



High-speed UARTs and Bridge ICs

Advanced serial-interface solutions





Fastest baud rate: 20 Mbps
SC16C85xS



Deepest FIFO: 256 Bytes
SC28L202



Smallest footprint: 12.25 mm²
SC16C85xLIET

NXP UARTs offer industry-leading performance, size, and FIFO depth

- ▶ Global supplier of a very broad portfolio
- ▶ High-performance solutions (speed, FIFO depth, baud rate)
- ▶ Focus on miniaturization (smaller packaging)
- ▶ In-house manufacturing and assembly
- ▶ Direct customer support: interface.support@nxp.com

NXP UART applications

▶ General Interface

UART controller is part of the serial data communication of a system. A UART is used to convert parallel data to serial data, and from serial data to parallel data.

▶ Internet access equipment

Routers, high-end modems, remote-access service, modem-access equipment for ISPs.

▶ Telecom and networking communication

Basestations, PABX systems, serial-to-fiber optic converters, ADSL boxes, Bluetooth based phones, hubs, switches, WLAN/802.11 GPRS.

▶ Computing

PC, server, POS, storage, PDAs and internet appliances, printers, scanners, fax servers, Smart Card readers

▶ Appliances and terminals

Cash registers connected via serial cable to CPU, simple fixed data-entry terminals for warehouse control, card readers connected with central unit for park-house control

▶ Entertainment and gaming

Midi interface on musical devices and stage equipment, data exchange and control of gambling equipment, toys, MP3, DTV, STB, projectors, digital cameras, digital LSRs, handheld games.

▶ Home Security

Remote control of audio equipment from central unit, light and heating control devices in homes or offices, security sensors and surveillance devices

▶ Robotics

Industrial control of CNC equipment, remote sensor equipment, motor control

▶ Industrial

Elevators, car-control boxes, security, medical equipment, data exchange via serial ports, lighting/gas metering, warehouse control, POS terminals, equipment control through serial connection, remote measurement, GPS navigation systems

▶ SmartPhones

Bluetooth interface, CDMA and GSM baseband communication

NXP UARTs

NXP, an established leader as a long-term supplier in UARTs, provides innovative solutions to meet the application requirements of today and tomorrow

INDUSTRIAL UARTS

NXP, the number-one supplier of industrial UARTs, offers a broad line of single- to eight-channel devices that deliver higher baud rates, superior error handling, deeper FIFOs, improved character recognition, responsive interrupt systems, and very fast host-bus cycle times. The latest implementation of the basic NXP UART architecture, the IMPACT family, offers special features – like lower operating voltage, programmable interrupt priority, and selectable Motorola/Intel bus interfaces – that lower overall cost, speed time-to-market, and improve system performance. A single IMPACT device can be used in multiple operating systems and in multiple applications, so designers can bring several systems to market using the same high-performance, simple-to-use UART.

16C UARTS

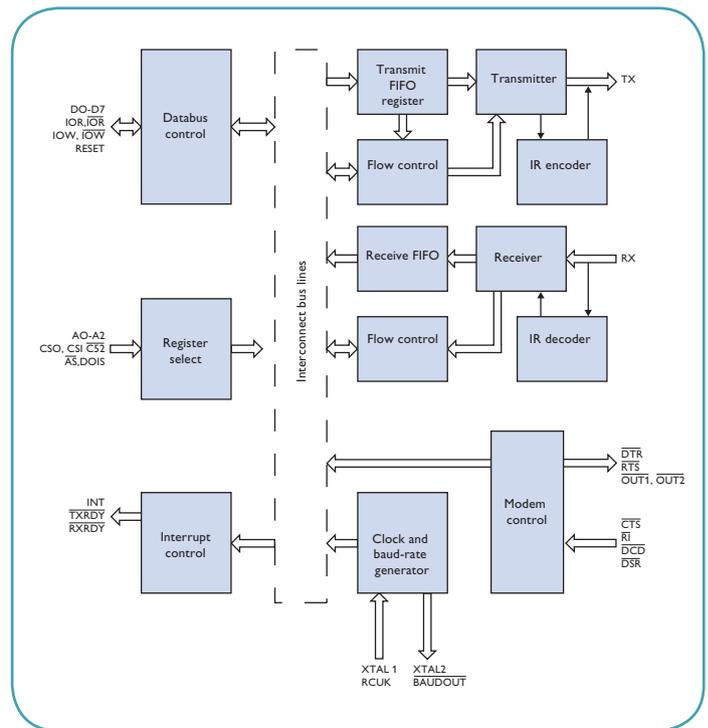
NXP's enhanced 16C UARTs are drop-in compatible with industry-standard devices and offer added features without a price premium.

The family includes CMOS-based, single- to quad-channel UARTs that support the widest supply voltage range (1.8, 2.5, 3.3 and 5 V), operate within the industrial temperature range (-40 to 85 °C), deliver baud rates up to 20 Mbps, and offer bus cycle times that are up to 20% faster than traditional devices. Many are available in tiny HVQFN and TFBGA packages that reduce PCB space by as much as 70%. The 16C UARTs are fully compatible with Linux and Windows OS drivers, thus saving precious design time and lowering overall cost.

SPECIAL NXP FEATURES

Both families of UARTs employ an architecture that has been carefully optimized for superior performance. Programmable channel modes increase flexibility and make diagnostics easier to run. Multi-drop support (also known as "RS-485" or "9-bit" mode) allows half-duplex long distance communication. Hardware handshaking uses modem control signals to control the data stream, preventing FIFO overflow without interrupting the CPU.

Common UART architecture

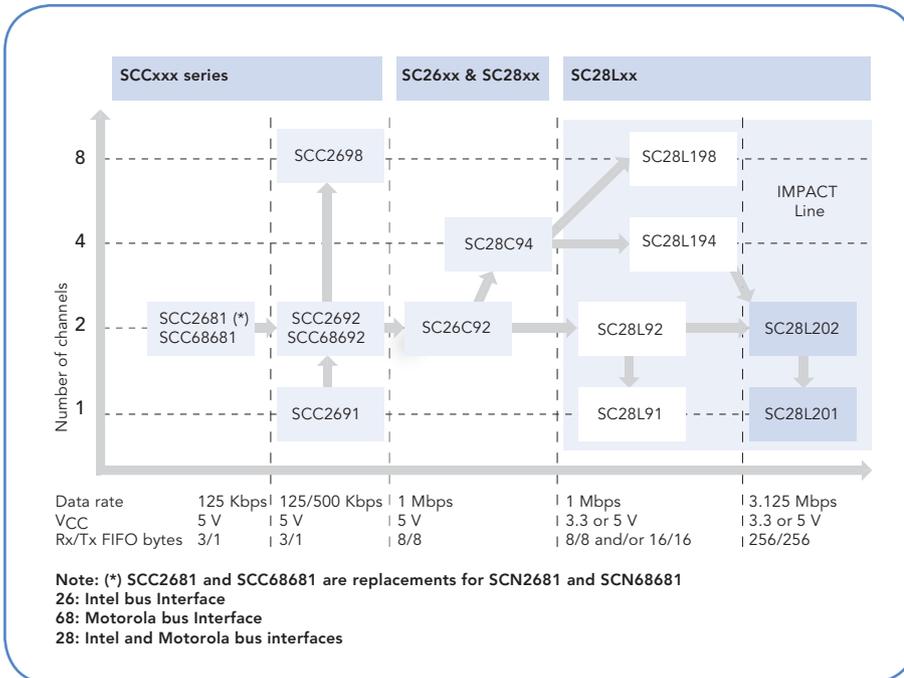


NXP UARTs are easy to design into a very broad range of applications

NXP industrial UARTs

Features	Benefits
Broad line of single- to eight-channel UARTs	Variety of choices for different applications
Industrial-grade temperature range (-40 to 85 °C)	Rugged performance in extreme conditions
Power-down mode	Ideal for battery-operated systems
Extensive interrupt support	Reduced software overhead
Automatic RS485 half-duplex control	Reduced CPU overhead (multi-drop support)
Automatic out-band flow control	Avoids loss of data
Rx/Tx-independent with respect to speed & clock frequency	Rx/Tx can operate at different baud rates
Flexible and programmable I/O structure	Allows usage of I/O pins for general purposes
RTS/CTS (hardware) flow control signals	Prevent receiver overrun
3.3 and 5 V operating range (IMPACT family)	Broader range of applications
Motorola/Intel interfaces (IMPACT family)	Industry-standard compatibility and faster design-in
Deep FIFO	Very high data throughput

