

### General Description

New device consisting of a 1-chip silicon ISFET sensor for pH measurement.

The solid state device has many advantages in comparison to the standard glass electrode sensor.

The high mechanical strength allows the use for many harsh applications. The easy cleaning and the fast response time are appreciated advantages of the ISFET sensors.

The package type is intended for direct mounting on PC boards or into inox electrodes.



### Applications

pH Measurements

Environmental and Industrial Monitoring

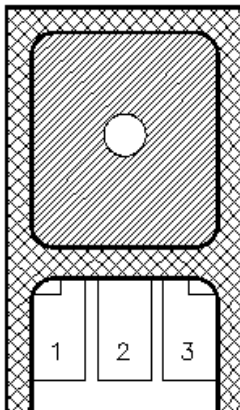
Bio-medical analysis

### Features

- Ion Sensitive Field Effect Transistor (ISFET)
- Silicon ISFET n-channel Device
- Silicon Nitride Sensing Layer
- Small Dimensions (L=13 mm, W=7.6 mm)
- High Sensitivity = 55 mV/pH
- Fast Response Time = 1-2 s

### Pin Functions

No.	Name	Function
1		N.C.
2	S	Source - Well
3	D	Drain



### Ordering Information

OIB40S01	Silicon n-channel ISFET with Silicon Nitride Sensing Layer for pH Measurements
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# OIB40S01

## ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Min	Max	Unit
T <sub>A</sub>	Operating Temperature Range	0	50	°C
T <sub>S</sub>	Storage Temperature	0	50	°C
T <sub>Sol</sub>	Lead Temperature (solder) 3s		230	°C
P <sub>D</sub>	Power Dissipation @ T <sub>A</sub> =25°C		100	mW

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rated conditions for extended periods may affect device reliability.

## CHARACTERISTICS

T<sub>A</sub> = 25°C unless otherwise noted.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
	Sensitivity	V <sub>DS</sub> =0.3V I <sub>DS</sub> =100µA		55		mV/pH
	pH Range		1		13	pH
	Hysteresis	V <sub>DS</sub> =0.3V I <sub>DS</sub> =100µA pH=3-11		10		mV
	Linearity	V <sub>DS</sub> =0.3V I <sub>DS</sub> =100µA pH=7		0.9995		
	Drift	V <sub>DS</sub> =0.3V I <sub>DS</sub> =100µA pH=7		0.3		mV/h
	Leakage Current	V <sub>REF</sub> =3V pH=7			100	nA
	Drain-Source Voltage	Recommended working point V <sub>DS</sub> =0.3V I <sub>DS</sub> =100µA		0.3	5	V
	Threshold Voltage	V <sub>DS</sub> =0.1V pH=7		0.4		V
	Reference Voltage	V <sub>DS</sub> =0.3V I <sub>DS</sub> =100µA pH=7		0.9		V
	Transconductance	V <sub>DS</sub> =0.3V I <sub>DS</sub> =100µA pH=7 V <sub>GS</sub> =V <sub>REF</sub>		0.3		mS
	Junction Breakdown		20			V

## MECHANICAL DIMENSIONS

Units=mm Mechanical tolerance=+/-0.2mm Die positioning tolerance=+/-0.050mm

