

PI7C9X762Q

Automotive I²C-Bus/SPI to UART Bridge Controller with 64 Bytes of TX/RX FIFOs

Description

The PI7C9X762Q is a I²C-bus/SPI to a dual-channel high performance UART bridge controller. It offers data rates up to 33Mbps and guarantees low operating and sleeping current. The PI7C9X762Q also has up to 8 additional programmable general purpose I/O [GPIO] pins. The device comes in very small TQFN32 packages, which makes it ideally suitable for cost efficient, handheld, battery operated applications. These UART bridges provide protocol conversion from I²C -bus or SPI to RS-232/RS-485/RS-422 and are fully bidirectional.

The PI7C9X762Q supports SPI clock speeds up to 33Mbps and IrDA SIR up to 1.152Mbit/s.

The PI7C9X762Q's internal register set is backward-compatible with the widely used and widely popular 16C450 UART. The PI7C9X762Q also provides additional advanced features such as auto hardware and software flow control, automatic RS-485 support, support for fractional baud rates and software reset. This allows the software to reset the UART at any moment, independent of the hardware reset signal.

Application(s)

- Telematics
- ADAS
- Smart Cockpits
- Zonal Gateways
- Central Controllers

Ordering Information

Orderable Part Number	Package Code	Package Description
PI7C9X762Q2ZHEX	ZH	32-Contact, TQFN (W-QFN5050-32)

Notes:

- Q = Automotive Compliant
- 2 = AEC-Q100 Grade Level
- E = Pb-free and Green
- X suffix = Tape/Reel

Notes:

1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. Automotive products are AEC-Q100 qualified and are PPAP capable. Refer to <https://www.diodes.com/quality/>.

Features

- AEC-Q100 Grade 2 Compliant
- Dual channel full-duplex UART
- Supports I²C-bus or SPI interface
- 64 bytes FIFO (transmitter and receiver)
- Fully compatible with industrial standard 16C450 and equivalent
- Baud Rates up to 16Mbit/s in 4X sampling clock rate
- Programmable character formatting
 - 5-bit, 6-bit, 7-bit or 8-bit character
 - Even, odd, or no parity
 - 1, 1.5, or 2 stop bits
- Programmable Receive and Transmit FIFO trigger levels
- Special character detection
- Internal Loopback mode
- Line break generation and detection

Flow Control

- Supports hardware flow control using RTS/CTS
- Supports software flow control with programmable Xon/Xoff characters
- Programmable single or double Xon/Xoff characters

Interface Control

- Automatic RS-485 slave address detection
- RS-485 driver direction control via RTS signal
- RS-485 driver direction control inversion
- Built-in IrDA encoder and decoder interface
- Supports IrDA SIR with speeds up to 115.2kbit/s (optional 1.152Mbps)
- Up to eight user programmable GPIO pins
- Software reset

Others

- Low standby current at 3.3V
- Wide operation voltage (1.8V, 2.5V or 3.3V)
- Automotive temperature ranges -40°C to 105°C

I²C Interface

- Compliant with I²C-bus fast speed
- Supports slave mode only
- Crystal oscillator (up to 24MHz) or external clock (up to 64MHz) input

SPI Interface

- PI7C9X762Q supports 33 Mbit/s maximum SPI clock speed
- Supports SPI mode 0 (slave mode only)
- Packaging (Pb-free & Green):
 - 32-Pin, TQFN (ZH)
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- The PI7C9X762Q is suitable for automotive applications requiring specific change control; this part is AEC-Q100 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities

<https://www.diodes.com/quality/product-definitions/>