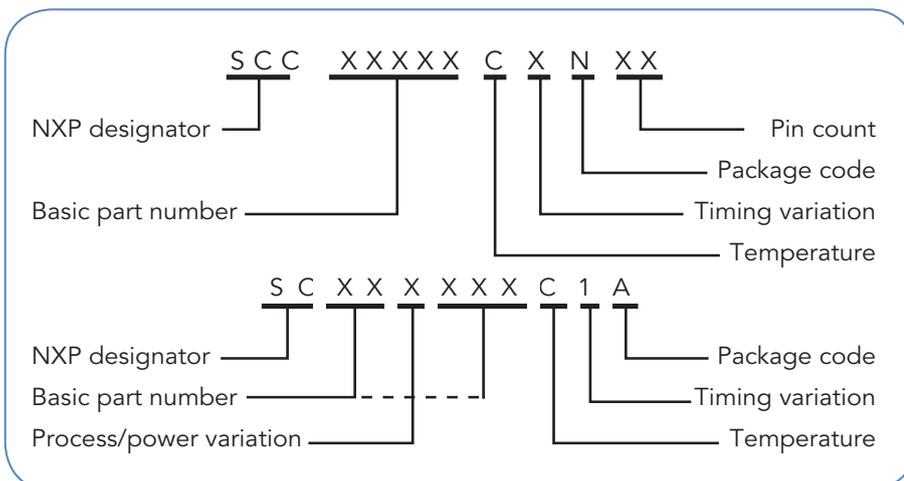
INDUSTRIAL UART FAMILY



ADDED FEATURES OF THE IMPACT FAMILY

- ▶ Single part for multiple operating environments
- ▶ 3.3 and 5 V operation
- ▶ Compatible with Intel and Motorola bus interfaces
- ▶ FIFO depth up to 256 bytes
- ▶ Three bytes of character recognition
- ▶ Xon/Xoff in-band flow control
- ▶ Watchdog™ timer
- ▶ Character count mode
- ▶ Receiver time-out mode
- ▶ Programmable FIFO interrupt level
- ▶ Intelligent interrupt arbitration
- ▶ Real-time data error detection

NAMING CONVENTIONS



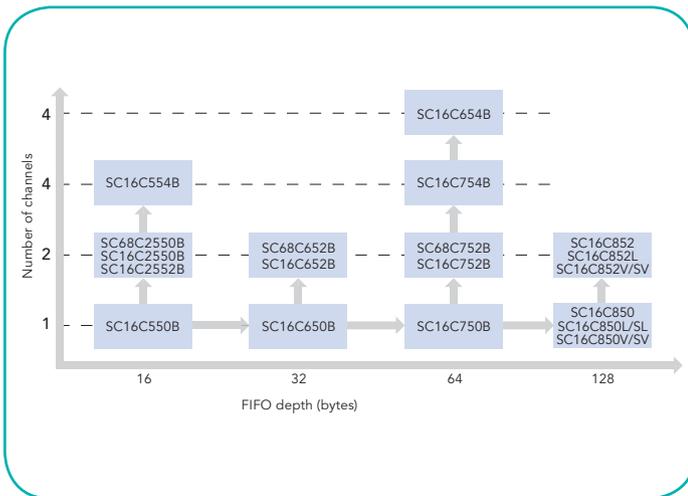
Industrial UART selection

UART device	Comment	Channel	V _{cc} (±10%)	Data rate at V _{cc} (Kbps)	Rx/Tx FIFO bytes	Arbitrating interrupt	I/O pins	16-bit counter/timer	Rx/Tx FIFO counters	Rx/Tx FIFO INT trigger	Software flow control	Intel or Motorola databus interface	Power-down mode	Package	Part number (temp range 0 to 70 °C)	Part number (temp range -40 to 85 °C)
SCC2691	Single-channel version of SCC2692	1	5 V	125	3/1	Normal	2	1	No	3/1 level	No	Intel	Yes	DIL24	SCC2691AC1N24	SCC2691AE1N24
														SO24	SCC2691AC1D24	
														PLCC28	SCC2691AC1A28	SCC2691AE1A28
SC28L91	Low power, single-channel version of SC28L92	1	3.3 or 5 V	1000	16/16 or 8/8	Normal Multi-level Vectored IACK/DACK	15	1	Yes	All	No	Intel or Motorola (Pin select)	Yes	PLCC44		SC28L91A1A
														QFP44		SC28L91A1B
SC28L201	Single-channel version of SC28L202. Enhanced, faster version of SC28L91	1	3.3 or 5 V	3125	256/256	Normal Multi-level IACK/DACK I2A	16	2	Yes	All	Auto	Intel or Motorola (Pin select)	Yes	TSSOP48		SC28L201A1DGG
SCC2681	CMOS version of SCN2681	2	5 V	125	3/1	Normal	15	1	No	3/1 level	No	Intel	No	DIL28	SCC2681AC1N28	SCC2681AE1N28
														DIL40	SCC2681AC1N40	SCC2681AE1N40
														PLCC44	SCC2681AC1A44	SCC2681AE1A44
SCC68681	CMOS version of SCN68681	2	5 V	125	3/1	Normal Vectored	14	1	No	3/1 level	No	Motorola	No	DIL40	SCC68681AC1N40	SCC68681AE1N40
														PLCC44	SCC68681AC1A44	SCC68681AE1A44
SCC2681T	CMOS version of SCN2681T	2	5 V	500	3/1	Normal	15	1	No	3/1 level	No	Intel	Yes	PLCC84	SCC2681TC1A44	
SCC2692	CMOS version of SCN2681	2	5 V	125	3/1	Normal	15	1	No	3/1 level	No	Intel	Yes	DIL28	SCC2692AC1N28	SCC2692AE1N28
														DIL40	SCC2692AC1N40	SCC2692AE1N40
														PLCC44	SCC2692AC1A44	SCC2692AE1A44
														QFP44	SCC2692AC1B44	SCC2692AE1B44
SCC68692	CMOS version of SCN68681	2	5 V	125	3/1	Normal Vectored IACK/DACK	14	1	No	3/1 level	No	Motorola	Yes	DIL40	SCC68692AC1N40	SCC68692AE1N40
														PLCC44	SCC68692AC1A44	SCC68692AE1A44
SC26C92	High-speed version of SCC2692	2	5 V	1000	8/8	Normal Multi-level	15	1	Yes	All	No	Intel	Yes	DIL40		SC26C92A1N
														PLCC44		SC26C92A1A
														QFP44		SC26C92A1B
SC28L92	Low-power, faster version of SC26C92	2	3.3 or 5 V	1000	16/6 or 8/8	Normal Multi-level Vectored IACK/DACK	15	1	Yes	All	No	Intel or Motorola	Yes	PLCC44		SC28L92A1A
														QFP44		SC28L92A1B
SC28L202	Enhanced, faster version of SC28L92	2	3.3 or 5 V	3125	256/256	Normal Multi-level IACK/DACK I2A	16	2	Yes	All	Auto	Intel or Motorola (Pin select)	Yes	TSSOP56		SC28L202A1DGG
SC28C94	Enhanced quad version of SC26C92	4	5 V	1000	8/8	Normal Multi-level IACK/DACK I2A	16	2	Yes	All	No	Intel or Motorola	Yes	PLCC52		SC28C94A1A
SC28L194	Enhanced version of SC28C94	4	3.3 or 5 V	1000	16/16	Normal Multi-level IACK/DACK I2A	16	2	Yes	All	Auto	Intel or Motorola	Yes	PLCC68		SC28L194A1A
														LQFP80		SC28L194A1BE
SCC2698B	Quad version of SCC2692	8	5 V	125	3/1	Normal	32	4	No	3/1 level	No	Intel	Yes	PLCC84	SCC2698BC1A84	SCC2698BE1A84
SC28L198	Enhanced version of SCC2698B	8	3.3 or 5 V	1000	16/16	Normal Multi-level IACK/DACK I2A	32	2	Yes	All	Auto	Intel or Motorola	Yes	PLCC84		SC28L198A1A
														LQFP100		SC28L198A1BE

