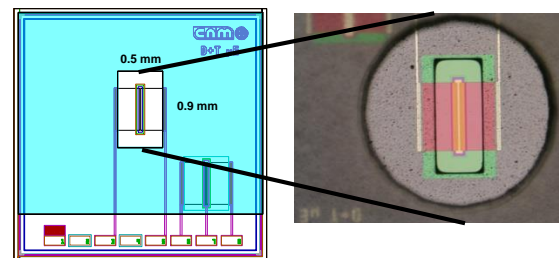
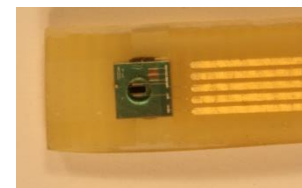
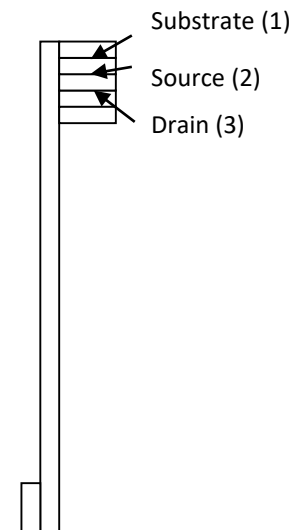


# pH ISFET specifications

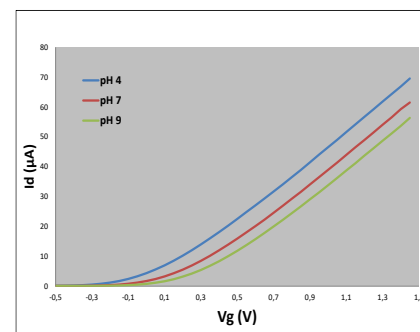
General	
Substrate	p-type 100 mm silicon wafers
Chip dimensions	3 x 3 mm
Gate length	10 $\mu\text{m}$
Gate width	$\geq 500 \mu\text{m}$
Gate structure	Silicon nitride (Standard)
Devices per chip	1 ISFET
Packaged sensor	
Sensor length	110 mm (Standard)
Sensor width	$\sim 10$ mm (Standard)
Electrical connection	5-pinn connector
Electrical Specifications	
Operational drain voltage, $V_d$	0.5 V
Operational drain current, $I_d$	0.1 mA
Transconductance, $G_m$	$> 0,4 \text{ mA/V}$
Threshold voltage, $V_{th}$	-2.0 – (+2.0) V at pH 7 versus Ag/AgCl reference electrode
Leakage current, $I_l$	$< 10 \text{ nA}$
Chemical Specifications	
Sensitivity (Slope)	52-55 mV / pH
Linear range	1 - 13 pH
Precision	$\pm 0.02 \text{ pH (max)}$
Long term drift	$\leq 1.0 \text{ mV/h (after preconditioning)}$
Lifetime	$> 8$ months in continuous immersion at pH=7
Standard parameters for silicon nitride gate dielectric.	



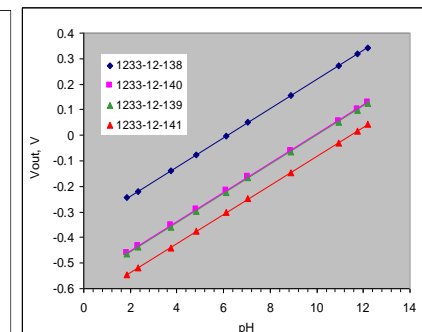
ISFET chip design and picture of ISFET gate



ISFET packaged in a PCB and scheme of PCB connections



Current-voltage characteristics of a pH-ISFET measured at  $V_D :0.5 \text{ V}$ .



Calibration plots for several  $\text{Si}_3\text{N}_4$  pH-ISFET (slope average:  $56.8 \pm 0.1 \text{ mV/pH}$ )

**IMPORTANT NOTE:** ISFET sensors being microelectronic devices may be subjected to damage by static electricity: They must be handled by a qualified personal and with subsequent care. Some additional information on this can be found in the file *Electrostatic discharge sensitivity tests for ISFETs sensors.pdf*.