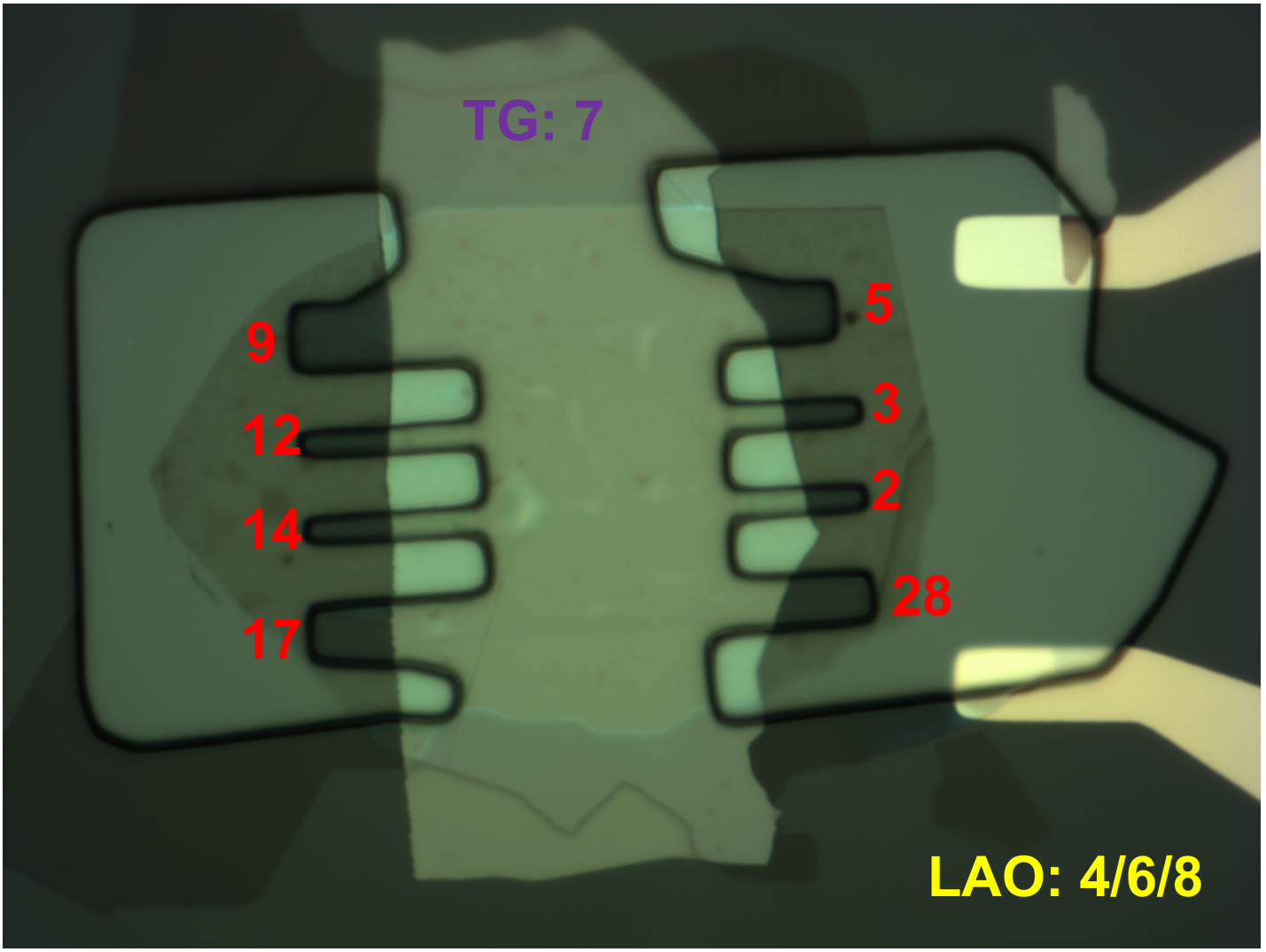
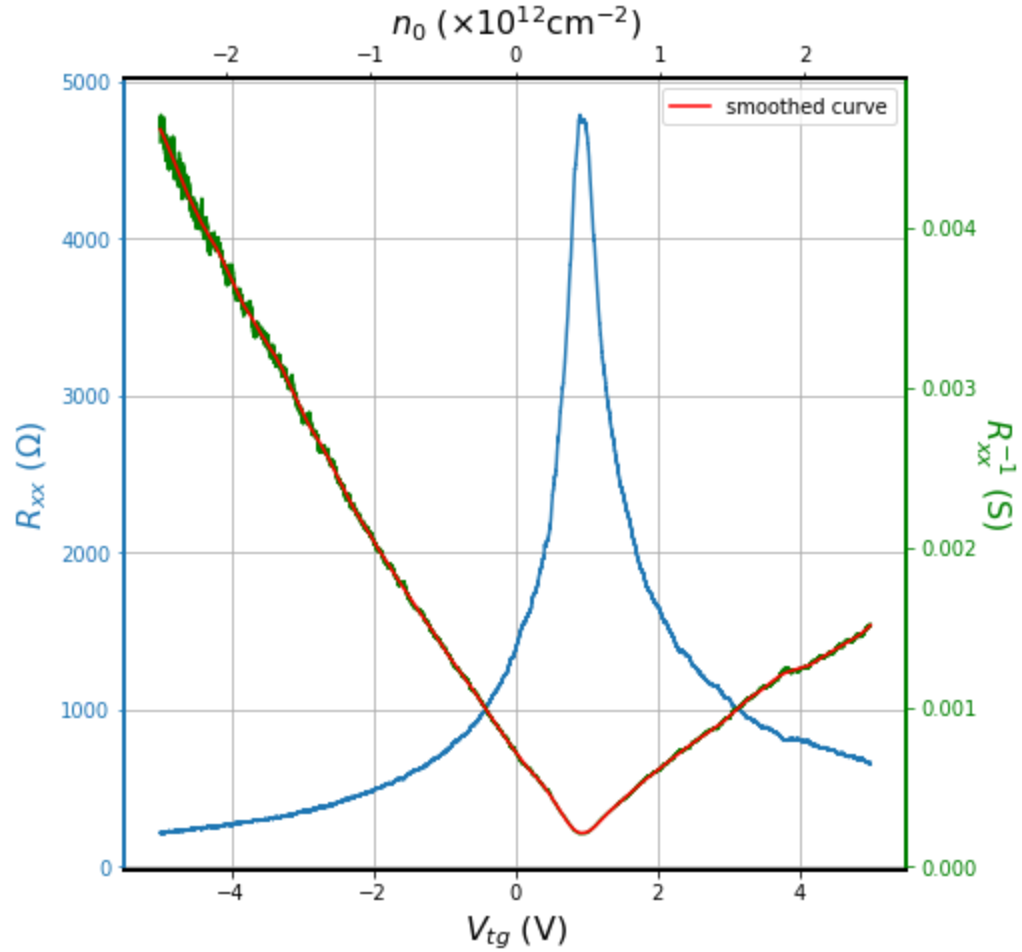
0. Device Layout

Out[2]:



1. "01 - Initial test/" (B = 0, 10mV+100kOhm, 13Hz)

Fig. 1a SA40379A.20221115.000006.tdms (S/D = 17/9, V_1/V_2 = 14/12, V_{tg} from +5V to -5V)



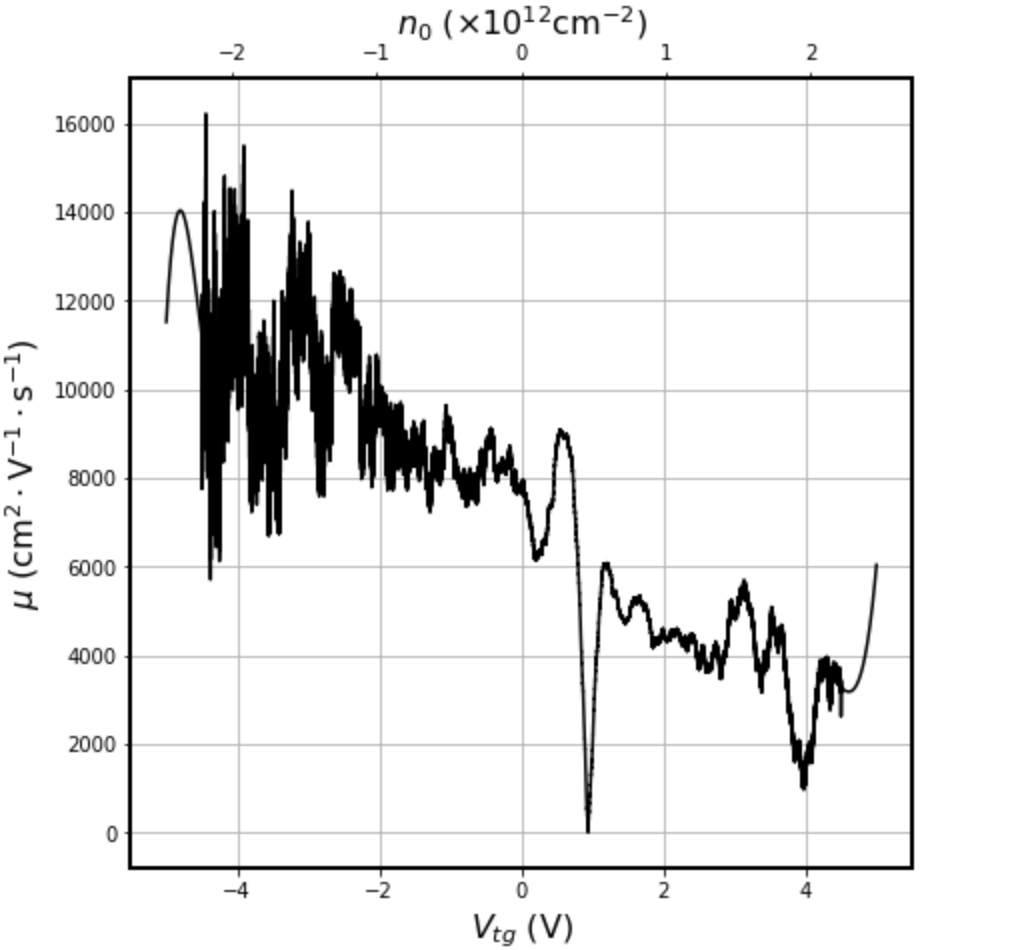
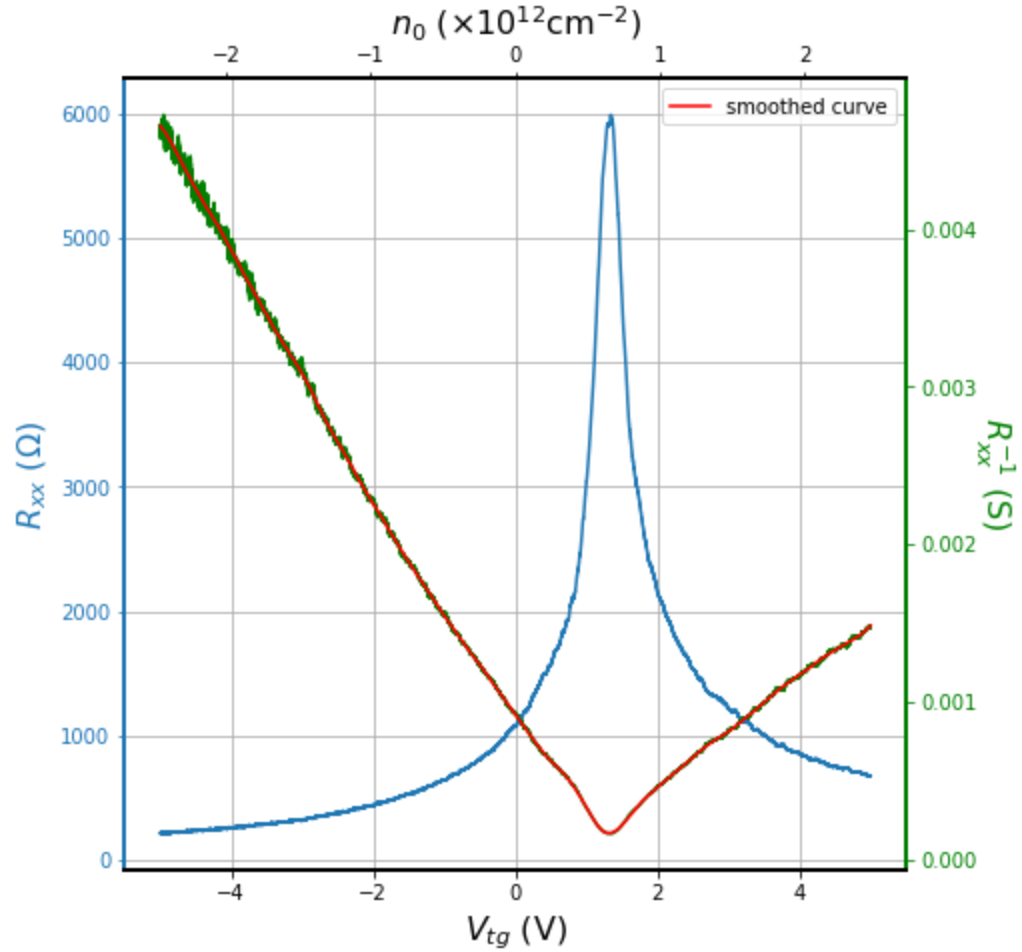