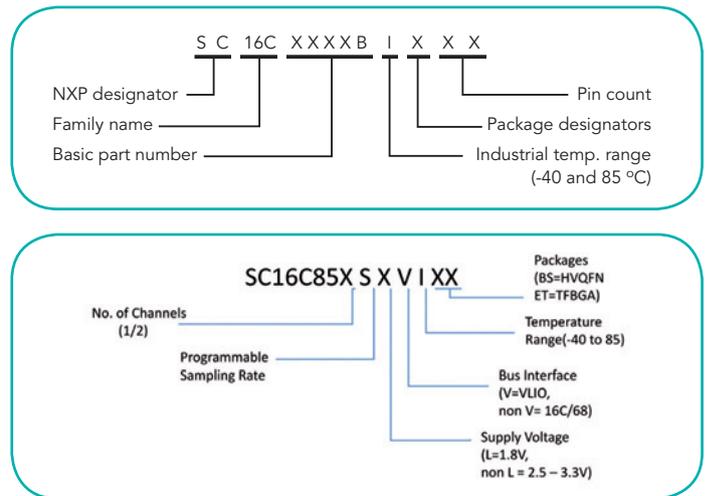
NXP high-speed 16CxxB UARTs

Features	Benefits
Broad line of single- to quad-channel UARTs	One-stop shopping
Widest supply voltage range (1.8, 2.5, 3.3, 5 V) at industrial temperature range (-40 to 85 °C) without price premium	Single part can be used for multiple systems, multiple operating environments Lower overall cost of ownership – can replace up to four competitor parts
Fastest devices on the market with over 20% faster bus cycle times and baud rates up to 20 Mbps	Compatible with high-speed processors Ideal for Bluetooth applications
Power-down mode	Ideal for battery-operated systems
HVQFN and BGA package options	Ideal for small, portable systems
Windows and Linux OS-compatible	Simplifies software development
Infrared (IrDA) interface	Enables wireless, short-range applications
Software readily available	Shortens design cycle
Automatic software and hardware flow control	Reduces CPU overhead and data loss
DMA mode and wide variety of FIFO depths	Increases system throughput
Drop-in compatibility with existing 16C devices	Alternative manufacturing source
16C (Intel), 68(Motorola), VLIO(Variable Latency I/O)	Wide range of processor supported
Programmable Sampling Rate	Higher baud rates
Fully automatic RS-485	Reduce processor's software overhead

16C UART FAMILY

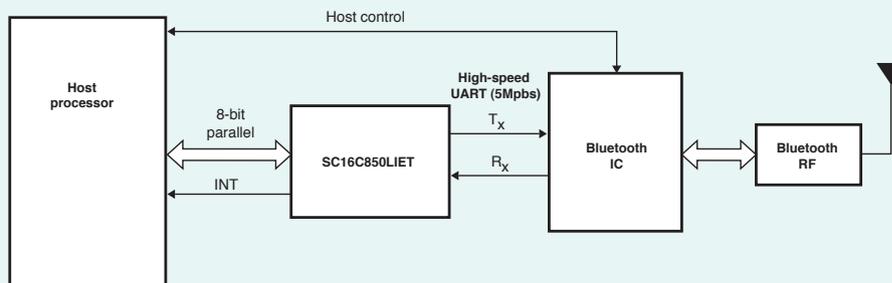


NAMING CONVENTIONS



NXP UART in a Bluetooth-enabled W-CDMA phone

Low-voltage, high-speed Bluetooth interface



- Advantages:**
- 64-byte FIFO
 - Auto flow controls
 - Low-power mode
 - Sleep mode <math><30\mu\text{A}</math>
 - HVQFN32 (5 x 5 x 0.85 mm)
 - Enhanced features

16C UARTs with Intel databus interface

UART device	Channel	V _{cc}	Data rate at 5/3.3/2.5/1.8 V (Mbps)	Rx/Tx FIFO bytes	IrDA	Modem pins/channel	Rx/Tx FIFO INT trigger	RTS/CTS flow control	Software flow control	Power-down mode	Programmable Sampling rate	Package	Part number
SC16C550B	1	2.5-5.5 V	3.0/2.0/1.0/-	16	No	6	Four levels/None	Yes	No	No		PLCC44	SC16C550BIA44
												LQFP48	SC16C550BIB48
												DIP40	SC16C550BIN40
												HVQFN32	SC16C550BIBS
SC16C650B	1	2.5-5.5 V	3.0/2.0/1.0/-	32	Yes	6	Four levels/ Four levels	Yes	Yes	Yes		PLCC44	SC16C650BIA44
												LQFP48	SC16C650BIB48
												HVQFN32	SC16C650BIBS
												DIP40	SC16C650BIN40
SC16C750B	1	2.5-5.5 V	3.0/2.0/1.0/-	16 or 64	No	6	Four levels/ None	Yes	No	Yes		PLCC44	SC16C750BIA44
												LQFP48	SC16C750BIB64
												HVQFN32	SC16C750BIBS
SC16C2550B	2	2.5-5.5 V	5.0/5.0/3.0/-	16	No	6	Four levels/None	No	No	No		PLCC44	SC16C2550BIA44
												LQFP48	SC16C2550BIB48
												DIP40	SC16C2550BIN40
												HVQFN32	SC16C2550BIBS
SC16C2552B	2	2.5-5.5 V	5.0/5.0/3.0/-	16	No	6	Four levels/None	No	No	No		PLCC44	SC16C2552BIA44
SC16C652B	2	2.5-5.5 V	5.0/5.0/3.0/-	32	Yes	6	Four levels/ Four levels	Yes	Yes	Yes		LQFP48	SC16C652BIB48
												HVQFN32	SC16C652BIBS
SC16C752B	2	2.5-5.5 V	5.0/5.0/3.0/-	64	No	6	Programmable	Yes	Yes	Yes		LQFP48	SC16C752BIB48
												HVQFN32	SC16C752BIBS
SC16C754B	4	2.5-5.5 V	5.0/5.0/3.0/-	64	No	6	Programmable	Yes	Yes	Yes		PLCC68	SC16C754BIA68
												LQFP80	SC16C754BIB80
												LQFP644	SC16C754BIBM
SC16C554B	4	2.5-5.5 V	5.0/5.0/3.0/-	16	No	6	Four levels/None	Yes	No	No		LQFP64	SC16C554BIA64
												LQFP64	SC16C554BIB64
												LQFP80	SC16C554BIB80
												HVQFN48	SC16C554BIBS
												LQFP644	SC16C554BIBM
SC16C654B	4	2.5-5.5 V	5.0/5.0/3.0/-	64	Yes	6	Four levels/ Four levels	Yes	Yes	Yes		LQFP64	SC16C654BIB64
												LQFP64	SC16C654BIB64
												LQFP644	SC16C654BIBM
												LFBGA64	SC16C654BIEC
SC16C850	1	2.5-3.3 V	-/5/5/-	128	Yes	6	Programmable	Yes	Yes	Yes	No	HVQFN32	SC16C850IBS
												TFBGA36	SC16C850IET
SC16C850L	1	1.8 V	-/-/5	128	Yes	6	Programmable	Yes	Yes	Yes	No	HVQFN32	SC16C850IBS
												TFBGA36	SC16C850IET
SC16C850SL	1	1.8 V	-/-/20	128	Yes	6	Programmable	Yes	Yes	Yes	Yes	HVQFN32	SC16C850IBS
												TFBGA36	SC16C850IET
SC16C852	2	2.5-3.3 V	-/5/5/-	128	Yes	6	Programmable	Yes	Yes	Yes	No	HVQFN32	SC16C852IBS
												TFBGA36	SC16C852IET
												LQFP48	SC16C852IB
SC16C852L	2	1.8 V	-/-/5	128	Yes	6	Programmable	Yes	Yes	Yes	No	HVQFN32	SC16C852IBS
												TFBGA36	SC16C852IET
												LQFP48	SC16C852IB

