


**Sensor and Detector Interface 3.6V 2.1mA I2C Interface
Automotive 12-Pin WSON EP T/R**



Images are for reference only

[Inquiry](#)

Manufacturer:	Texas Instruments, Inc
Package/Case:	12-WSON4X4
Product Type:	Drivers
RoHS:	RoHS Compliant/Lead free 
Lifecycle:	Active

General Description

Capacitive sensing is a low-power, low-cost, high-resolution contactless sensing technique that can be applied to a variety of applications ranging from proximity detection and gesture recognition to remote liquid level sensing. The sensor in a capacitive sensing system is any metal or conductor, allowing for low cost and highly flexible system design.

The main challenge limiting sensitivity in capacitive sensing applications is noise susceptibility of the sensors. With the FDC2x1x innovative EMI resistant architecture, performance can be maintained even in presence of high-noise environments.

The FDC2x1x is a multi-channel family of noise- and EMI-resistant, high-resolution, high-speed capacitance-to-digital converters for implementing capacitive sensing solutions. The devices employ an innovative narrow-band based architecture to offer high rejection of noise and interferers while providing high resolution at high speed. The devices support a wide excitation frequency range, offering flexibility in system design. A wide frequency range is especially useful for reliable sensing of conductive liquids such as detergent, soap, and ink.

The FDC221x is optimized for high resolution, up to 28 bits, while the FDC211x offers fast sample rate, up to 13.3ksps, for easy implementation of applications that use fast moving targets. The very large maximum input capacitance of 250 nF allows for the use of remote sensors, as well as for tracking environmental changes over time, temperature and humidity.

The FDC2x1x family targets proximity sensing and liquid level sensing applications for any type of liquids. For non-conductive liquid level sensing applications in the presence of interferences such as human hands, the FDC1004 is recommended, which has integrated active shield drivers.

Key Features

Qualified for Automotive Applications

AEC-Q100 Qualified With the Following Results:

Device Temperature Grade 1: -40°C to +125°C Ambient Operating Temperature Range

Device HBM ESD Classification Level 2

Device CDM ESD Classification Level C5

EMI-Resistant Architecture

Maximum Output Rates (One Active Channel):

13.3 ksps (FDC2112-Q1, FDC2114-Q1)

4.08 ksps (FDC2212-Q1, FDC2214-Q1)

Maximum Input Capacitance: 250 nF (at 10 kHz with 1-mH inductor)

Sensor Excitation Frequency: 10 kHz to 10 MHz

Number of Channels: 2, 4

Resolution: Up to 28 bits

RMS noise: 0.3 fF at 100 sps and fSENSOR = 5MHz

Supply Voltage: 2.7 V to 3.6 V

Power Consumption: Active: 2.1 mA

Low-Power Sleep Mode: 35 μ A

Shutdown: 200 nA

Interface: I2C

Temperature Range: -40°C to +125°C

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Recommended For You

FDC2212DN1T

Texas Instruments, Inc
WSON12

FDC2214RGHR

Texas Instruments, Inc
WQFN16

FDC2214RGHT

Texas Instruments, Inc
WQFN16

FDC2112QDN1RQ1

Texas Instruments, Inc
WSON-12

FDC2114RGHR

Texas Instruments, Inc
WQFN-16

FDC2214QRGHTQ1

Texas Instruments, Inc
WQFN16

FDC2112DN1R

Texas Instruments, Inc
WSON12

FDC2112QDN1TQ1

Texas Instruments, Inc
12WSON

FDC2212QDN1RQ1

Texas Instruments, Inc
WSON12

FDC2114QRGHRQ1

Texas Instruments, Inc
QFN-16

FDC2112DN1T

Texas Instruments, Inc
WSON-12

FDC2214QRGHRQ1

Texas Instruments, Inc
WQFN-16

FDC2114QRGHTQ1

Texas Instruments, Inc
WQFN16

FDC2114RGHT

Texas Instruments, Inc
16-WQFN(4x4)

LDC3114QPWTQ1

Texas Instruments, Inc
TSSOP-16