Fig. 1b SA40379A.20221115.000007.tdms (S/D = 17/9, V_1/V_2 = 14/12, V_{tg} from -5V to +5V)



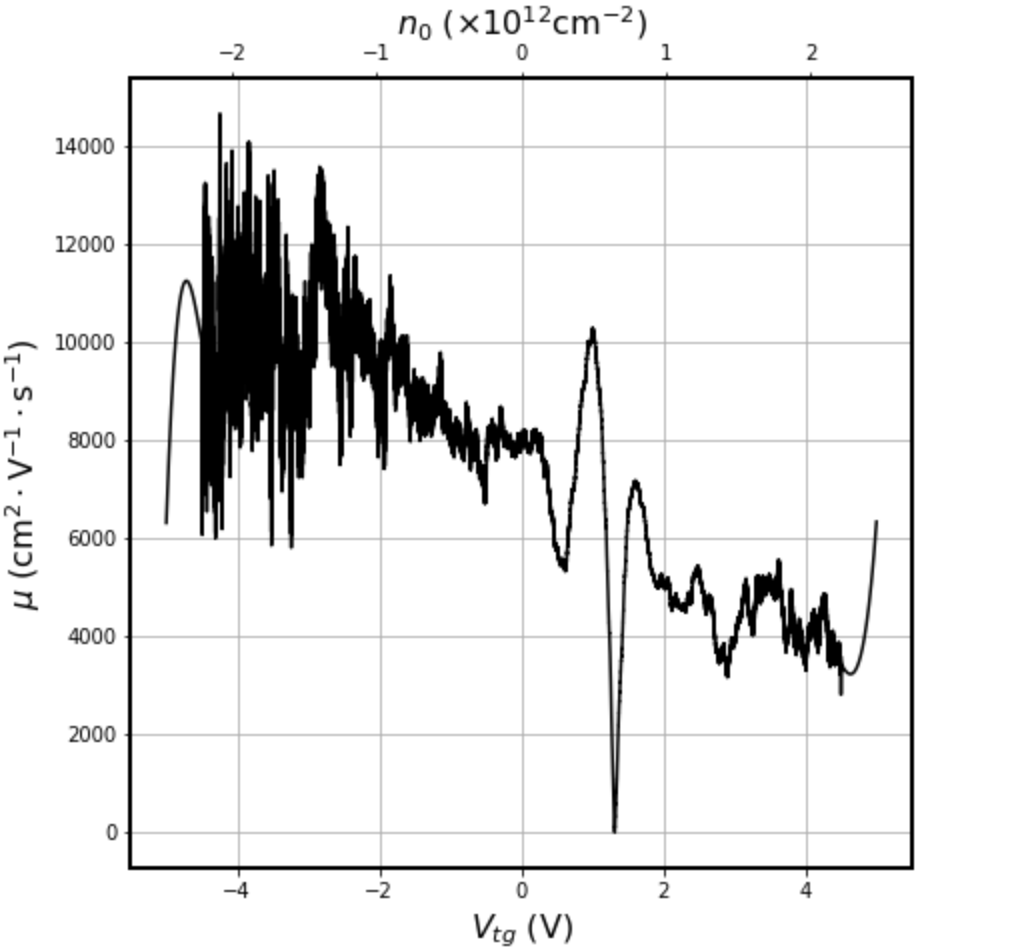


Fig. 1c SA40379A.20221115.000008.tdms (S/D = 17/9, V_1/V_2 = 14/12, V_{tg} from +5V to -5V)

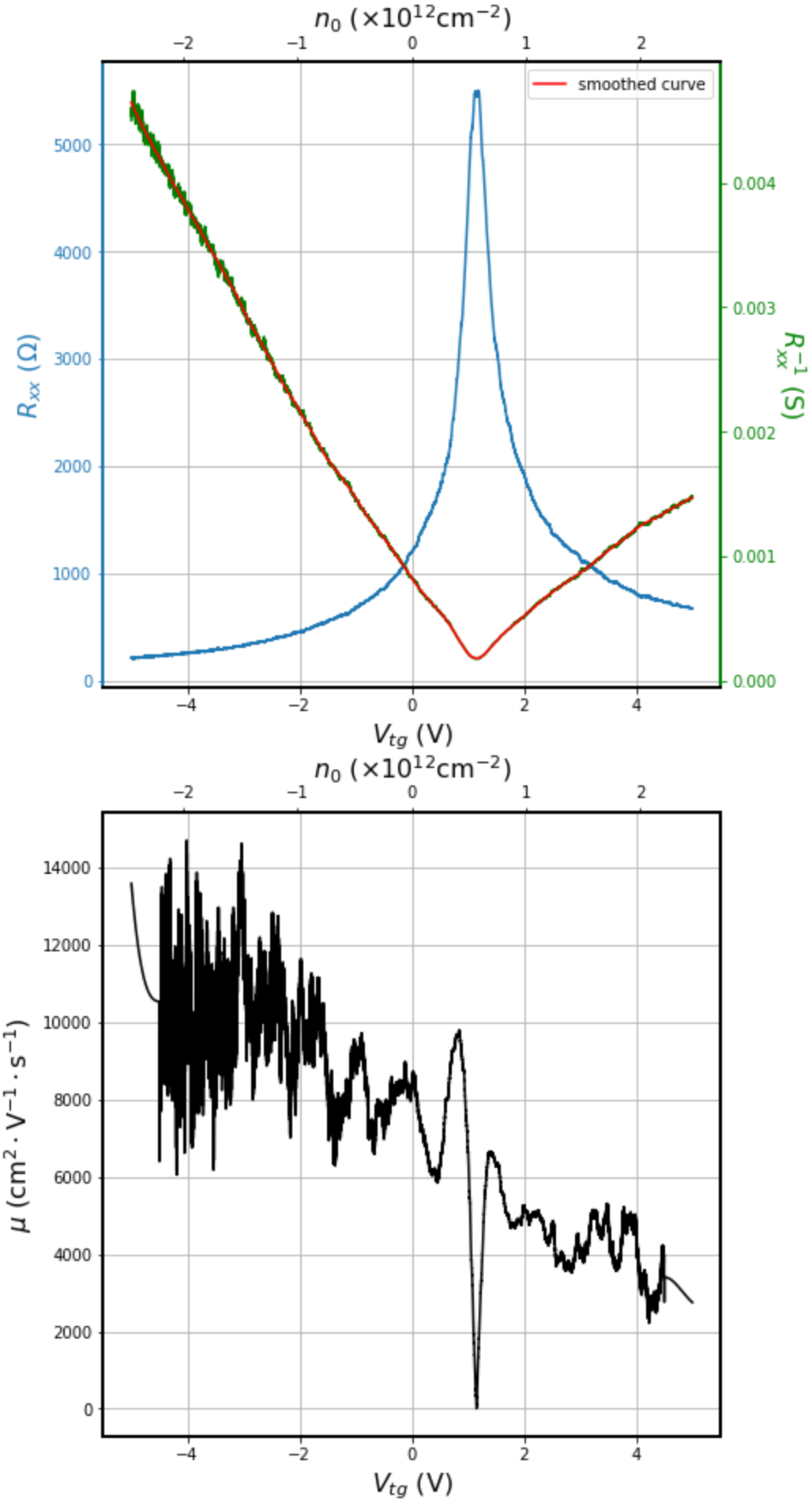
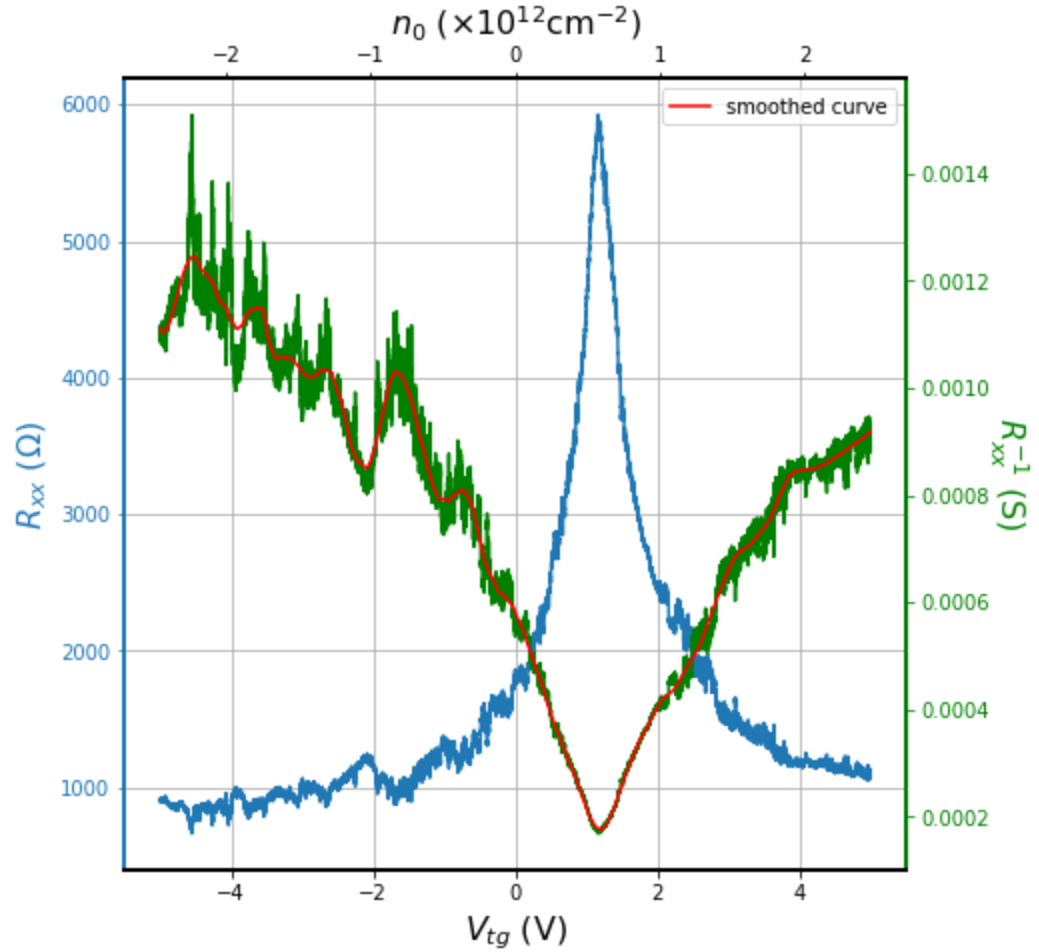
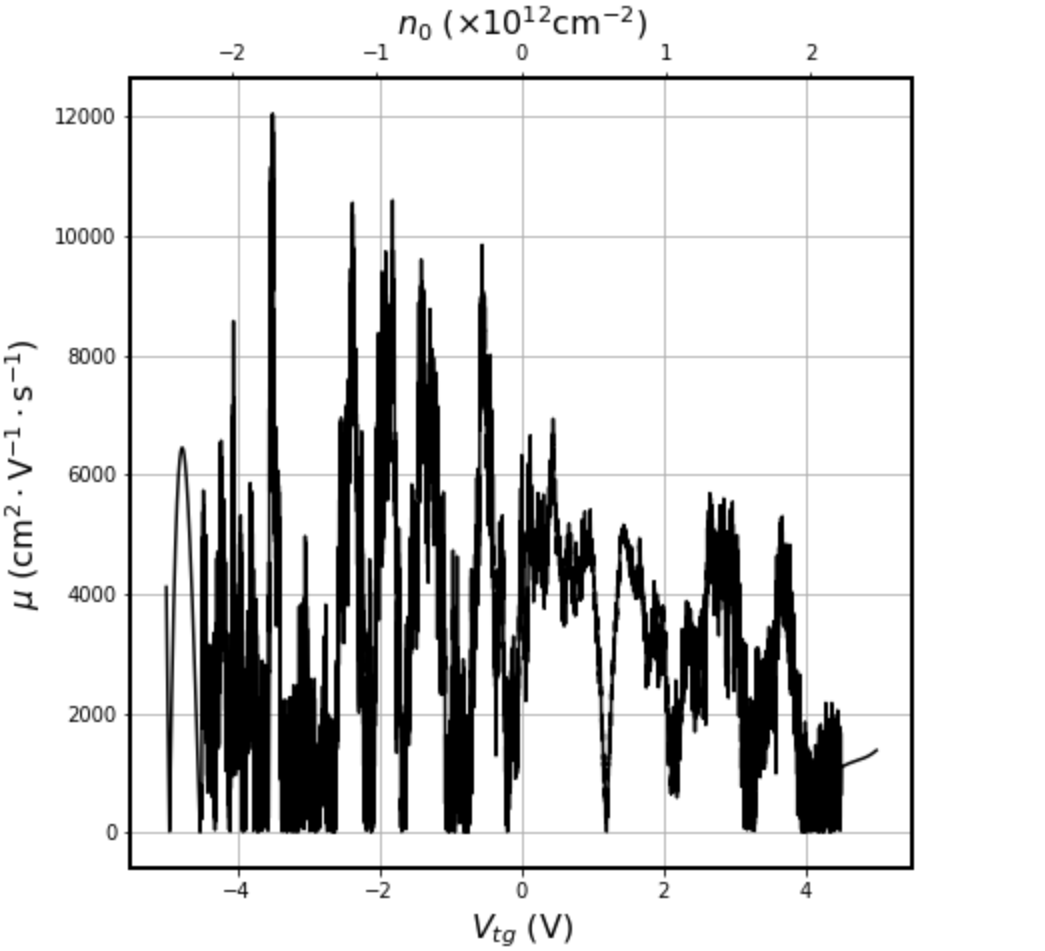