16C UARTs with Motorola databus interface

UART device	Channel	V _{cc}	Data rate 5/3.3/2.5/1.8 V (Mbps)	Rx/Tx FIFO	IrDA	Modem pins / channel	Rx/Tx FIFO INT trigger	RTS/CTS flow control	Software Flow control	Power-down mode	Programmable Sampling rate	Package	Part number
SC16C850	1	2.5-3.3 V	-/5/5/-	128	Yes	6	Programmable	Yes	Yes	Yes	No	HVQFN32 TFBGA36	SC16C850IBS SC16C850IET
SC16C850L	1	1.8 V	-/-/5	128	Yes	6	Programmable	Yes	Yes	Yes	No	HVQFN32 TFBGA36	SC16C850IBS SC16C850IET
SC16C850SL	1	1.8 V	-/-/20	128	Yes	6	Programmable	Yes	Yes	Yes	Yes	HVQFN32 TFBGA36	SC16C850IBS SC16C850IET
SC16C852	2	2.5-3.3 V	-/5/5/-	128	Yes	6	Programmable	Yes	Yes	Yes	No	HVQFN32 TFBGA36 LOFP48	SC16C852IBS SC16C852IET SC16C852IB
SC16C852L	2	1.8 V	-/-/5	128	Yes	6	Programmable	Yes	Yes	Yes	No	HVQFN32 TFBGA36 LOFP48	SC16C852IBS SC16C852IET SC16C852IB
SC68C850	1	2.5-3.3 V	-/5/5/-	128	Yes	6	Programmable	Yes	Yes	Yes	No	TFBGA36	SC16C850IET

16C UART with VLIO databus interface

UART device	Channel	V _{cc}	Data rate 5/3.3/2.5/1.8 V (Mbps)	Rx/Tx FIFO	IrDA	Modem pins / channel	Rx/Tx FIFO INT trigger	RTS/CTS flow control	Software Flow control	Power-down mode	Programmable Sampling rate	Package	Part number
SC16C850V	1	1.8 V	-/-/5	128	Yes	6	Programmable	Yes	Yes	Yes	No	HVQFN32	SC16C850VIBS
SC16C850SV	1	1.8 V	-/-/20	128	Yes	6	Programmable	Yes	Yes	Yes	Yes	HVQFN32	SC16C850VIBS
SC16C852V	2	1.8 V	-/-/5	128	Yes	6	Programmable	Yes	Yes	Yes	No	HVQFN32 TFBGA36	SC16C852VIBS SC16C852VIET
SC16C852SV	2	1.8 V	-/-/20	128	Yes	6	Programmable	Yes	Yes	Yes	Yes	TFBGA36	SC16C852SVIET

16C UART with I²C serial bus interface

UART device	Channel	V _{cc}	Data rate 5/3.3/2.5/1.8 V (Mbps)	Rx/Tx FIFO	IrDA	Modem pins / channel	GPIO pins	Rx/Tx FIFO INT trigger	RTS/CTS flow control	Software Flow control	Power-down mode	I ² C Speed Max (Kbps)	Package	Part number
SC16IS740	1	2.5-3.3 V	-/5/3/-	64	Yes	2	0	Programmable	Yes	Yes	Yes	400	TSSOP16	SC16IS740IPW
SC16IS750	1	2.5-3.3 V	-/5/3/-	64	Yes	6	8 ^[1]	Programmable	Yes	Yes	Yes	400	TSSOP24	SC16IS750IPW
SC16IS750	1	2.5-3.3 V	-/5/3/-	64	Yes	6	8 ^[1]	Programmable	Yes	Yes	Yes	400	HVQFN24	SC16IS750IBS
SC16IS760	1	2.5-3.3 V	-/5/3/-	64	Yes	6	8 ^[1]	Programmable	Yes	Yes	Yes	400	TSSOP24	SC16IS760IPW
SC16IS760	1	2.5-3.3 V	-/5/3/-	64	Yes	6	8 ^[1]	Programmable	Yes	Yes	Yes	400	HVQFN24	SC16IS760IBS
SC16IS752	2	2.5-3.3 V	-/5/3/-	64	Yes	6	4 ^[2]	Programmable	Yes	Yes	Yes	400	TSSOP28	SC16IS752IPW
SC16IS752	2	2.5-3.3 V	-/5/3/-	64	Yes	6	4 ^[2]	Programmable	Yes	Yes	Yes	400	HVQFN32	SC16IS752IBS
SC16IS762	2	2.5-3.3 V	-/5/3/-	64	Yes	6	4 ^[2]	Programmable	Yes	Yes	Yes	400	TSSOP28	SC16IS762IPW
SC16IS762	2	2.5-3.3 V	-/5/3/-	64	Yes	6	4 ^[2]	Programmable	Yes	Yes	Yes	400	HVQFN32	SC16IS762IBS
SC16IS850L	1	1.8 V	-/-/5	128	Yes	6	0	Programmable	Yes	Yes	Yes	400	HVQFN24	SC16IS850LIBS
SC16IS850L	1	1.8 V	-/-/5	128	Yes	6	0	Programmable	Yes	Yes	Yes	400	TSSOP24	SC16IS850LIPW

