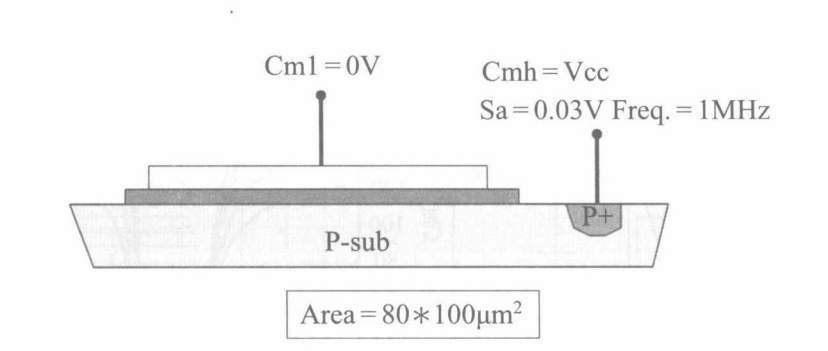

圖 13-38 用來量測閘極氧化層的測試鍵結構。

Measure C_{OX} with Cmh(sub) = Vcc(bias), Cml(gate) = 0V,
Small signal = 0.03V(default), Frequency = 1MHz(Accumulation)

$$C_{AP\_GOX} = (1.E+12) * C_{OX}/8000(pF/\mu m^2)$$

Oxide Thickness calculation:

$$C_{OX} = \frac{A_{OX}\,\varepsilon_O\varepsilon_{Si}}{t_{ox}} \quad t_{OX} = \frac{A_{OX}\,\varepsilon_O\varepsilon_{Si}}{C_{OX}} = \frac{\varepsilon_O\varepsilon_{Si}}{\left(\frac{C_{OX}}{A_{OX}}\right)}$$

Ex. 100μm² Cox test key, CAP_GOX/PW = 0. 8156pF

$$t_{OX} = \frac{A_{OX}\,\varepsilon_O\varepsilon_{Si}}{C_{OX}} = \frac{\varepsilon_O\varepsilon_{Si}}{\left(\frac{C_{OX}}{A_{OX}}\right)} = \frac{3.9 * 8.85 * 10^{-14}(F/cm)}{(0.008156) * 10^{-12}(F/\mu m^2)} = 42.3179(A)$$