Fig. 1d SA40379A.20221115.000009.tdms (S/D = 28/5, V_1/V_2 = 2/3, V_{tg} from -5V to +5V)





2. "02 - Ramp B from 0 to 18T/" (V_{tg} = +5V,

10mV+100kOhm, 13Hz)

Out[7]:

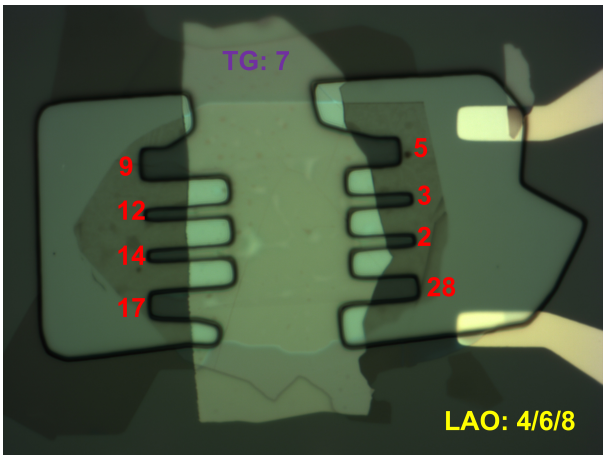
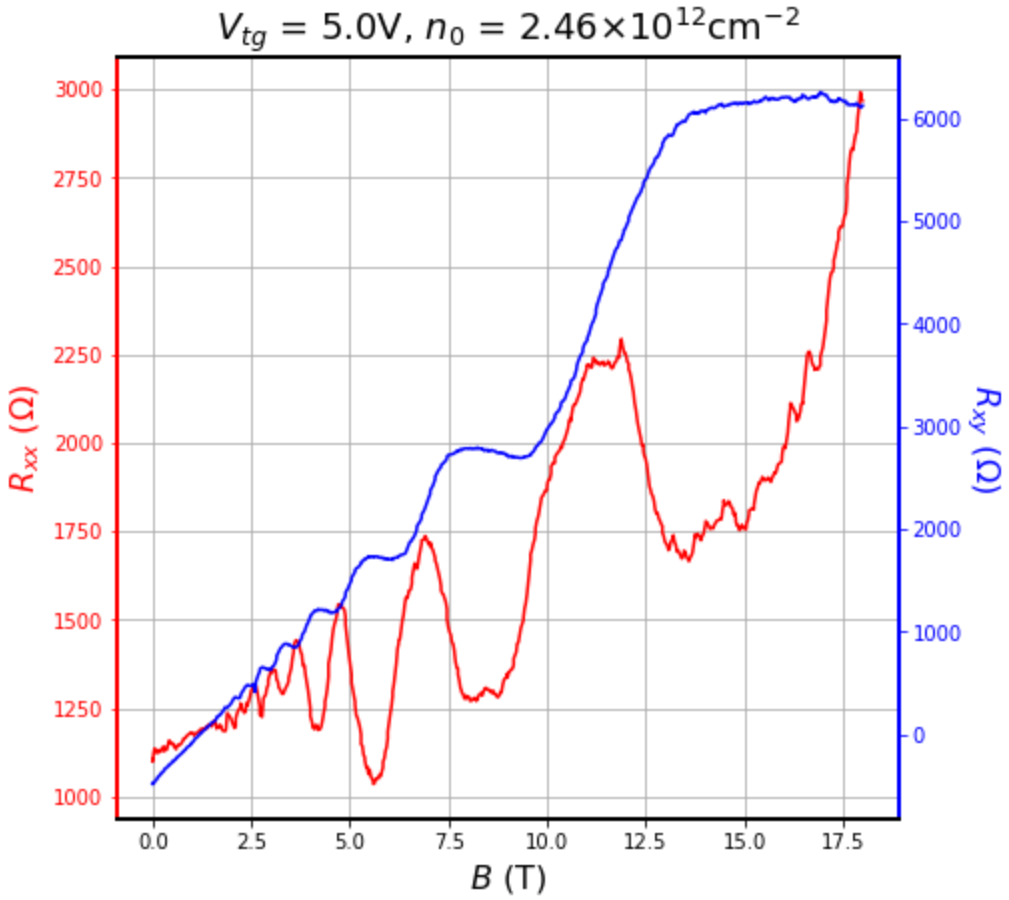


Fig. 2a SA40379A.20221115.000009.tdms (S/D = 28/5, B from 0 to 18T) plot R_{xx} (2-3) and R_{xy} (3-12) together



3. "03 - Vsg sweep at 18T/" (B = 18T, 10mV+100kOhm, 13Hz)

Out[9]:

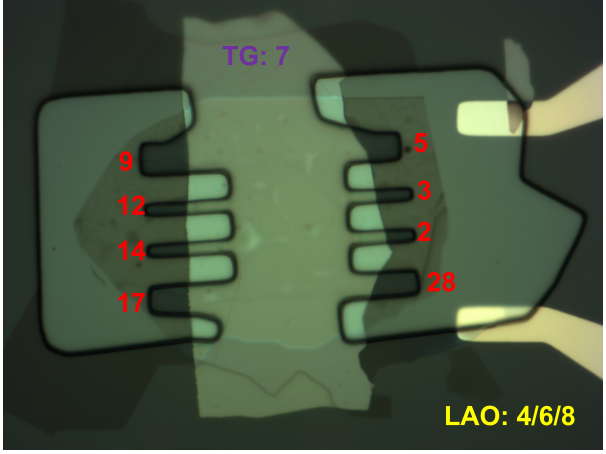


Fig. 3a SA40379A.20221115.000000.tdms (S/D = 28/5, V_{tg} from +5V to -5V)
plot R_{xx} (2-3) and R_{xy} (3-12) together