^[1] 4 pins are shared with modem pins

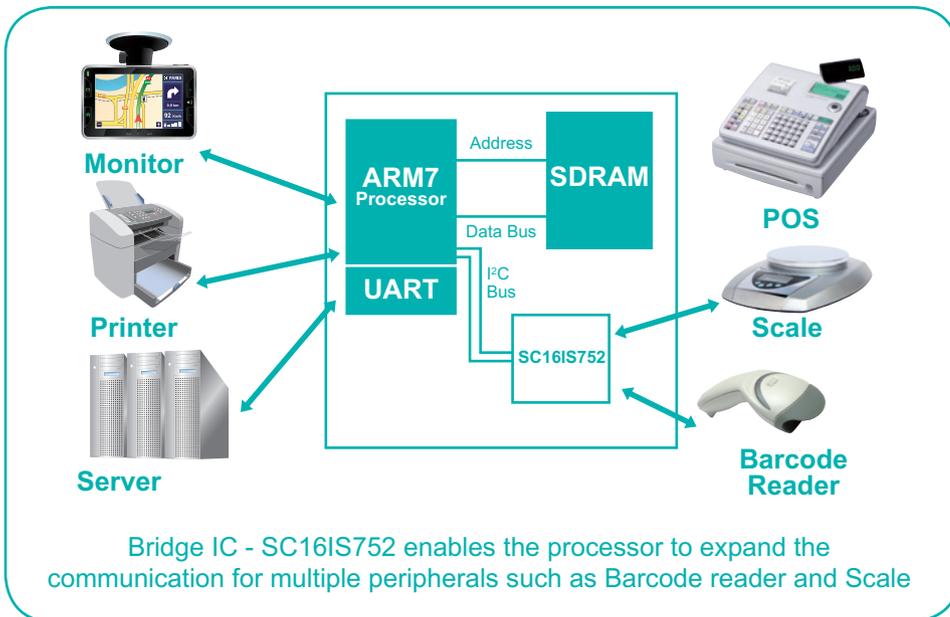
^[2] share with modem pins

16C UART with SPI serial bus interface

UART device	Channel	V _{cc}	Data rate 5/3.3/2.5/1.8 V (Mbps)	Rx/Tx FIFO	IrDA	Modem pins / channel	GPIO pins	Rx/Tx FIFO INT trigger	RTS/CTS flow control	Software Flow control	Power-down mode	SPI Speed Max (Mbps)	Package	Part number
SC16IS740	1	2.5-3.3 V	-/5/3/-	64	Yes	2	0	Programmable	Yes	Yes	Yes	4	TSSOP16	SC16IS740IPW
SC16IS750	1	2.5-3.3 V	-/5/3/-	64	Yes	6	8 ^[1]	Programmable	Yes	Yes	Yes	4	TSSOP24	SC16IS750IPW
SC16IS750	1	2.5-3.3 V	-/5/3/-	64	Yes	6	8 ^[1]	Programmable	Yes	Yes	Yes	4	HVQFN24	SC16IS750IBS
SC16IS760	1	2.5-3.3 V	-/5/3/-	64	Yes	6	8 ^[1]	Programmable	Yes	Yes	Yes	15	TSSOP24	SC16IS760IPW
SC16IS760	1	2.5-3.3 V	-/5/3/-	64	Yes	6	8 ^[1]	Programmable	Yes	Yes	Yes	15	HVQFN24	SC16IS760IBS
SC16IS752	2	2.5-3.3 V	-/5/3/-	64	Yes	6	4 ^[2]	Programmable	Yes	Yes	Yes	4	TSSOP28	SC16IS752IPW
SC16IS752	2	2.5-3.3 V	-/5/3/-	64	Yes	6	4 ^[2]	Programmable	Yes	Yes	Yes	4	HVQFN32	SC16IS752IBS
SC16IS762	2	2.5-3.3 V	-/5/3/-	64	Yes	6	4 ^[2]	Programmable	Yes	Yes	Yes	15	TSSOP28	SC16IS762IPW
SC16IS762	2	2.5-3.3 V	-/5/3/-	64	Yes	6	4 ^[2]	Programmable	Yes	Yes	Yes	15	HVQFN32	SC16IS762IBS
SC16IS850L	1	1.8 V	-/-/5	128	Yes	6	0	Programmable	Yes	Yes	Yes	15	TSSOP24	SC16IS850LIPW
SC16IS850L	1	1.8 V	-/-/5	128	Yes	6	0	Programmable	Yes	Yes	Yes	15	HVQFN24	SC16IS850LIBS

