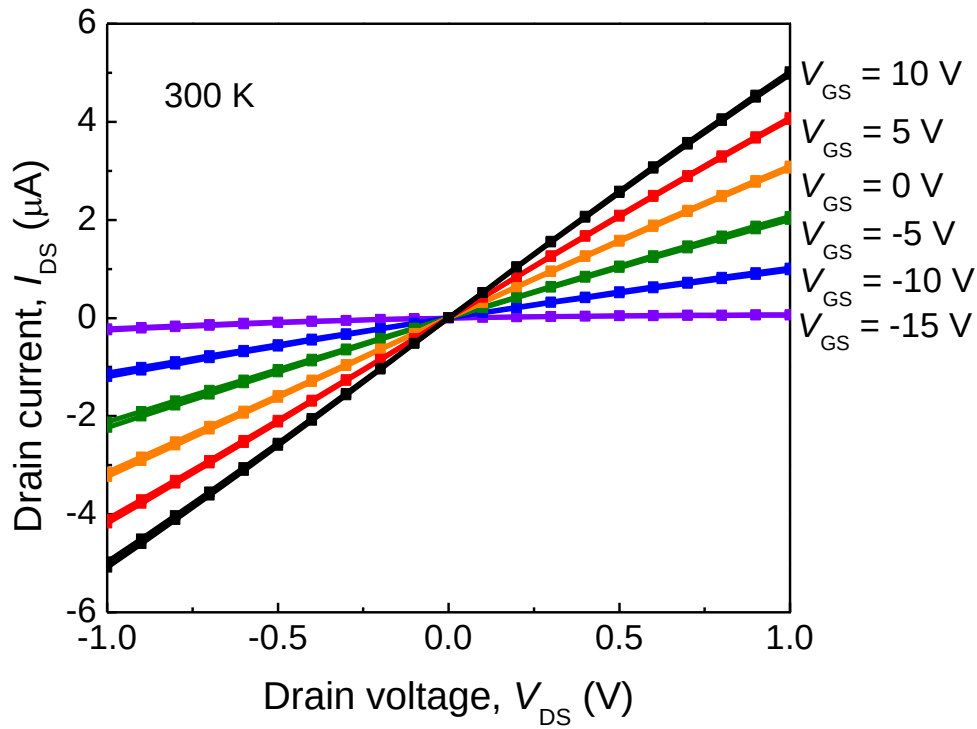


Figure S1. Output curves of I_{DS} – low V_{DS} at room temperature for $V_{GS} = -15, -10, -5, 0, 5$, and 10 V. The good linearity of output curves indicate the Ohmic contact of the β -Ga₂O₃ FET.

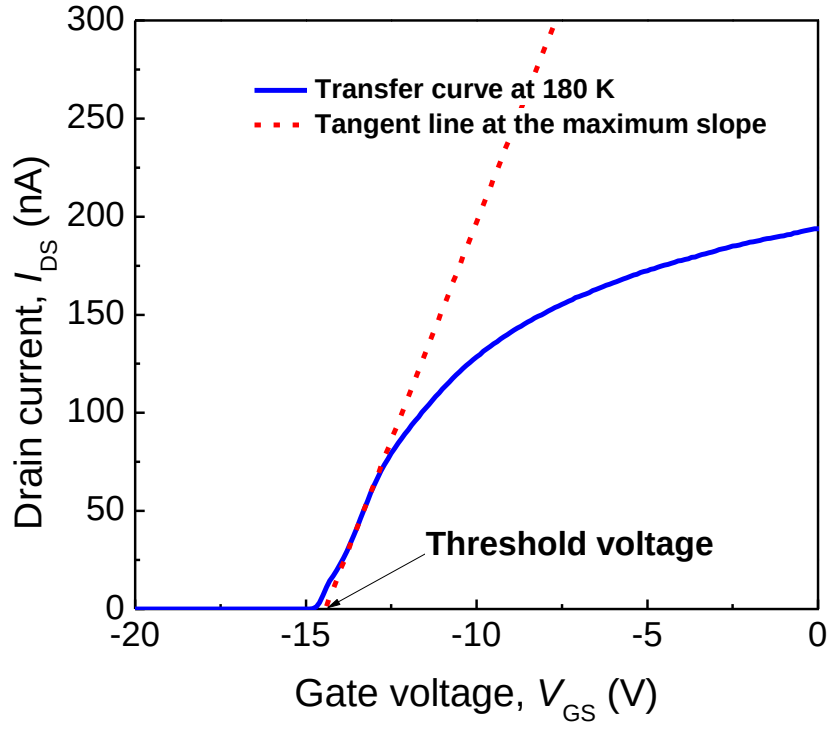


Figure S2. Transfer curve for $V_{bs} = 1$ V in a linear scale at 180 K. The red dash line is tangential line at the maximum slope on transfer curve. The threshold voltage is defined as x -intercept of the red dash line.

Table S1. The density of the trapped and de-trapped charges and the time constants.

$$I = I_0 \pm \frac{\mu W V_{DS} (Q_1 e^{-t/\tau_{it1}} + Q_2 e^{-t/\tau_{it2}})}{L}$$

	$V_G = 0$ V					$V_G = 10$ V				
T [K]	Q_1+Q_2 [10^9 cm^{-2}]	Q_1 [10^9 cm^{-2}]	τ_{it1} [s]	Q_2 [10^9 cm^{-2}]	τ_{it2} [s]	Q_1+Q_2 [10^9 cm^{-2}]	Q_1 [10^9 cm^{-2}]	τ_{it1} [s]	Q_2 [10^9 cm^{-2}]	τ_{it2} [s]
280	19.23	2.33	19.41	16.9	153.13	-5.53	-2.52	3.35	-3.01	51.04
290	33.18	4.14	13.44	29.04	148.44	-7.73	-3.55	2.95	-4.18	50.72
300	38.61	4.77	6.16	33.84	72.24	-11.06	-6.09	1.73	-4.97	34
310	42.56	6.63	3.51	35.93	34.86	-10.71	-6.55	1.57	-4.16	25.35
320	42.7	5.84	1.52	36.86	13.89	-9.61	-5.69	0.95	-3.92	10.96