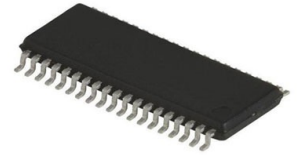


Sensor and Detector Interface 35V 5.6mA SPI Interface Automotive 38-Pin HTSSOP EP T/R



Images are for reference only

Manufacturer: [Texas Instruments, Inc](#)

Package/Case: TSSOP38

Product Type: Drivers

RoHS: RoHS Compliant/Lead free 

Lifecycle: Active

[Inquiry](#)

General Description

The TIC12400-Q1 is an advanced Multiple Switch Detection Interface (MSDI) designed to detect external switch status in a 12-V automotive system. The TIC12400-Q1 features an integrated 10-bit ADC to monitor multi-position analog switches and a comparator to monitor digital switches independently of the MCU. Detection thresholds can be programmed for the ADC and the comparator to support various switch topologies and system non-idealities. The device monitors 24 direct switch inputs, with 10 inputs configurable to monitor switches connected to either ground or battery. 6 unique wetting current settings can be programmed for each input to support different application scenarios. The device supports wake-up operation on all switch inputs to eliminate the need to keep the MCU active continuously, thus reducing power consumption of the system. The TIC12400-Q1 also offers integrated fault detection, ESD protection, and diagnostic functions for improved system robustness. The TIC12400-Q1 supports 2 modes of operations: continuous and polling mode. In continuous mode, wetting current is supplied continuously. In polling mode, wetting current is turned on periodically to sample the input status based on a programmable timer, thus the system power consumption is significantly reduced.

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

Device HBM ESD Classification Level H2

Device CDM ESD Classification Level C4B

Designed to Support 12-V Automotive Systems with Over-voltage and Under-voltage Warning

Monitors up to 24 Direct Switch Inputs with 10 Inputs Configurable to Monitor Switches Connected to Either Ground or Battery

Switch Input Withstands up to 40 V (Load Dump Condition) and down to -24 V (Reverse Polarity Condition)

6 Configurable Wetting Current Settings: (0 mA, 1 mA, 2 mA, 5 mA, 10 mA, and 15 mA)

Integrated 10-bit ADC for Multi-Position Analog Switch Monitoring

Integrated Comparator with 4 Programmable Thresholds for Digital Switch Monitoring

Ultra-low Operating Current in Polling Mode: 68 μ A Typical (tPOLL = 64 ms, tPOLL_ACT = 128 μ s, All 24 Inputs Active, Comparator Mode, All Switches Open)

Interfaces Directly to MCU Using 3.3 V / 5 V Serial Peripheral Interface (SPI) Protocol

Interrupt Generation to Support Wake-Up Operation on All Inputs

Integrated Battery and Temperature Sensing

\pm 8 kV Contact Discharge ESD Protection on Input Pins per ISO-10605 With Appropriate External Components

38-Pin TSSOP Package

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Recommended For You

TIC10024QDCPRQ1

Texas Instruments, Inc

HTSSOP-38

TI380C60APHR

Texas Instruments, Inc

QFP

TI380PCIAPCM

Texas Instruments, Inc

QFP

TIIR2000PAG

Texas Instruments, Inc

TQFP64

SN65LV1224BDBR

Texas Instruments, Inc

SSOP28

TCA9534PWR

Texas Instruments, Inc

TSSOP16

SN75173N

Texas Instruments, Inc

DIP

SN65LBC179D

Texas Instruments, Inc

SOP8

AM26LS31CD

Texas Instruments, Inc

SOP16

TFP401AMPZPEP

Texas Instruments, Inc
HTQFP100

SN75176AD

Texas Instruments, Inc
SOP-8

SN65LVDS3486D

Texas Instruments, Inc
SOP-16

ISO7221BDR

Texas Instruments, Inc
SOP8

SN65HVD33MDREP

Texas Instruments, Inc
SOP-14

SN65LVDS3487D

Texas Instruments, Inc
SOP16