^[1] 4 pins are shared with modem pins

^[2] share with modem pins



Exar competitive cross-reference

EXAR Part Number	Exar Description	Exar Package	Cross Type	NXP Part Number	NXP Description
SINGLE UART					
ST16C550CJ44-F or IJ44-F	Single Channel UART with 16-Byte FIFO	PLCC-44	Drop-in	SC16C550BIA44	2.5 V-5 V single UART with 16-Byte FIFO
ST16C550CP40 or IP40	Single Channel UART with 16-Byte FIFO	PDIP-40	Drop-in	SC16C550BIN40	2.5 V-5 V single UART with 16-Byte FIFO
ST16C550CQ48-F or IQ48-F	Single Channel UART with 16-Byte FIFO	TQFP-48	Drop-in	SC16C550BIB48	2.5 V-5 V single UART with 16-Byte FIFO
XR16L570IL32-F	Smallest 1.62 V to 5.5 V UART with 16-Byte FIFO and PowerSave	QFN-32	Similar Part	SC16C650BIBS	2.5 V-5 V single UART with 32-Byte FIFO
ST16C580CQ48-F or IQ48-F	UART with 16-Byte FIFO and IrDA Encoder/Decoder	TQFP-48	Similar Part	SC16C550BIB48	2.5 V-5 V single UART with 16-Byte FIFO
XR16L580L-F	Smallest 2.25 V to 5.5 V UART with 16-Byte FIFO and PowerSave	QFN-32	Similar Part	SC16C550BIBS	2.5 V-5 V single UART with 16-Byte FIFO
XR16M581L24-F	1.62 V to 3.63 V UART with 16-byte FIFO, VLI0 interface	QFN-24	Similar Part	SC16C850VIBS	1.8 V UART with 128-byte FIFO, VLI0 Interface
XR16M581L32-F	1.62 V to 3.63 V UART with 16-byte FIFO, VLI0 interface	QFN-32	Similar Part	SC16C850VIBS	1.8 V UART with 128-byte FIFO, VLI0 Interface
XR16M581B25-F	1.62 V to 3.63 V UART with 16-byte FIFO, VLI0 interface	BGA-25	Similar Part	SC16C850VIBS	1.8 V UART with 128-byte FIFO, VLI0 Interface
XR16M681L24-F	1.62 V to 3.63 V UART with 32-byte FIFO, VLI0 interface	QFN-24	Similar Part	SC16C850VIBS	1.8 V UART with 128-byte FIFO, VLI0 Interface
XR16M681L32-F	1.62 V to 3.63 V UART with 32-byte FIFO, VLI0 interface	QFN-32	Similar Part	SC16C850VIBS	1.8 V UART with 128-byte FIFO, VLI0 Interface
XR16M681B25	1.62 V to 3.63 V UART with 32-byte FIFO, VLI0 interface	BGA-25	Similar Part	SC16C850VIBS	1.8 V UART with 128-byte FIFO, VLI0 Interface
XR16M781L24-F	1.62 V to 3.63 V UART with 64-byte FIFO, VLI0 interface	QFN-24	Similar Part	SC16C850VIBS	1.8 V UART with 128-byte FIFO, VLI0 Interface
XR16M781L32-F	1.62 V to 3.63 V UART with 64-byte FIFO, VLI0 interface	QFN-32	Similar Part	SC16C850VIBS	1.8 V UART with 128-byte FIFO, VLI0 Interface
XR16M781B25-F	1.62 V to 3.63 V UART with 64-byte FIFO, VLI0 interface	BGA-25	Similar Part	SC16C850VIBS	1.8 V UART with 128-byte FIFO, VLI0 Interface
ST16C650ACJ44-F or IJ44-F	2.90 V to 5.5 V UART with 32-Byte FIFO	PLCC-44	Drop-in	SC16C650BIA44	2.5 V-5 V single UART with 32-Byte FIFO
ST16C650ACQ48-F or IQ48-F	2.90 V to 5.5 V UART with 32-Byte FIFO	TQFP-48	Drop-in	SC16C650BIB48	2.5 V-5 V single UART with 32-Byte FIFO
XR16C850CM-F or IM-F	2.97 V to 5.5 V UART with 128-Byte FIFO	TQFP-48	Similar Part	SC16C850IBS	2.5 V-3.3 V single UART with 128-Byte FIFO
XR16C850CM-F or IM-F	2.97 V to 5.5 V UART with 128-Byte FIFO	TQFP-48	Similar Part	SC16C850IET	2.5 V-3.3 V single UART with 128-Byte FIFO
XR16C850CJ-F or IJ-F	2.97 V to 5.5 V UART with 128-Byte FIFO	PLCC-44	Similar Part	SC16C850IBS	2.5 V-3.3 V single UART with 128-Byte FIFO
XR16C850CJ-F or IJ-F	2.97 V to 5.5 V UART with 128-Byte FIFO	PLCC-44	Similar Part	SC16C850IET	2.5 V-3.3 V single UART with 128-Byte FIFO
DUAL UART					
ST16C2550CP40-F or IP40-F	2.97 V to 5.5 V DUART with 16-Byte FIFO	PDIP-40	Drop-in	SC16C2550BIN40	2.5 V-5 V dual UART with 16-Byte FIFO
ST16C2550CQ48-F or IQ48-F	2.97 V to 5.5 V DUART with 16-Byte FIFO	TQFP-48	Drop-in	SC16C2550BIB48	2.5 V-5 V dual UART with 16-Byte FIFO
ST16C2550CJ44-F or IJ44-F	2.97 V to 5.5 V DUART with 16-Byte FIFO	PLCC-44	Drop-in	SC16C2550BIA44	2.5 V-5 V dual UART with 16-Byte FIFO
ST16C2552CJ44-F or IJ44-F	2.97 V to 5.5 V DUART with 16-Byte FIFO	PLCC-44	Drop-in	SC16C2552BIA44	2.5 V-5 V dual UART with 16-Byte FIFO
XR16L2551M-F	2.25 V to 5.5 V DUART with 16-Byte FIFO	TQFP-48	Similar Part	SC16C652BIB48	2.5 V-5 V dual UART with 32-Byte FIFO
XR16L2552J-F	2.25 V to 5.5 V DUART with 16-Byte FIFO	PLCC-44	Similar Part	SC16C2552BIA44	2.5 V-5 V dual UART with 16-Byte FIFO
XR16V2650M-F	High Performance DUART with 32-Byte FIFO	TQFP-48	Similar Part	SC16C652BIB48	2.5 V-5 V dual UART with 32-Byte FIFO
XR16V2650L-F	High Performance DUART with 32-Byte FIFO	QFN-32	Similar Part	SC16C652BIBS	2.5 V-5 V dual UART with 32-Byte FIFO
XR16V2651M-F	High Performance DUART with 32-Byte FIFO	TQFP-48	Similar Part	SC68C652BIB48	2.5 V-5 V dual UART with 32-Byte FIFO
XR16M2750M48-F	High Performance Low Voltage DUART with 64-Byte FIFO	TQFP-48	Similar Part	SC16C752BIB48	2.5 V-5 V dual UART with 64-Byte FIFO
XR16M2750L32-F	High Performance Low Voltage DUART with 64-Byte FIFO	QFN-32	Similar Part	SC16C752BIBS	2.5 V-5 V dual UART with 64-Byte FIFO
XR16M752M48-F	High Performance DUART with 64-Byte FIFO	TQFP-48	Similar Part	SC16C752BIB48	2.5 V-5 V dual UART with 64-Byte FIFO
XR16M752L32-F	High Performance DUART with 64-Byte FIFO	QFN-32	Similar Part	SC16C752BIBS	2.5 V-5 V dual UART with 64-Byte FIFO
XR68M752M48-F	1.62 V to 3.6 V high Performance Dual UART with 64-Byte FIFO	TQFP-48	Drop-in	SC68C752BIB48	1.62 V to 3.6 V high Performance Dual UART with 64-Byte FIFO
QUAD UART					
XR16V554V-F	High Performance Quad UART with 16-Byte FIFO	LQFP-64	Drop-in	SC16C554BIB64	2.5 V-5 V quad UART with 16-Byte FIFO
XR16V554V80-F	High Performance Quad UART with 16-Byte FIFO	LQFP-80	Similar Part	SC16C554BIB80	2.5 V-5 V quad UART with 16-Byte FIFO
XR16V554V-F	High Performance Quad UART with 16-Byte FIFO	LQFP-64	Drop-in	SC16C554BIBM	2.5 V-5 V quad UART with 16-Byte FIFO
XR16V564V-F	High Performance Quad UART with 32-Byte FIFO	LQFP-64	Similar Part	SC16C554BIBM	2.5 V-5 V quad UART with 16-Byte FIFO
XR16V554L-F	High Performance Quad UART with 16-Byte FIFO	QFN-48	Similar Part	SC16C554BIBS	2.5 V-5 V quad UART with 16-Byte FIFO
XR16V554IJ-F	High Performance Quad UART with 16-Byte FIFO	PLCC-68	Drop-in	SC16C554DBIA68	2.5 V-5 V quad UART with 16-Byte FIFO
XR16V554DIV-F	High Performance Quad UART with 16-Byte FIFO	LQFP-64	Drop-in	SC16C554DBIB64	2.5 V-5 V quad UART with 16-Byte FIFO
ST16C654CJ68-F or IJ68-F	2.25 V to 5.5 V Quad UART with 64-Byte FIFO	PLCC-68	Drop-in	SC16C654BIA68	2.5 V-5 V quad UART with 64-Byte FIFO
ST16C654CQ64-F or IQ64-F	2.25 V to 5.5 V Quad UART with 64-Byte FIFO	LQFP-64	Drop-in	SC16C654BIB64	2.5 V-5 V quad UART with 64-Byte FIFO
ST16C654CJ68-F or IJ68-F	2.25 V to 5.5 V Quad UART with 64-Byte FIFO	PLCC-68	Similar Part	SC16C754BIA68	2.5 V-5 V quad UART with 64-Byte FIFO
XR16V654V-F	High Performance Quad UART with 64-Byte FIFO	LQFP-64	Similar Part	SC16C654BIB64	2.5 V-5 V quad UART with 64-Byte FIFO
XR16V654L-F	High Performance Quad UART with 64-Byte FIFO	QFN-48	Similar Part	SC16C654BIBS	2.5 V-5 V quad UART with 64-Byte FIFO
XR16V654V-F	High Performance Quad UART with 64-Byte FIFO	LQFP-64	Similar Part	SC16C654BIEC	2.5 V-5 V quad UART with 64-Byte FIFO
XR16V654IJ-F	High Performance Quad UART with 64-Byte FIFO	PLCC-68	Similar Part	SC16C754BIA68	2.5 V-5 V quad UART with 64-Byte FIFO
XR16V654V80-F	High Performance Quad UART with 64-Byte FIFO	LQFP-80	Similar Part	SC16C754BIB80	2.5 V-5 V quad UART with 64-Byte FIFO