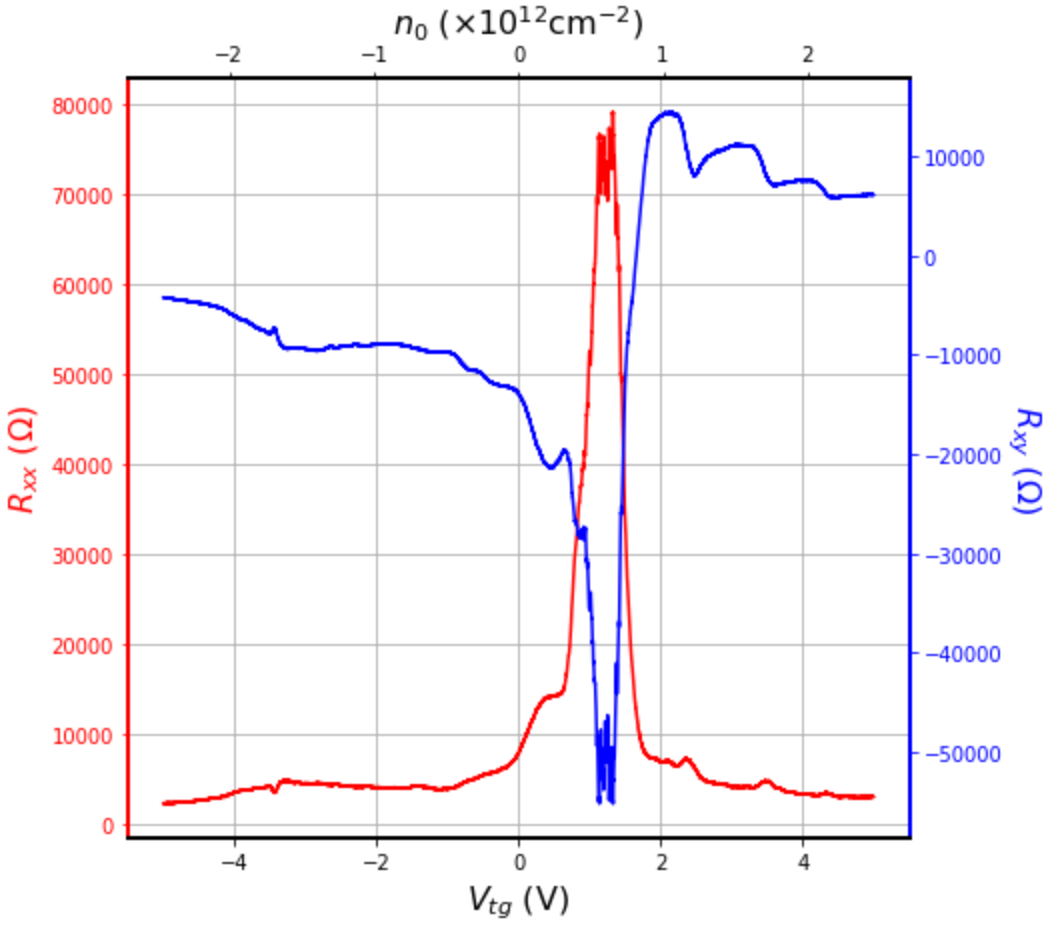
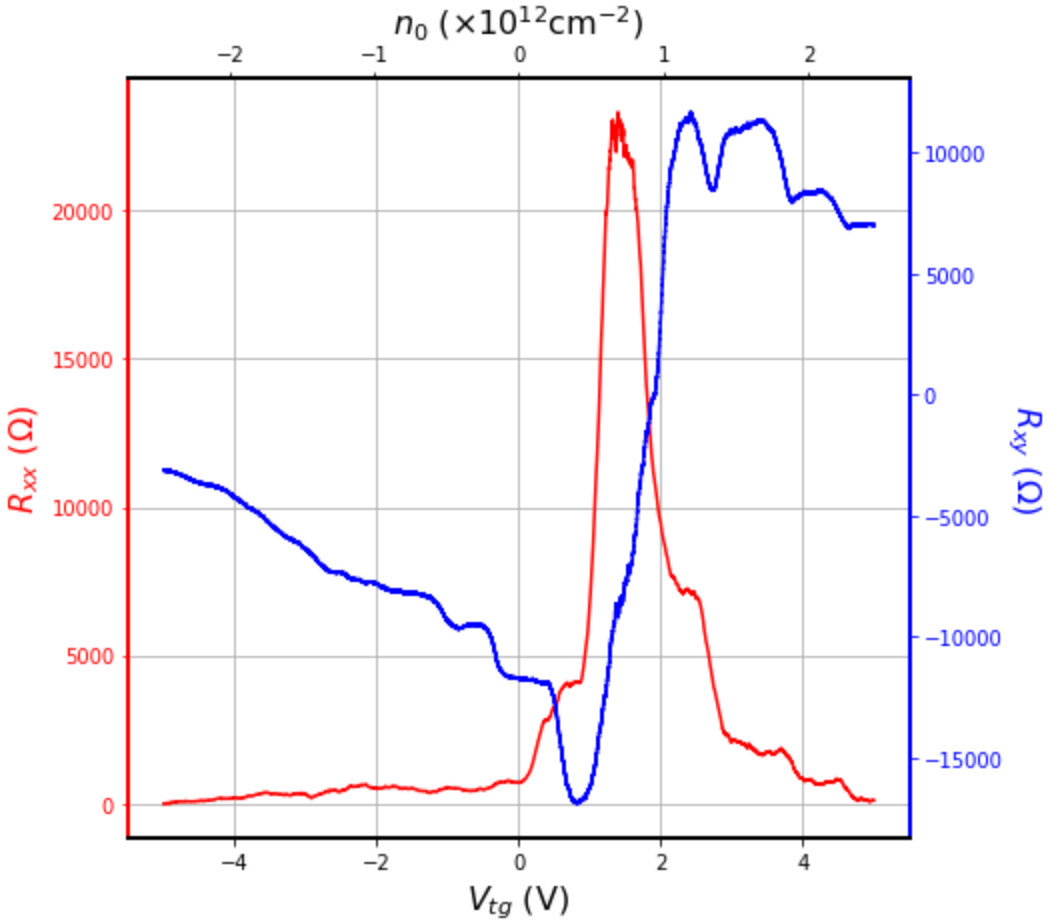
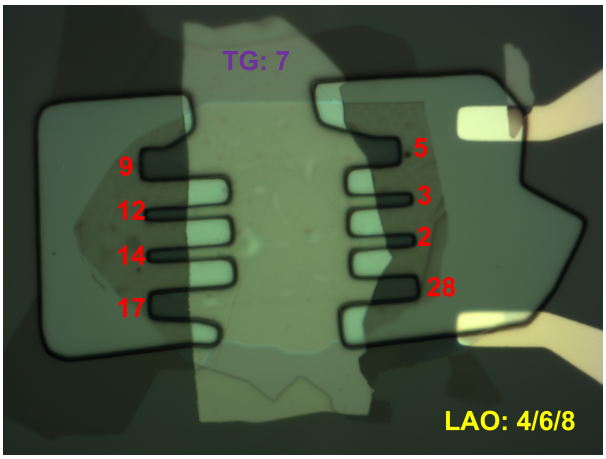


Fig. 3b SA40379A.20221115.000001.tdms (S/D = 17/9, V_1/V_2 = 14/12, V_{tg} from -5V to +5V)
plot R_{xx} (14-12) and R_{xy} (2-14) together



4. "04 - B sweep Vtg sweep/" (S/D = 28/5, 10mV+100kOhm, 13Hz)

Out[12]:



SA40379A.20221115.000000.tdms to ...000095.tdms (S/D = 28/5, V_{tg} slow from +5V to -5V and fast back to +5V, B from +18T to -1T, step size 0.2T)
Note: len(data) = 16120, from +5 to -5V corresponds to 0-15600 (i.e. data[15600] = data at -5V)

