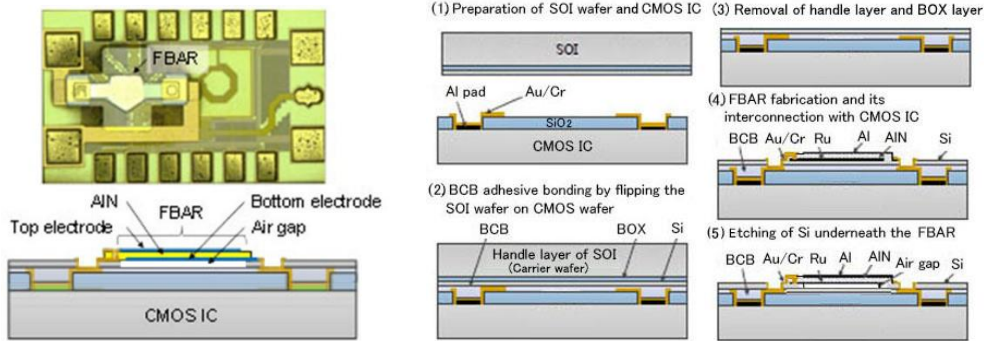
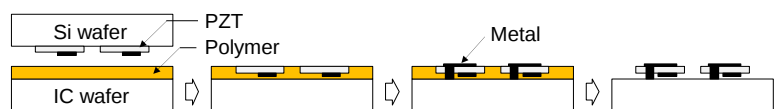
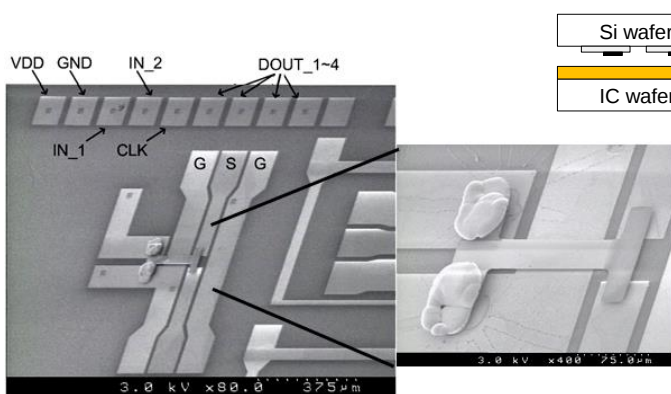


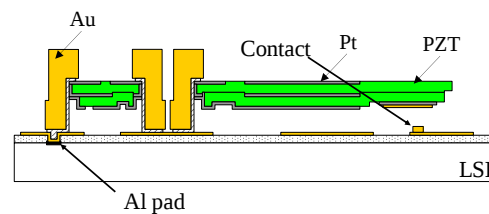
RF MEMS (S.Tanaka, M.Esashi et.al)



FBAR (film bulk acoustic resonator) on LSI (Kochhar et. al, 2012 IEEE Internl. Ultrasonic Symp. (2012) 1047)



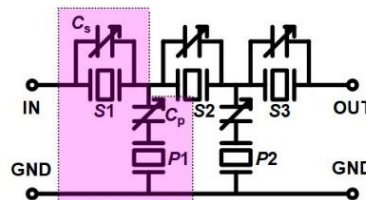
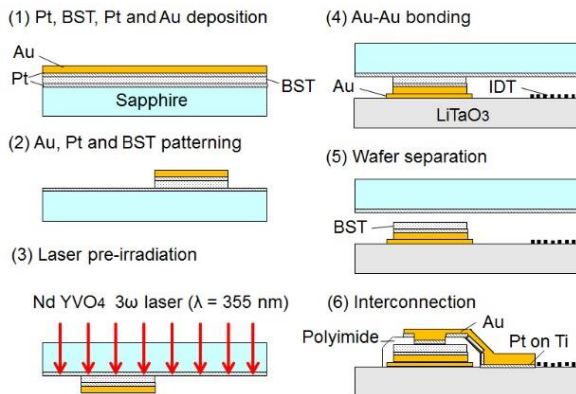
IC 上への PZT MEMS の集積化プロセス



PZT MEMS switch fabricated on 0.35 μm CMOS LSI

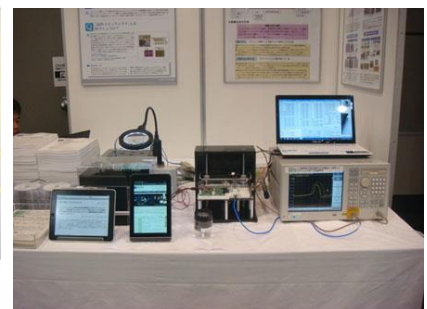
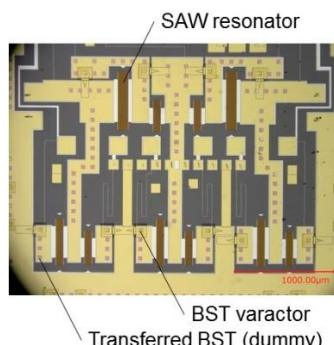
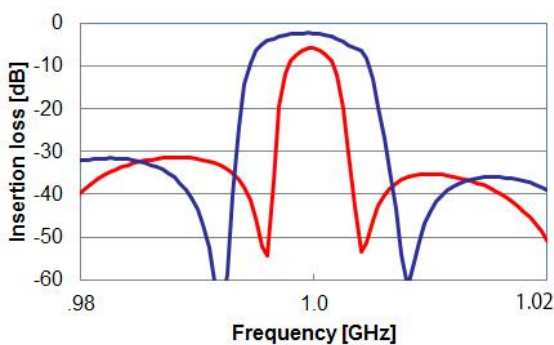
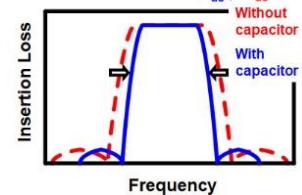
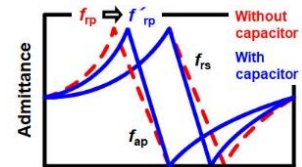
Cross sectional view of PZT MEMS switch

(Matsuo *et al.*, IEEE MEMS 2012, pp. 1153-1156)



$$f'_{rp} = f_{rp} \sqrt{1 + \frac{C_{1p}}{C_{0p} + C_p}}$$

$$f'_{as} = f_{rs} \sqrt{1 + \frac{C_{1s}}{C_{0s} + C_s}}$$



Tunable bandwidth filter fabricated by selective transfer of ferroelectric variable capacitor on SAW device

(H.Hirano et.al, J. of Micromech. Microeng., 23, 2 (2013) 025005(9pp))