	NXP Package	COMMENTS IF NOT DROP-IN REPLACEMENT	HARDWARE CHANGE	SOFTWARE CHANGE
	PLCC44		NO	NO
	DIP40		NO	NO
	LQFP48		NO	NO
	HVQFN32	Pin map not compatible. Software similar to the SC16C650B. XR16L570 has 16-byte FIFO while SC16C650 has 32-byte FIFO.	YES	YES
	LQFP48	Pin map compatible. Similar UART functions but the NXP part does not support hardware, software flow control and IrDA	NO	YES
	HVQFN32	pin map not compatibe, similar software, SC16C550 does not have DREV and DVID registers	YES	YES
	HVQFN32	Pin map NOT compatible, basic UART functions compatible, both has VLIO host interface	YES	YES
	HVQFN32	Pin map compatible, basic UART functions compatible, both has VLIO host interface	NO	YES
	HVQFN32	Pin map NOT compatible, basic UART functions compatible, both has VLIO host interface	YES	YES
	HVQFN32	Pin map NOT compatible, basic UART functions compatible, both has VLIO host interface	YES	YES
	HVQFN32	Pin map compatible, basic UART functions compatible, both has VLIO host interface	NO	YES
	HVQFN32	Pin map NOT compatible, basic UART functions compatible, both has VLIO host interface	YES	YES
	HVQFN32	Pin map NOT compatible, basic UART functions compatible, both has VLIO host interface	YES	YES
	HVQFN32	Pin map compatible, basic UART functions compatible, both has VLIO host interface	NO	YES
	HVQFN32	Pin map NOT compatible, basic UART functions compatible, both has VLIO host interface	YES	YES
	PLCC44		NO	NO
	LQFP48		NO	NO
	HVQFN32	pin map not compatible, basic UART function compatible, both has 128-byte FIFOs	YES	YES
	TFBGA36	pin map not compatible, basic UART function compatible, both has 128-byte FIFOs	YES	YES
	HVQFN32	pin map not compatible, basic UART function compatible, both has 128-byte FIFOs	YES	YES
	TFBGA36	pin map not compatible, basic UART function compatible, both has 128-byte FIFOs	YES	YES
	DIP40		NO	NO
	LQFP48		NO	NO
	PLCC44		NO	NO
	PLCC44		NO	NO
	LQFP48	pin map similar: SC16C652B does not have PwrSave pin, 16/-68 pin. Software similar: XR16L2551 does not support FCR[5:4], or Xon any and XR16L2551 has 16-byte FIFO	YES	YES
	PLCC44	Pin map not compatible. Similar UART functions, but the NXP part does not support hardware and software flow control	YES	YES
	LQFP48	Pin map compatible and SC16C652 does not have DLD, DREV and DVID registers	NO	YES
	HVQFN32	Pin map not compatible and SC16C652 does not have DLD, DREV and DVID registers	YES	YES
	LQFP48	pin map similar: SC16C652B does not have PwrSave pin, 16/-68 pin. Software similar: XR16L2551 does not support FCR[5:4], or Xon any.	YES	YES
	LQFP48	pin map compatible. SC16C752B does not have these registers: EMSR, FLVL, DREV, DVID, TRG, FC, FCTR	NO	YES
	HVQFN32	pin map NOT compatible. SC16C752B does not have these registers: EMSR, FLVL, DREV, DVID, TRG, FC, FCTR	YES	YES
	LQFP48	pin map compatible. Software similar but XR16M752IM48 has Fractional baud rate generator and 4X, 8X sampling rates	NO	YES
	HVQFN32	pin map not compatible. Software similar but XR16M752IL32 has Fractional baud rate generator and 4X, 8X sampling rates	YES	YES
	LQFP48		NO	NO
	LQFP64		NO	NO
	LQFP80	Pin map not compatible. Software compatible to the SC16C554BIB80	YES	NO
	LQFP64		NO	NO
	LQFP64	Pin to pin compatible. XR16V564IV has larger 32 byte FIFOs.	NO	YES
	HVQFN48	Pin map not compatible. XR16V554IL has TX, RX, RTS, CTS for all 4 channels.	YES	YES
	PLCC68		NO	NO
	LQFP64		NO	NO
	PLCC68		NO	NO
	LQFP64		NO	NO
	PLCC68	pin map compatible. Automatic hardware flow control enabled differently.	NO	YES
	LQFP64	pin map compatible. Software compatible but SC16C654BIB64 does not support 4X, 8X sampling rates and FSTAT register	NO	YES
	HVQFN48	pin map not compatible (XR16V654IL has TX, RX, RTS, CTS for all 4 channels). Software compatible but the NXP part does not support 4X, 8X sampling rates and FSTAT register	YES	YES
	LFBGA64	pin map not compatible. Software compatible but the NXP part does not support 4X, 8X sampling rates and FSTAT register	YES	YES
	PLCC68	pin map compatible. Automatic hardware flow control enabled differently. SC16C754B does not have DLD (4X, 8X sampling rates), FSTAT (FIFO status) registers	NO	YES
	LQFP80	pin map compatible. Automatic hardware flow control enabled differently. SC16C754B does not have DLD (4X, 8X sampling rates), FSTAT (FIFO status) registers	NO	YES

Exar competitive cross-reference

EXAR Part Number	Exar Description	Exar Package	Cross Type	NXP Part Number	NXP Description
XR16V654IV-F	High Performance Quad UART with 64-Byte FIFO	LQFP-64	Similar Part	SC16C754BIBM	2.5 V-5 V quad UART with 64-Byte FIFO
XR16L784CV-F or IV-F	High Performance 2.97 V to 5.5 V Quad UART with 64-Byte FIFO	LQFP-64	Similar Part	SC16C754BIB64	2.5 V-5 V quad UART with 64-Byte FIFO
XR16L784CV-F or IV-F	High Performance 2.97 V to 5.5 V Quad UART with 64-Byte FIFO	LQFP-64	Similar Part	SC28L194A1BE	Quart channel UART with 16-byte FIFO
OCTAL UART					
XR16L788CQ-F or IQ-F	High Performance 2.97 V to 5.5 V Octal UART with 64-Byte FIFO	QFP-100	Func Equiv	SC28L198A1BE	Octal channel UART with 16-byte FIFO
INDUSTRIAL UART					
XR88C92CJ-F	Dual Channel UART with 8-Byte FIFO	PLCC-44	Similar Part	SC28L92A1A	Dual Channel UART with 8-Byte FIFO
XR88C92IJ-F	Dual Channel UART with 8-Byte FIFO	PLCC-44	Similar Part	SC28L92A1A	Dual Channel UART with 8-Byte FIFO
XR88C92CV-F	Dual Channel UART with 8-Byte FIFO	LQFP-44	Similar Part	SC28L92A1B	Dual Channel UART with 8-Byte FIFO
XR88C92IV-F	Dual Channel UART with 8-Byte FIFO	LQFP-44	Similar Part	SC28L92A1B	Dual Channel UART with 8-Byte FIFO
XR88C192CJ-F	Dual Channel UART with 16-Byte FIFO	PLCC-44	Similar Part	SC28L92A1A	Dual Channel UART with 16-Byte FIFO
XR88C192IJ-F	Dual Channel UART with 16-Byte FIFO	PLCC-44	Similar Part	SC28L92A1A	Dual Channel UART with 16-Byte FIFO
XR88C192CV-F	Dual Channel UART with 16-Byte FIFO	LQFP-44	Similar Part	SC28L92A1B	Dual Channel UART with 16-Byte FIFO
XR88C192IV-F	Dual Channel UART with 16-Byte FIFO	LQFP-44	Similar Part	SC28L92A1B	Dual Channel UART with 16-Byte FIFO
XR88C681CP/28-F	Dual Channel UART	PDIP-28	Similar Part	SCC2692AC1N28	Dual Channel UART
XR88C681P/28-F	Dual Channel UART	PDIP-28	Similar Part	SCC2692AE1N28	Dual Channel UART
XR88C681CP/40-F	Dual Channel UART	PDIP-40	Similar Part	SCC2692AC1N40	Dual Channel UART
XR88C681P/40-F	Dual Channel UART	PDIP-40	Similar Part	SCC2692AE1N40	Dual Channel UART
XR88C681CJ-F	Dual Channel UART	PLCC-44	Similar Part	SCC2692AC1A44	Dual Channel UART
XR88C681J-F	Dual Channel UART	PLCC-44	Similar Part	SCC2692AE1A44	Dual Channel UART
XR68C92CJ-F	Dual Channel UART with 8-Byte FIFO	PLCC-44	Similar Part	SC28L92A1A	Dual Channel UART with 8-Byte FIFO
XR68C92IJ-F	Dual Channel UART with 8-Byte FIFO	PLCC-44	Similar Part	SC28L92A1A	Dual Channel UART with 8-Byte FIFO
XR68C92CV-F	Dual Channel UART with 8-Byte FIFO	LQFP-44	Similar Part	SC28L92A1B	Dual Channel UART with 8-Byte FIFO
XR68C92IV-F	Dual Channel UART with 8-Byte FIFO	LQFP-44	Similar Part	SC28L92A1B	Dual Channel UART with 8-Byte FIFO
XR68C681CP-F	Dual Channel UART	PDIP-40	Similar Part	SCC68692C1N40	Dual Channel UART
XR68C681P-F	Dual Channel UART	PDIP-40	Similar Part	SCC68692E1N40	Dual Channel UART
XR68C681CJ-F	Dual Channel UART	PLCC-44	Similar Part	SCC68692C1A44	Dual Channel UART
XR68C681J-F	Dual Channel UART	PLCC-44	Similar Part	SCC68692E1A44	Dual Channel UART
UART WITH I ² C/SPI INTERFACE					
XR20M1170IL28-F	Single Channel UART, 64-byte FIFO, I ² C/SPI interface	28-QFN	Similar Part	SC16IS760IBS	Single Channel UART, 64-byte FIFO, I ² C/SPI interface
XR20M1170IL24-F	Single Channel UART, 64-byte FIFO, I ² C/SPI interface	24-QFN	Similar Part	SC16IS760IBS	Single Channel UART, 64-byte FIFO, I ² C/SPI interface
XR20M1170IL16-F	Single Channel UART, 64-byte FIFO, I ² C/SPI interface	16-QFN	Similar Part	SC16IS740IPW	Single Channel UART, 64-byte FIFO, I ² C/SPI interface
XR20M1170IG24-F	Single Channel UART, 64-byte FIFO, I ² C/SPI interface	24-TSSOP	Similar Part	SC16IS760IPW	Single Channel UART, 64-byte FIFO, I ² C/SPI interface
XR20M1170IG16-F	Single Channel UART, 64-byte FIFO, I ² C/SPI interface	16-TSSOP	Similar Part	SC16IS740IPW	Single Channel UART, 64-byte FIFO, I ² C/SPI interface
XR20V2170IL40-F	Single Channel UART, 64-byte FIFO, I ² C/SPI interface with RS232 drivers	40-QFN	Similar Part	SC16IS760IBS	Single Channel UART, 64-byte FIFO, I ² C/SPI interface
XR20M1172IL32-F	Dual Channel UART, 64-byte FIFO, I ² C/SPI interface	32-QFN	Similar Part	SC16IS762IBS	Dual Channel UART, 64-byte FIFO, I ² C/SPI interface
XR20M1172IG28-F	Dual Channel UART, 64-byte FIFO, I ² C/SPI interface	28-TSSOP	Similar Part	SC16IS762IPW	Dual Channel UART, 64-byte FIFO, I ² C/SPI interface
XR20V2172IL64-F	Dual Channel UART, 64-byte FIFO, I ² C/SPI interface with RS232 drivers	64-QFN	Similar Part	SC16IS762IBS	Dual Channel UART, 64-byte FIFO, I ² C/SPI interface

