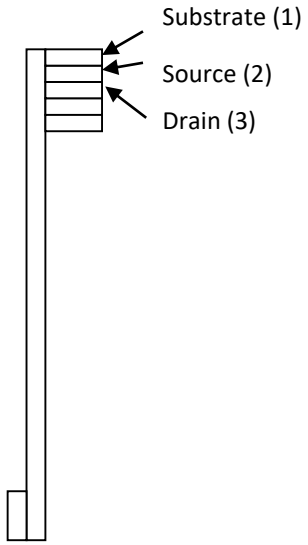
Ion-FET specifications

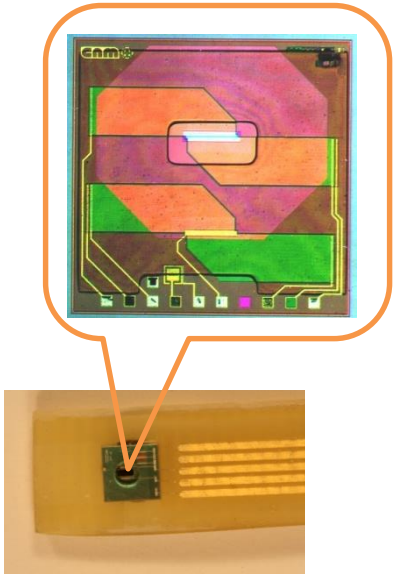
Transducer Parameters

General	
Substrate	p-type 100 mm silicon wafers
Chip dimensions	3 x 3 mm
Gate length	10 µm
Gate width	≥ 500 µm
Gate structure	Silicon oxide (Standard)
Devices per chip	1 Ion-FET
Packaged sensor	
Sensor lenght	110 mm (Standard)
Sensor width	~10 mm (Standard)
Electrical connection	5-pin connector
Electrical Specifications	
Operational drain voltage, V_d	0.5 V
Operational drain current, I_d	0.1 mA
Transconductance, G_m	> 0,3 mA/V
Threshold voltage, V_{th}	± 1.5 V at pH 7 versus Ag/AgCl ref. electrode
Output voltage, V_{OUT}	± 1.5 V at log [ion] = -2
Leakage current, I_l	< 10 nA
Standard parameters for silicon oxide gate dielectric.	



scheme of PCB connections

ISFET chip design for IonFETs



IonFET packaged in a PCB

IMPORTANT NOTE: Ion-FET 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*.

IonFET v3

Na-FET specifications

Chemical Specifications	
Sensitivity (Slope)	52-58 mV / pNa
Linear range (pNa)	4-2
Precision	± 0.1 pNa (max)
Long term drift	≤ 1.0 mV/h (after preconditioning)
Lifetime	> 2 months in continuous immersion at pNa = 3

Cl-FET specifications

Chemical Specifications	
Sensitivity (Slope)	-52- (-59) mV / pCl
Linear range (pCl)	4-2
Precision	± 0.1 pCl (max)
Long term drift	≤ 1.0 mV/h (after preconditioning)
Lifetime	> 2 months in continuous immersion at pCl = 3

K-FET specifications

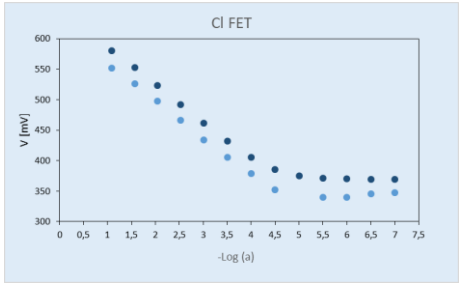
Chemical Specifications	
Sensitivity (Slope)	52-58 mV / pK
Linear range (pK)	4-2
Precision	± 0.1 pK (max)
Long term drift	≤ 1.0 mV/h (after preconditioning)
Lifetime	> 2 months in continuous immersion at pK = 3

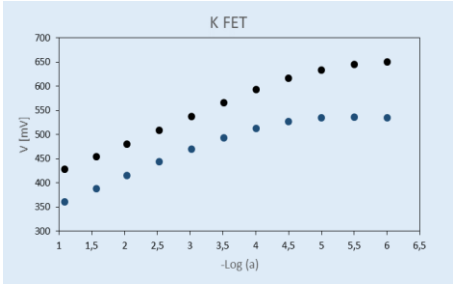
NO3-FET specifications

Chemical Specifications	
Sensitivity (Slope)	-56-(-66) mV / pNO3
Linear range (pNO3)	4-2
Precision	± 0.1 pNO3 (max)
Long term drift	≤ 1.0 mV/h (after preconditioning)
Lifetime	> 2 months in continuous immersion at pNO3 = 3

Ca-FET specifications

Chemical Specifications	
Sensitivity (Slope)	24-28 mV / pCa
Linear range (pCa)	4-2
Precision	± 0.1 pCa (max)
Long term drift	≤ 1.0 mV/h (after preconditioning)
Lifetime	> 2 months in continuous immersion at pCa = 3





Calibration plots of Cl and K FET