Fig. 4a four-terminal resistance between 2 and 3

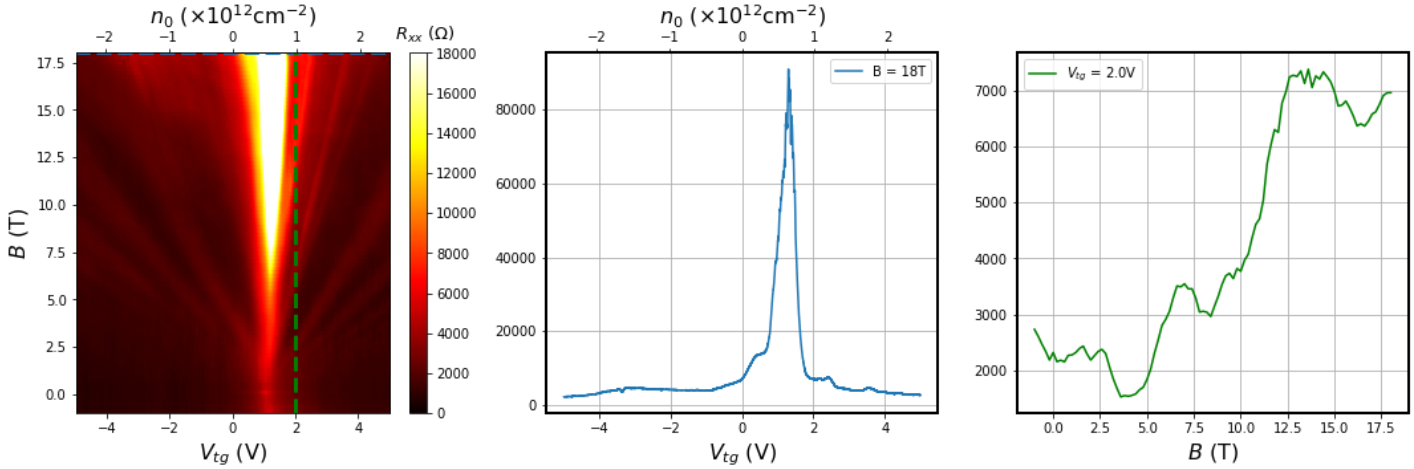


Fig. 4b four-terminal resistance between 14 and 12

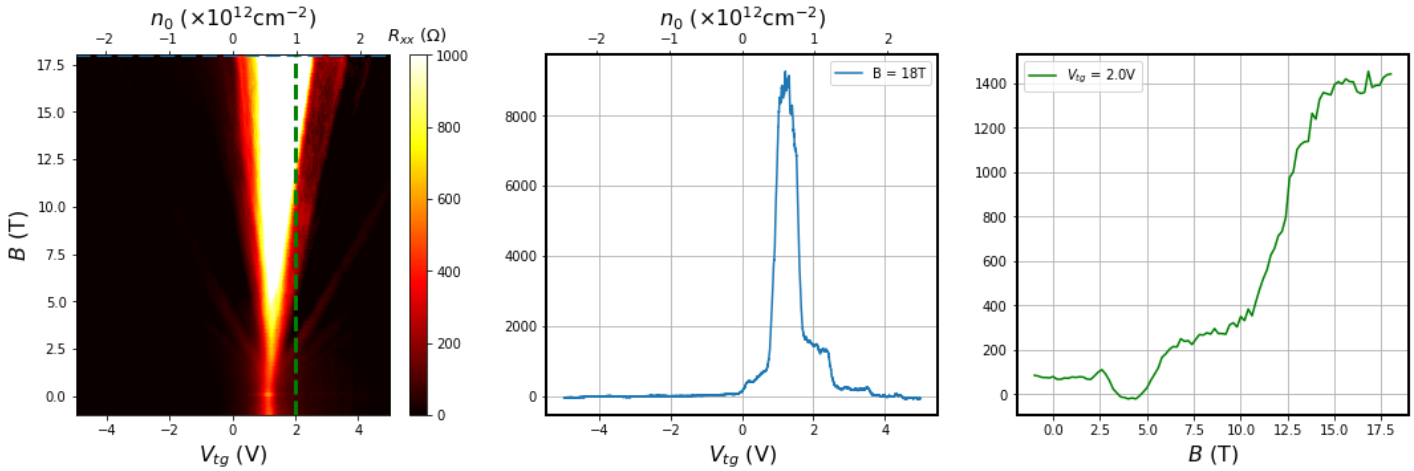


Fig. 4c four-terminal resistance between 2 and 14

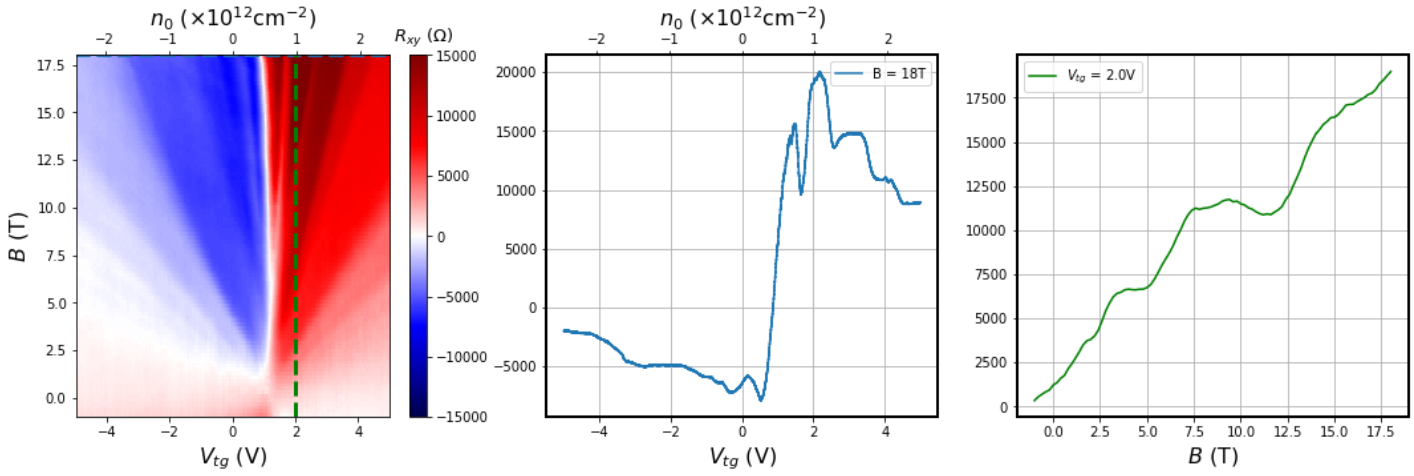


Fig. 4d four-terminal resistance between 3 and 12

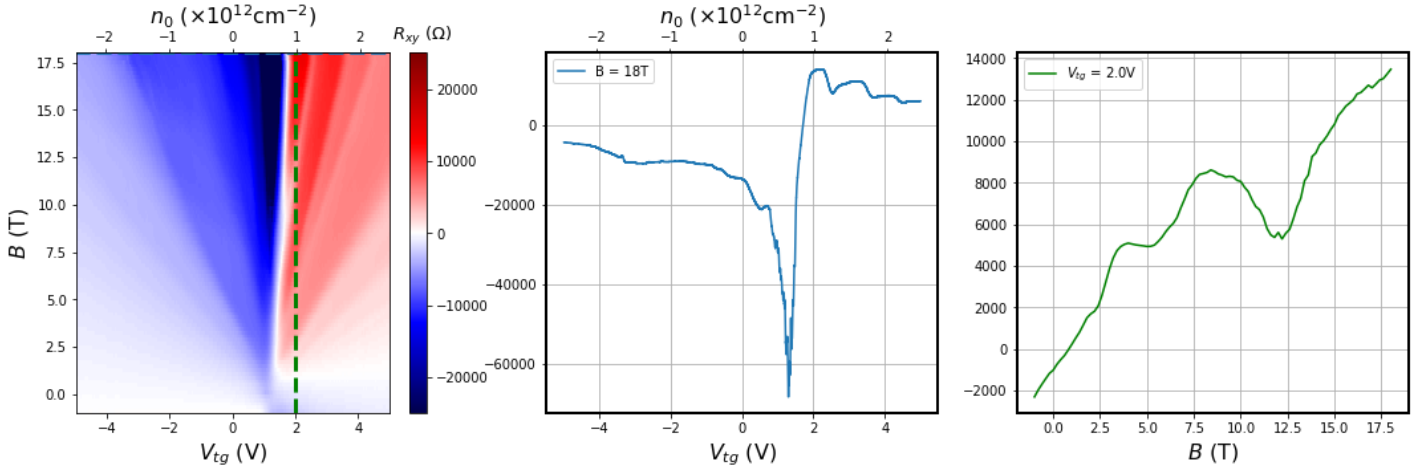
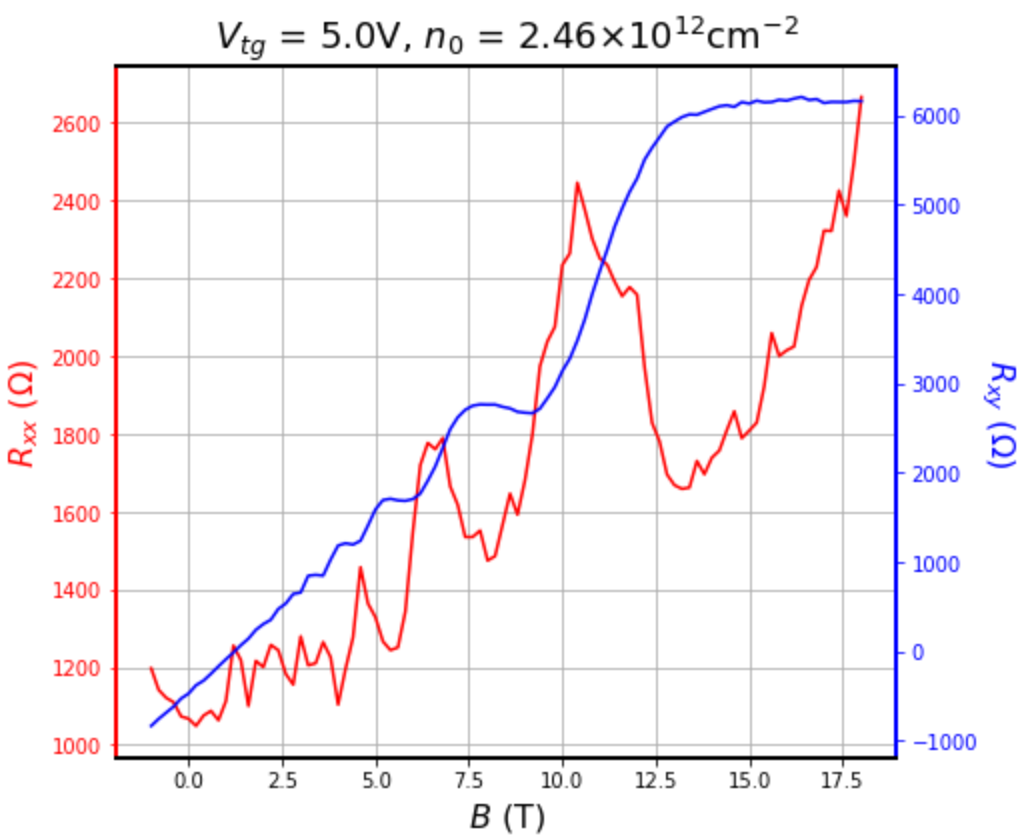
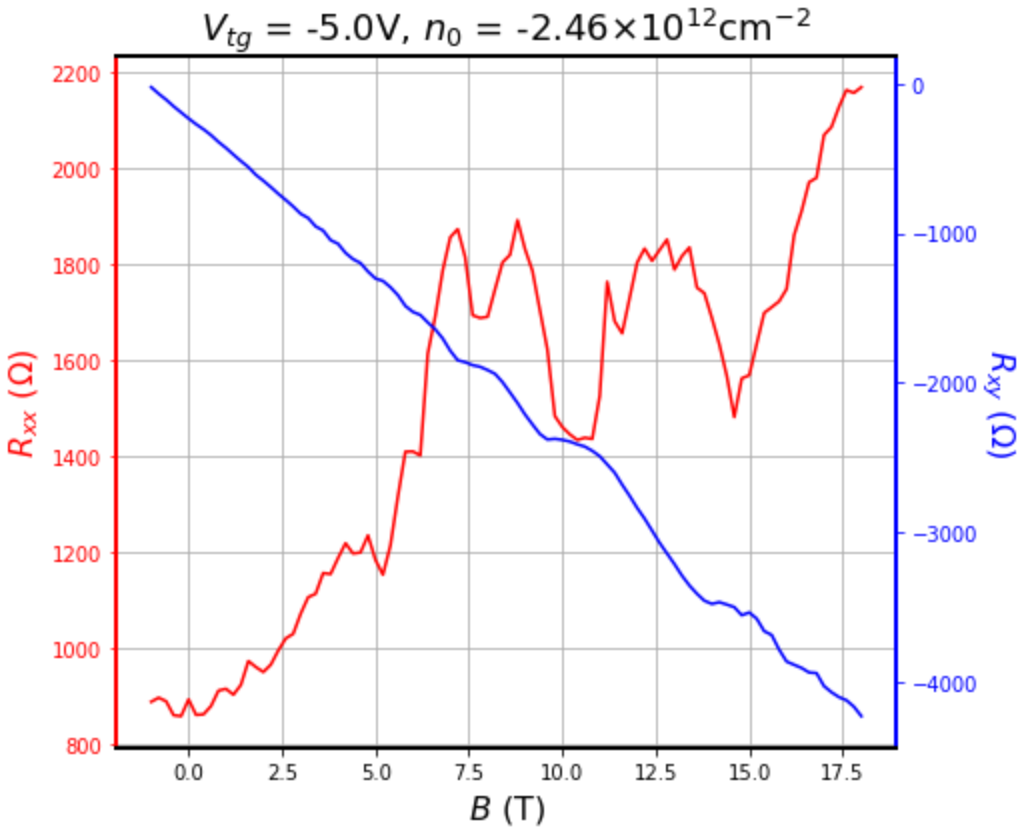


Fig. 4e plot linecuts of R_{xx} (2-3) and R_{xy} (3-12) at fixed V_{tg} together





5. "05 - Ramp B from 0 to -18T/" (V_{tg} = +5V, 10mV+100kOhm, 13Hz)

Out[19]:

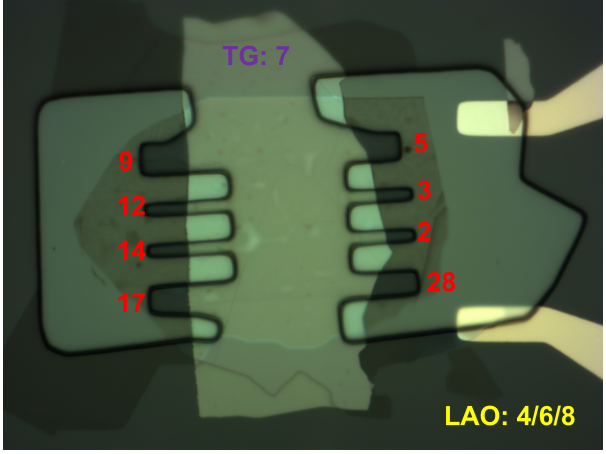
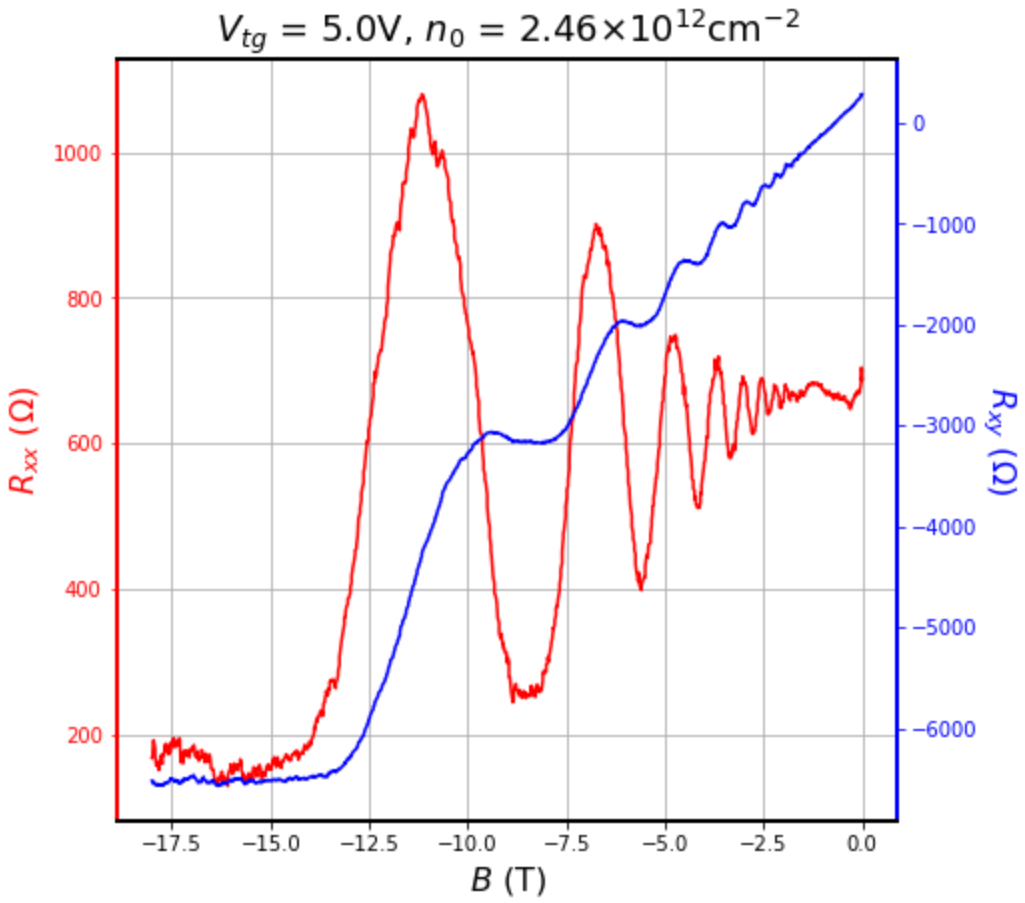
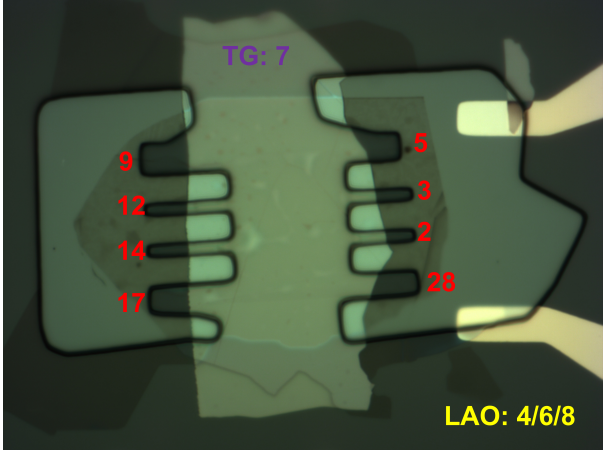


Fig. 5a SA40379A.20221115.000000.tdms (S/D = 17/9, B from 0 to -18T) plot R_{xx} (2-3) and R_{xy} (3-12) together



6. "06 - B sweep Vtg sweep/" (S/D = 17/9, 10mV+100kOhm, 13Hz)

Out[21]:



SA40379A.20221115.000000.tdms to ...000180.tdms (S/D = 17/9, V_{tg} slow from +5V to -5V and fast back to +5V, B from -18T to +18T, step size 0.2T)
Note: len(data) = 10920, from +5 to -5V corresponds to 0-10400 (i.e. data[10400] = data at -5V)

Fig. 6a four-terminal resistance between 14 and 12

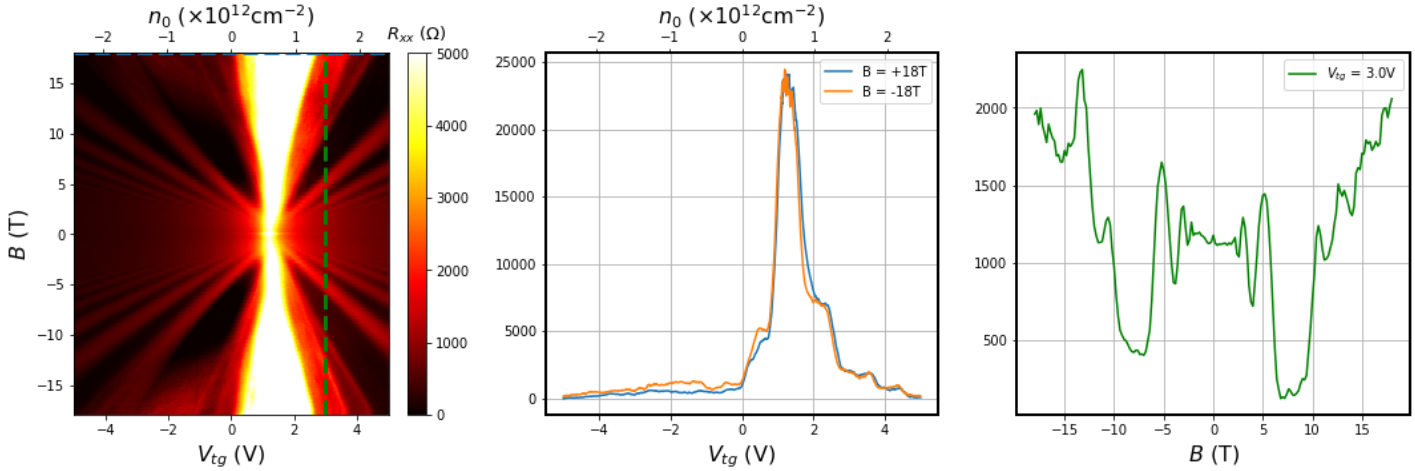


Fig. 6b four-terminal resistance between 2 and 3

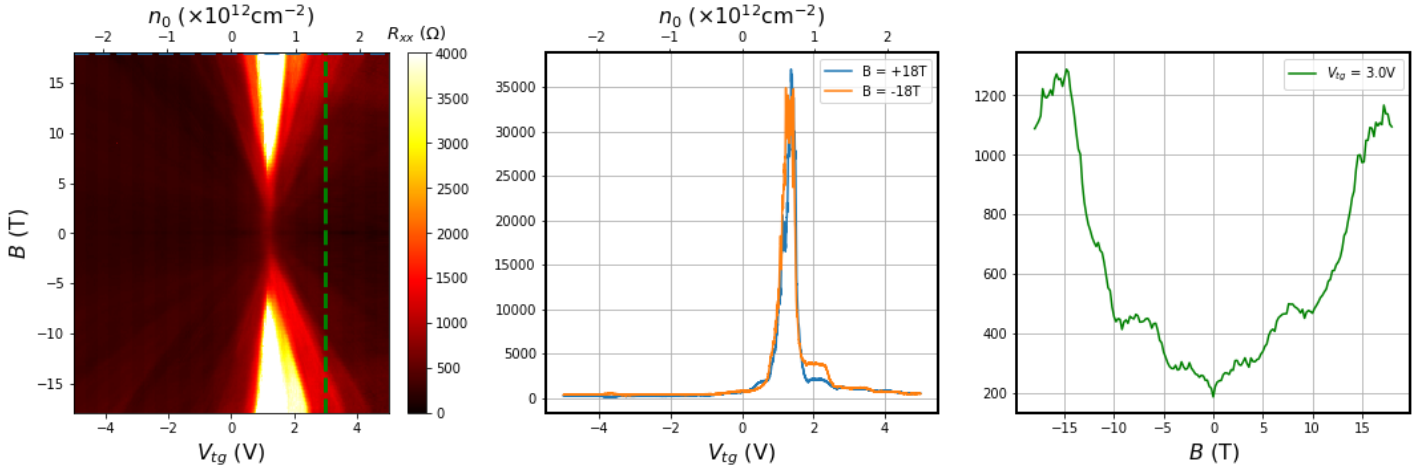


Fig. 6c four-terminal resistance between 2 and 14

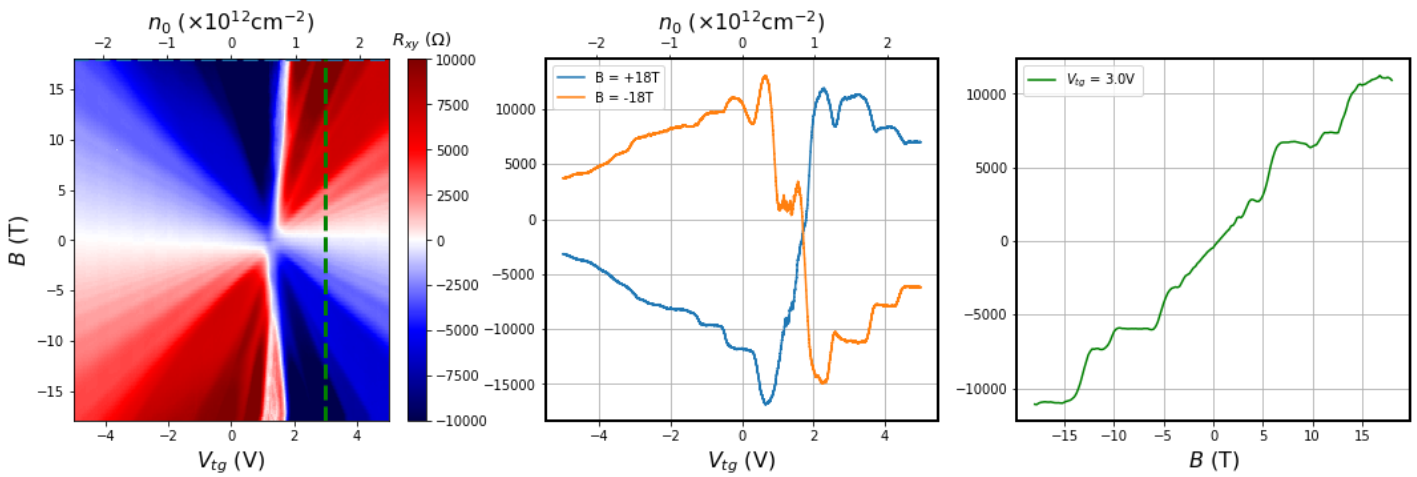


Fig. 6d four-terminal resistance between 3 and 12

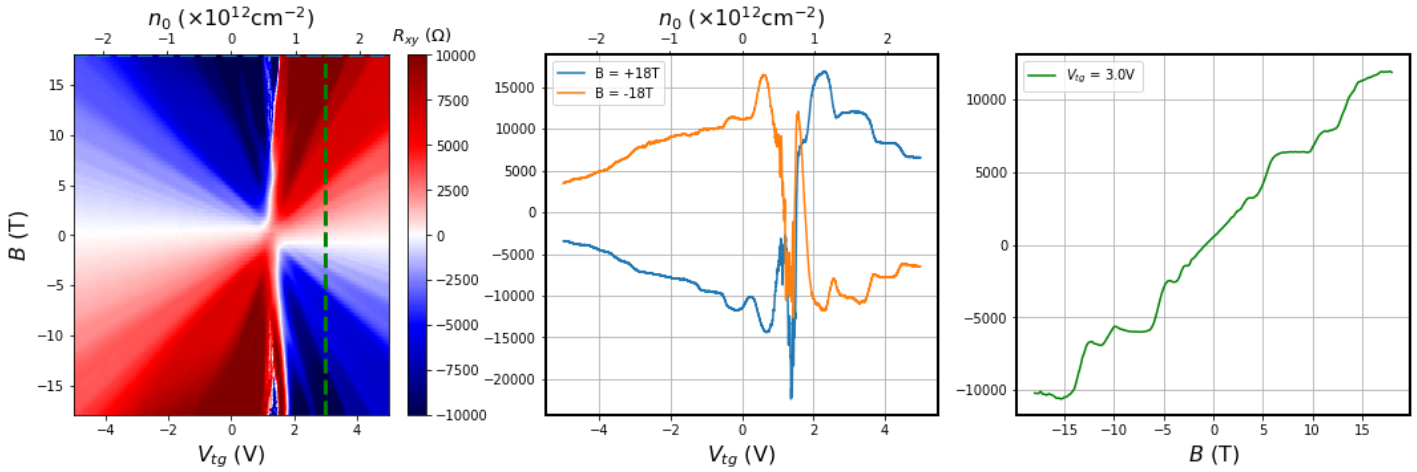
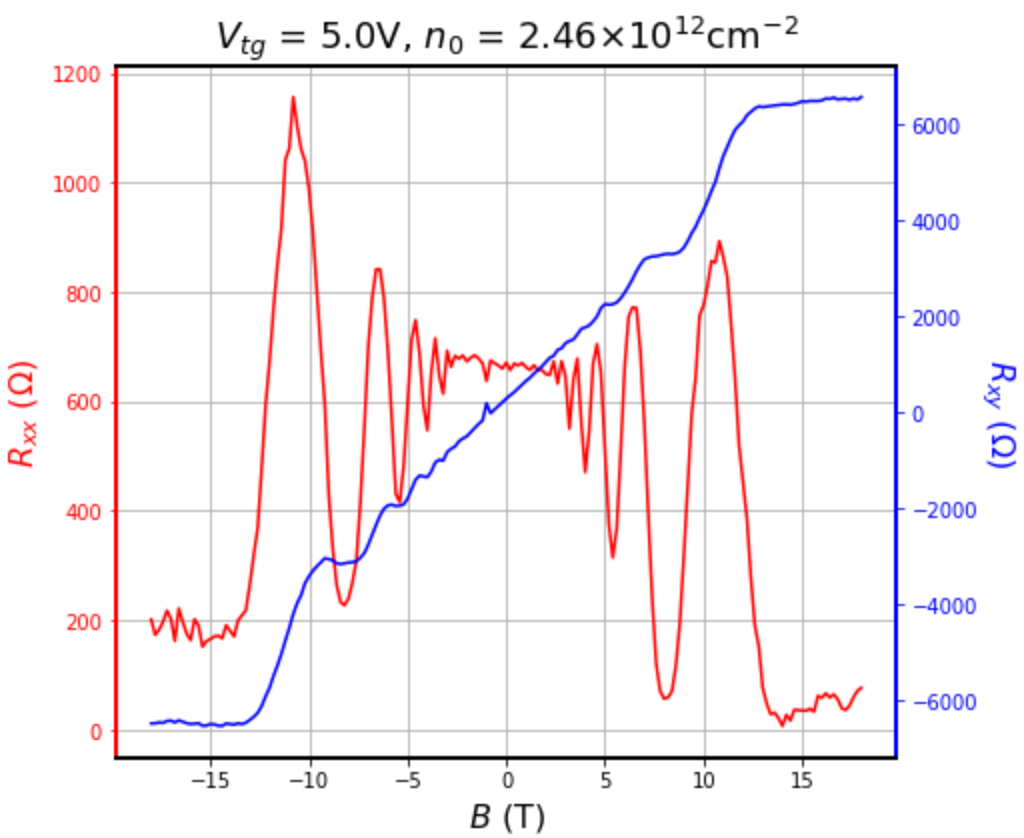
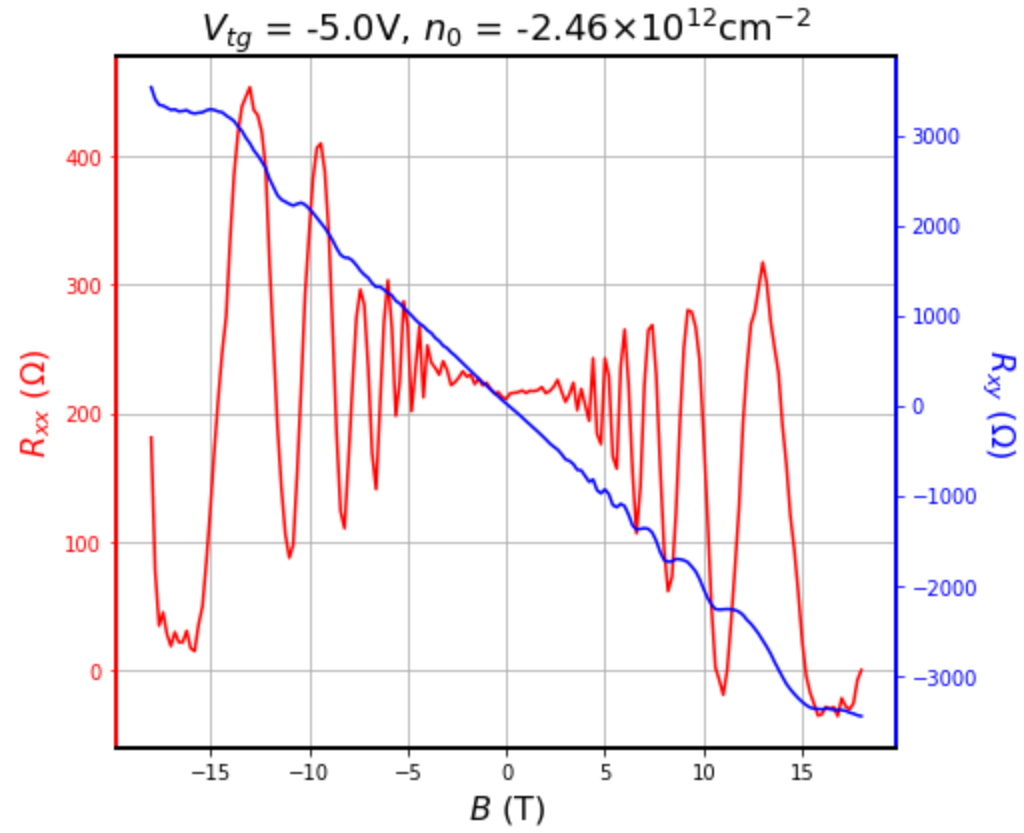


Fig. 6e plot linecuts of R_{xx} (14-12) and R_{xy} (3-12) at fixed V_{tg} together





(Anti-)symmetrization: $\rho_{xx} = \frac{R_{xx}(B)+R_{xx}(-B)}{2}$, $\rho_{xy} = \frac{R_{xy}(B)-R_{xy}(-B)}{2}$

Fig. 6f post-symmetrization: four-terminal resistance between 14 and 12

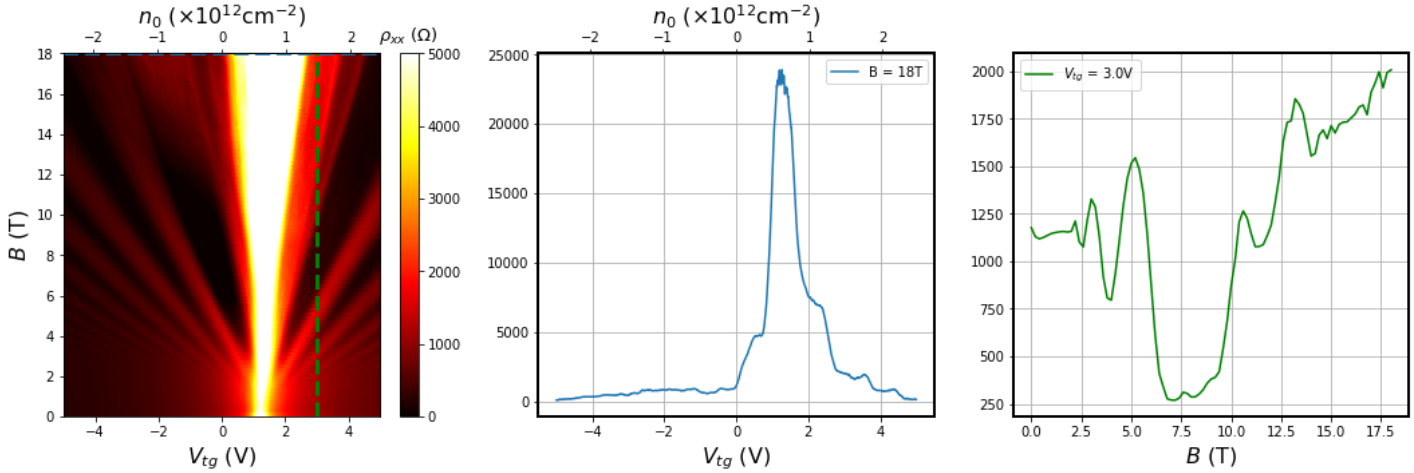


Fig. 6g post-symmetrization: four-terminal resistance between 2 and 3

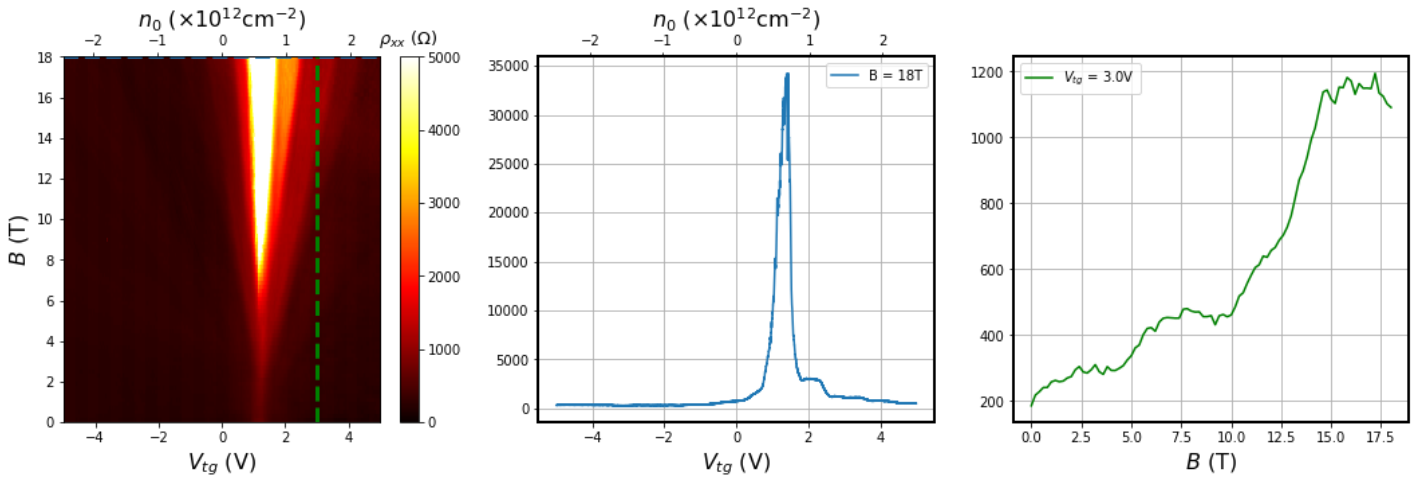


Fig. 6h post-symmetrization: four-terminal resistance between 2 and 14

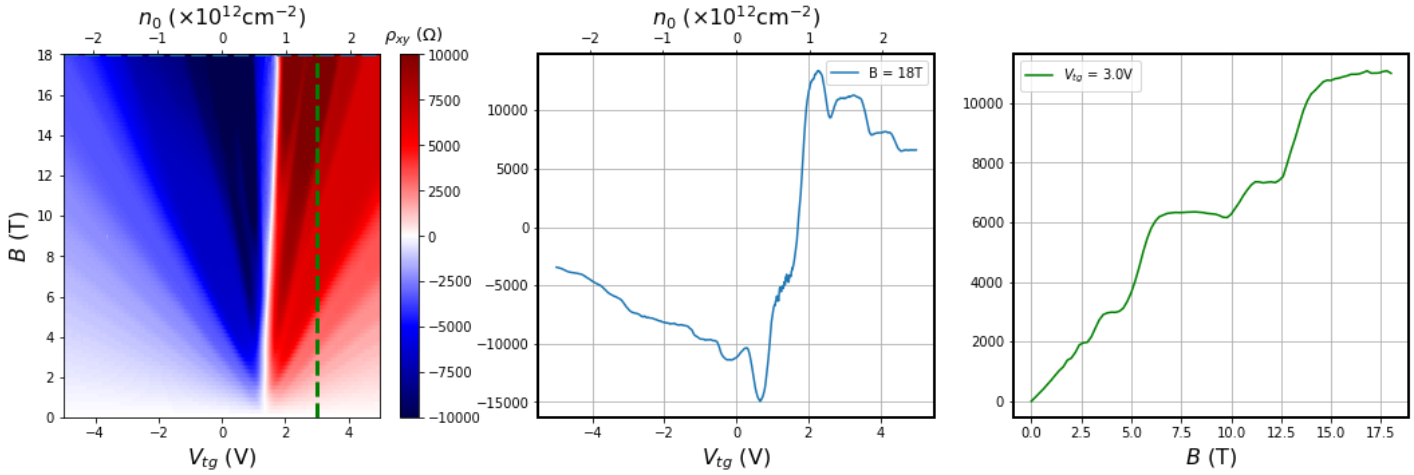


Fig. 6i post-symmetrization: four-terminal resistance between 3 and 12

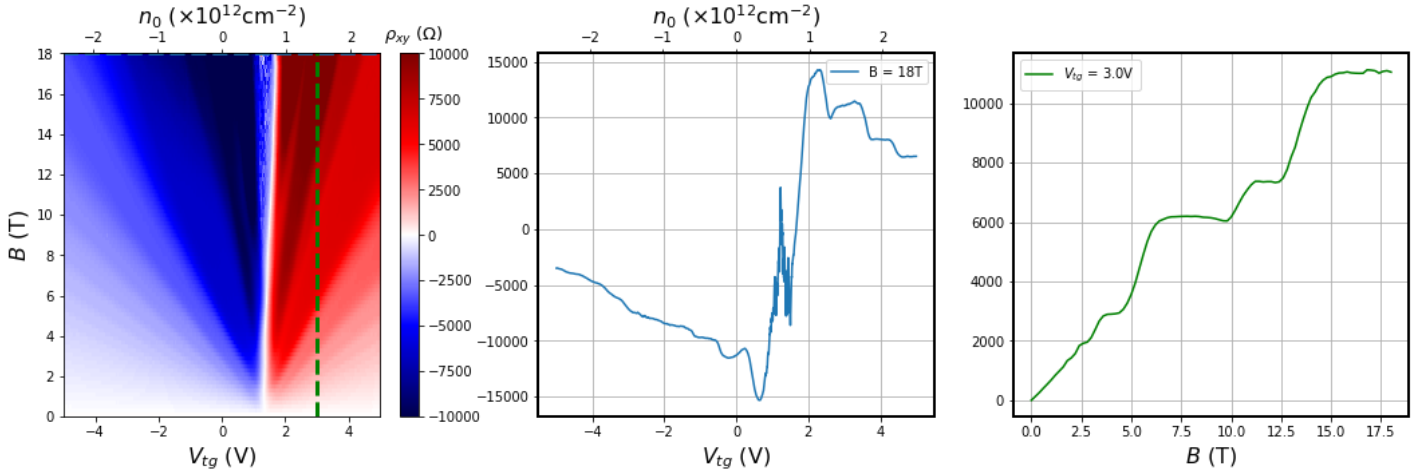
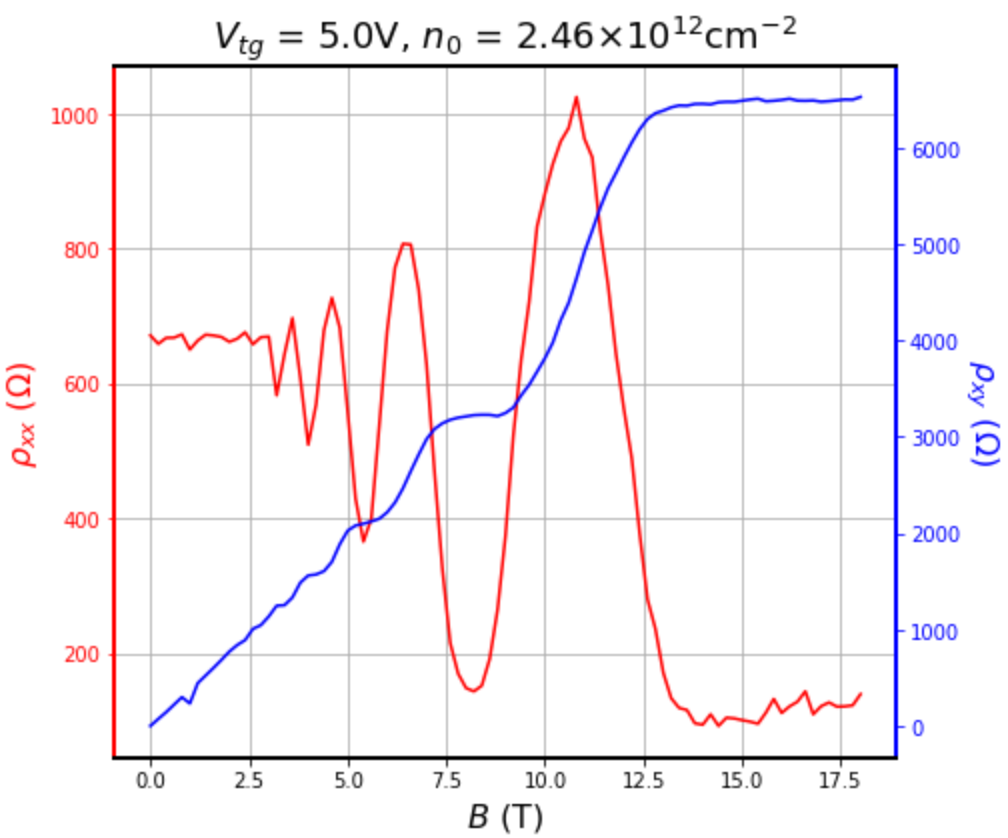
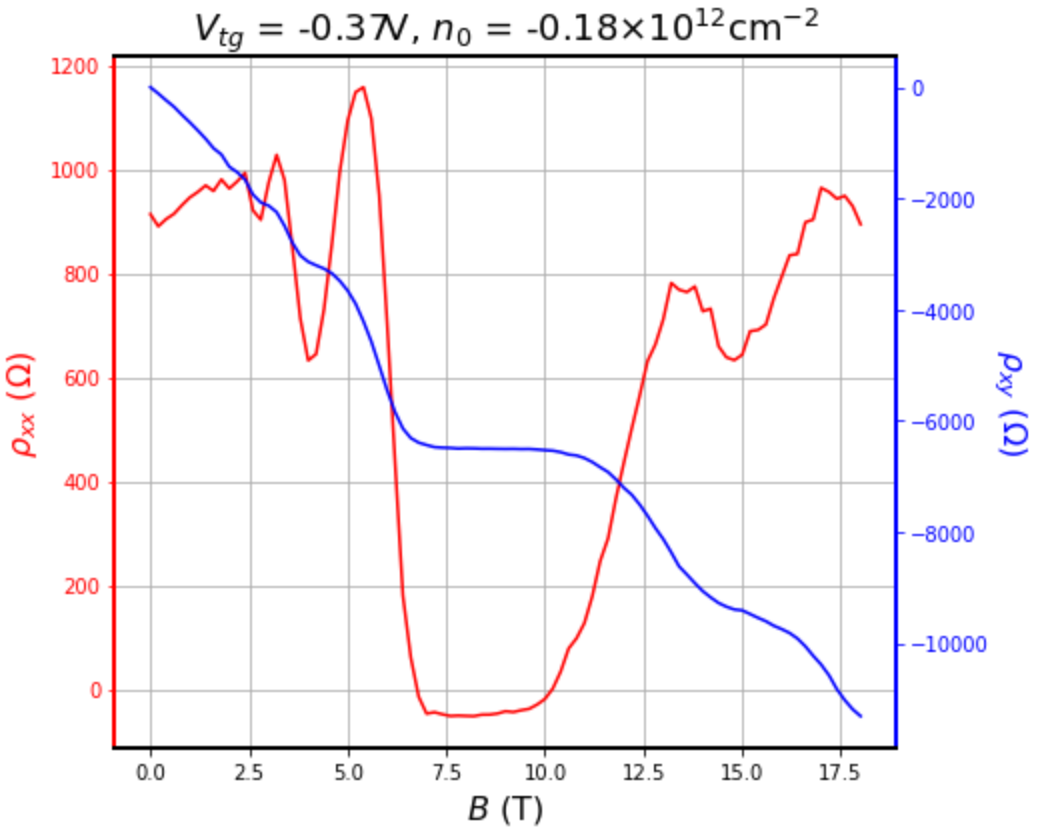


Fig. 6j post-symmetrization: plot linecuts of ρ_{xx} (14-12) and ρ_{xy} (3-12) at fixed V_{tg} together


V_{tg} = 5.0V, n_0 = 2.46×10^{12}cm^{-2}
ρ_{xx} (Ω)
ρ_{xy} (Ω)
B (T)


V_{tg} = -0.37V, n_0 = -0.18×10^{12}cm^{-2}
ρ_{xx} (Ω)
ρ_{xy} (Ω)
B (T)