	NXP Package	COMMENTS IF NOT DROP-IN REPLACEMENT	HARDWARE CHANGE	SOFTWARE CHANGE
	LQFP64	pin map compatible. Automatic hardware flow control enabled differently. SC16C754B does not have DLD (4X, 8X sampling rates), FSTAT (FIFO status) registers	NO	YES
	LQFP64	Different pin out. XR16L784 has global interrupt register and SC16C754 does not	YES	YES
	LQFP80	Different package and pinout. XR16L784 has 16C550 compatible register while SC28L194 does not. Both has global interrupt registers	YES	YES
	LQFP100	Different package and pinout. XR16L788 has 16C550 compatible register while SC28L198 does not. Both have global interrupt registers	YES	YES
	PLCC44	Most likely drop in replacement. Pin map compatible (I/M pin can be left unconnected). A minor difference when SC28L92 is used as a master in RS-485 mode (see Exar datasheet Extra Storage For The A/D Tag section)	NO	MIGHT NOT
	PLCC44	Most likely drop in replacement. Pin map compatible (I/M pin can be left unconnected). A minor difference when SC28L92 is used as a master in RS-485 mode (see Exar datasheet Extra Storage For The A/D Tag section)	NO	MIGHT NOT
	QFP44	Most likely drop in replacement. Pin map compatible (I/M pin can be left unconnected). A minor difference when SC28L92 is used as a master in RS-485 mode (see Exar datasheet Extra Storage For The A/D Tag section)	NO	NO
	QFP44	Most likely drop in replacement. Pin map compatible (I/M pin can be left unconnected). A minor difference when SC28L92 is used as a master in RS-485 mode (see Exar datasheet Extra Storage For The A/D Tag section)	NO	NO
	PLCC44	Most likely drop in replacement. Pin map compatible (I/M pin can be left unconnected). A minor difference when SC28L92 is used as a master in RS-485 mode (see Exar datasheet Extra Storage For The A/D Tag section). 16-byte FIFO must be enabled via MR0 register	NO	YES
	PLCC44	Most likely drop in replacement. Pin map compatible (I/M pin can be left unconnected). A minor difference when SC28L92 is used as a master in RS-485 mode (see Exar datasheet Extra Storage For The A/D Tag section). 16-byte FIFO must be enabled via MR0 register	NO	YES
	QFP44	Most likely drop in replacement. Pin map compatible (I/M pin can be left unconnected). A minor difference when SC28L92 is used as a master in RS-485 mode (see Exar datasheet Extra Storage For The A/D Tag section). 16-byte FIFO must be enabled via MR0 register	NO	YES
	QFP44	Most likely drop in replacement. Pin map compatible (I/M pin can be left unconnected). A minor difference when SC28L92 is used as a master in RS-485 mode (see Exar datasheet Extra Storage For The A/D Tag section). 16-byte FIFO must be enabled via MR0 register	NO	YES
	DIP28	SCC2692 does not support Masked Interrupt Status and Interrupt Vector registers. The last 8 commands of the command registers are different.	NO	YES
	DIP28	SCC2692 does not support Masked Interrupt Status and Interrupt Vector registers. The last 8 commands of the command registers are different.	NO	YES
	DIP40	SCC2692 does not support Masked Interrupt Status and Interrupt Vector registers. The last 8 commands of the command registers are different.	NO	YES
	DIP40	SCC2692 does not support Masked Interrupt Status and Interrupt Vector registers. The last 8 commands of the command registers are different.	NO	YES
	PLCC44	SCC2692 does not support Masked Interrupt Status and Interrupt Vector registers. The last 8 commands of the command registers are different.	NO	YES
	PLCC44	SCC2692 does not support Masked Interrupt Status and Interrupt Vector registers. The last 8 commands of the command registers are different.	NO	YES
	PLCC44	I/M pin of 28L92 must be connected to ground. A minor difference when SC28L92 is used as a master in RS-485 mode (see Exar datasheet Extra Storage For The A/D Tag section)	YES	MIGHT NOT
	PLCC44	I/M pin of 28L92 must be connected to ground. A minor difference when SC28L92 is used as a master in RS-485 mode (see Exar datasheet Extra Storage For The A/D Tag section)	YES	MIGHT NOT
	QFP44	I/M pin of 28L92 must be connected to ground. A minor difference when SC28L92 is used as a master in RS-485 mode (see Exar datasheet Extra Storage For The A/D Tag section)	YES	MIGHT NOT
	QFP44	I/M pin of 28L92 must be connected to ground. A minor difference when SC28L92 is used as a master in RS-485 mode (see Exar datasheet Extra Storage For The A/D Tag section)	YES	MIGHT NOT
	DIP40	SCC68692 does not support Masked Interrupt Status and Interrupt Vector registers. The last 8 commands of the command registers are different.	NO	YES
	DIP40	SCC68692 does not support Masked Interrupt Status and Interrupt Vector registers. The last 8 commands of the command registers are different.	NO	YES
	PLCC44	SCC68692 does not support Masked Interrupt Status and Interrupt Vector registers. The last 8 commands of the command registers are different.	NO	YES
	PLCC44	SCC68692 does not support Masked Interrupt Status and Interrupt Vector registers. The last 8 commands of the command registers are different.	NO	YES
	HVQFN24	Different pin map. SC16IS760 does not have these features: ENIR and EN485 pins, 8X sampling rate, fractional baud rate generator. SC16IS760 supports SPI speed up to 15 MH while XR20M1170 supports SPI speed of 5 MH max. Software compatible	YES	YES
	HVQFN24	Different pin map. SC16IS760 does not have these features: 8X sampling rate, fractional baud rate generator. SC16IS760 supports SPI speed up to 15 MH while XR20M1170 supports SPI speed of 5 MH max. