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• **Supplementary File** •

Reconfigurable Vertical Field Effect Transistor based on Graphene/$MoTe_2$/Graphite Heterostructure

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Appendix A Supplementary Figure

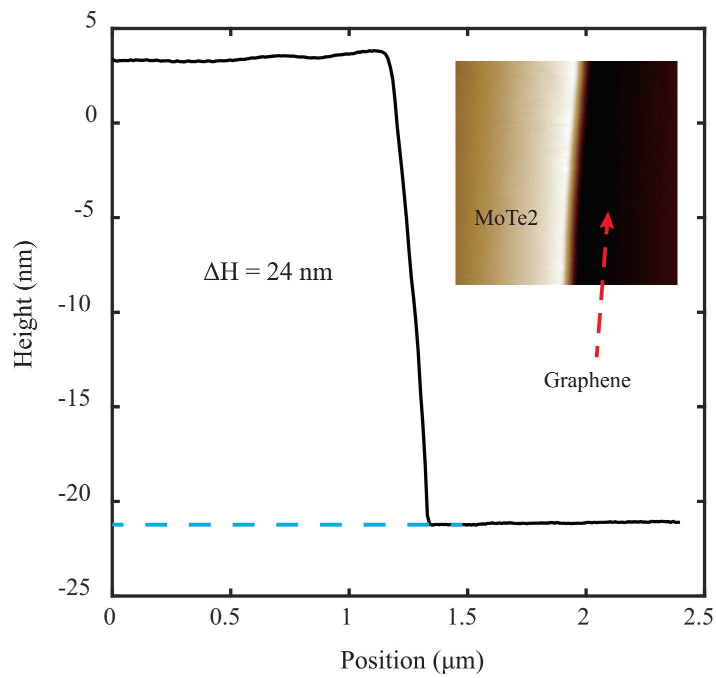

Figure S1 AFM height plot of $MoTe_2$ in a typical device. Inset shows the corresponding AFM image.

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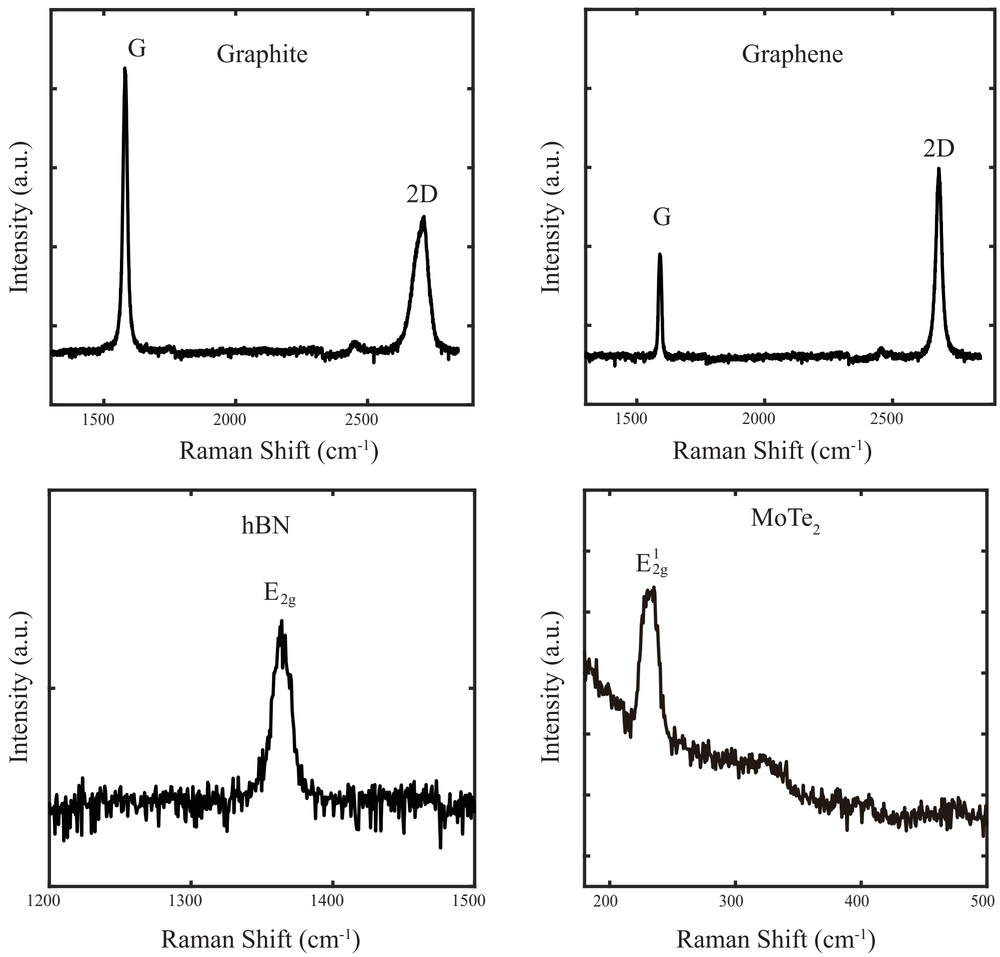

Figure S2 Raman spectra of each component of the graphene/$MoTe_2$/graphite/hBN heterostructure.

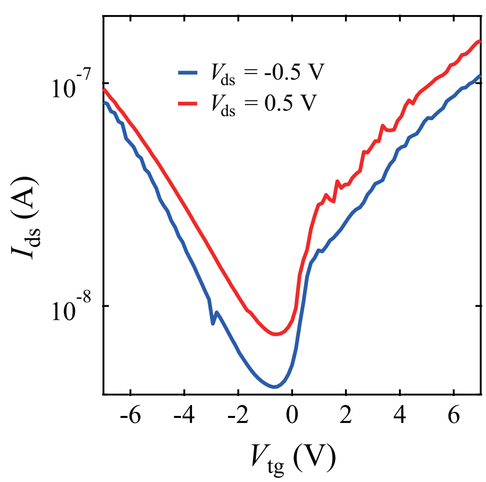

Figure S3 The field effect of drain-source current versus top gate voltage under different V_{ds} biases.

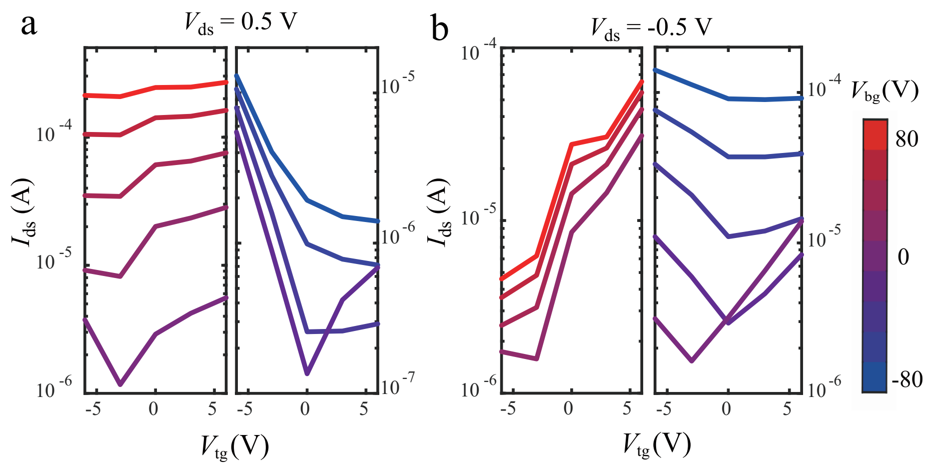

Figure S4 Field effect characteristics by sweeping top-gate voltage bias V_{tg} at different back-gate voltages. The drain-to-source bias is 0.5 V and -0.5 V in (a) and (b), respectively.

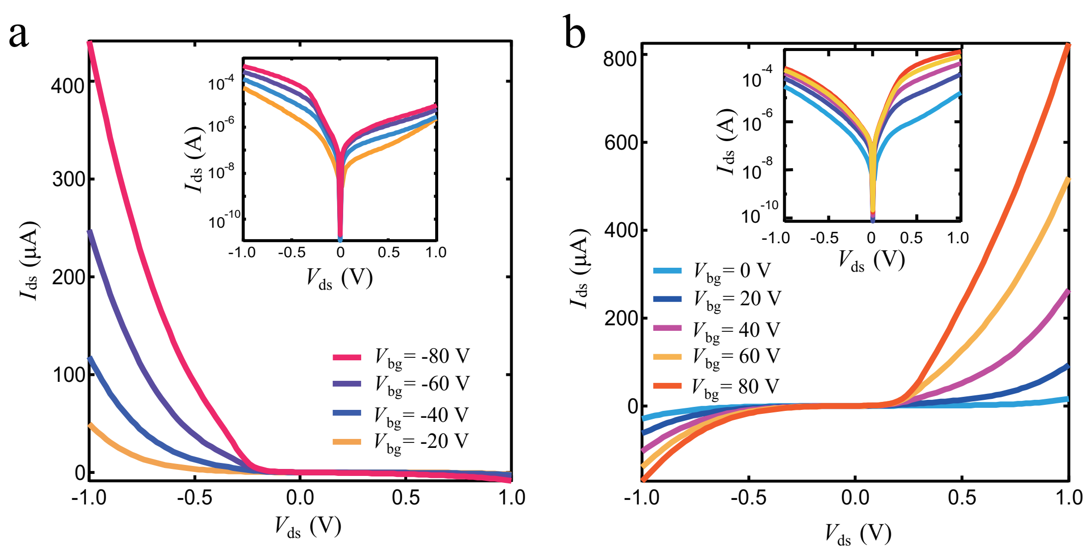

Figure S5 Output characteristics curves of RVFET. The back-gate voltage varies from -80 to -20 V in (a) and from 0 to 80 V in (b).

Appendix B Supplementary Table

Table S1 Comparison of different dual-gate reconfigurable FET devices.

Channel materials	Device structure	Channel length (nm)	Reconfigurable feature	On/Off ratio	On-state current(μA)	References
$MoTe_2$	Planar dual-gate	750	n-type	$\sim 10^3$	$\sim$2	[1]
			p-type	$\sim 10^5$	$\sim$0.1	
$MoTe_2$	Planar dual-gate	1200	n-type	$\sim 10^2$	$\sim$0.005	[2]
			p-type	$\sim 10^2$	$\sim$0.0003	
WSe_2	Planar dual-gate	$\sim$5000	n-type	$\sim 10^4$	$\sim$0.1	[3]
			p-type	$\sim 10^5$	$\sim$1	
Silicon nanowires	Planar dual-gate	680	n-type	$\sim 10^7$	$\sim$0.1	[4]
			p-type	$\sim 10^8$	$\sim$2	
$MoTe_2$	Vertical dual-gate	24	n-type	$\sim 10^3$	250	This work
			ambipolar	$\sim$10	63	
			p-type	$\sim 10^2$	140	

References

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