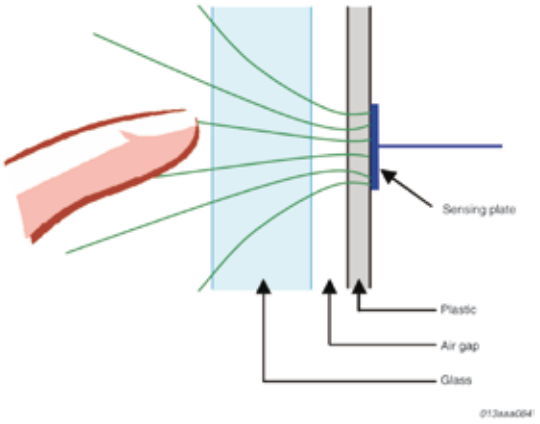


NXP capacitive proximity switch PCF8883

Self-calibrating proximity switch with very low power consumption

This low-power switch uses a proprietary digital method to detect changes in capacitance on a remote sensing plate. Self-calibration makes it insensitive to most contaminants.

Key features

- Dynamic proximity switch
- Digital processing method
- Adjustable sensitivity, can be made very high
- Adjustable response time
- Wide input capacitance range (10 pF to 60 pF)
- Automatic calibration
- Several meters between the sensing plate and IC are possible
- Open-drain output (P-type MOSFET, external load between pin and ground)
- Designed for battery powered applications (I_{DD} = 3 µA, typical)
- Output configurable as push-button, toggle or pulse
- Wide voltage operating range (V_{DD} = 3 V to 9 V)
- Large temperature operating range (T_{amb} = -40 °C to 85 °C)
- Internal voltage regulator
- Available in SOIC8 (other packages available on request for larger quantities)

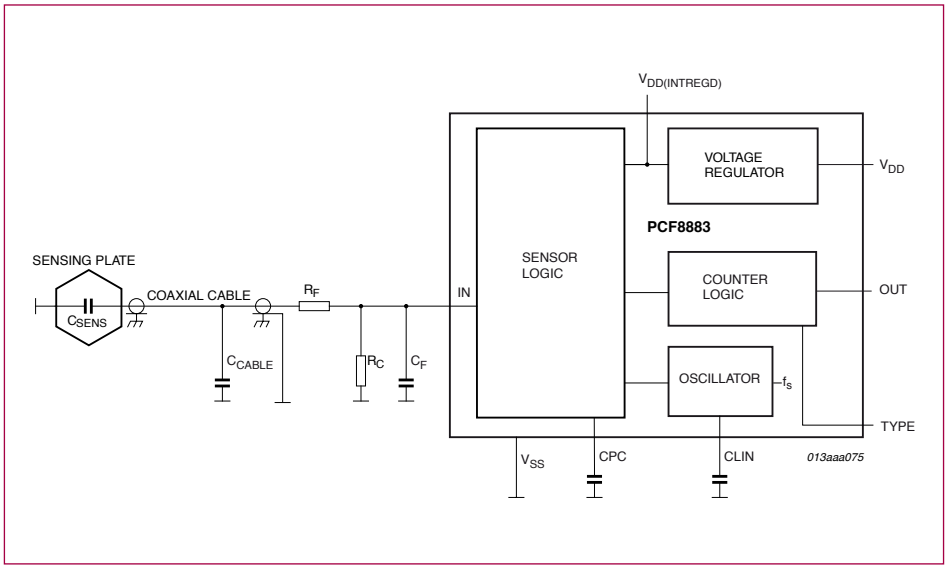
Applications

- Proximity detection
- Sanitary applications: electric hand dryer and towel dispenser
- Switches for medical applications
- Switches for use in explosive environments
- Vandal proof switches
- Transportation: switches in or under upholstery, leather, handles, mats and glass
- Buildings: switch in or under carpets, glass or tiles
- Mobile and handheld devices
- Hermetically sealed keys on a keyboard

The integrated circuit PCF8883 is a capacitive proximity switch that uses a patented (EDISEN) digital method to detect a change in capacitance on a remote sensing plate. Changes in the static capacitance (as opposed to dynamic capacitance changes) are automatically compensated. Remote sensing plates be connected remotely using a coaxial cable.

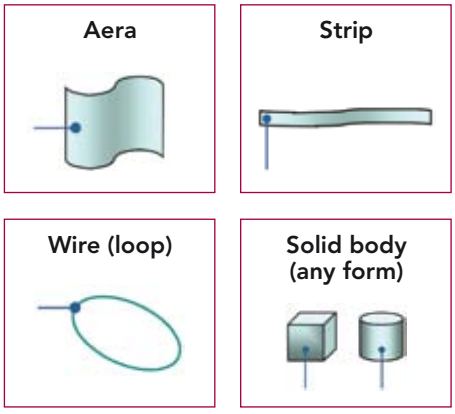
NXP founded by Philips

PCF8883 application diagram



In a typical application, two capacitors define the sensitivity and reaction speed. The output can be configured as either push button, pulse or toggle. The internal voltage regulator, which suppresses the supply voltage variations, can also be used for direct battery supply. Self-calibration increases design flexibility. Multiple switches will work the same way, regardless of location. The device continuously compensates for any contamination, such as debris, grease, or moisture. The device also detects the capacitive change and the speed of the touching "body".

Possible sensing plates



The sensor plate can be made of various materials, including copper foil, conductive plating, wire, or solid blocks, and can be formed into various shapes.

PCF8883 demo board (OM11055)

Key parameters

Characteristics	
Supply voltage range	3.0 V - 9.0 V
Operating current	3 µA typ.
Operating temperature range	-40 °C - +85 °C

Ordering information

Characteristics	Package tape and reel	Qualification	Version
PCF8883T/1	SO8, plastic small outline package, body width 7.5 mm	Industrial, Automotive on request	1
PCF8883CX8	Chipscale package with solder bumps on request		

www.nxp.com

founded by PHILIPS

Date of release: November 2009
Document order number: 9397 750 16767
Printed in the Netherlands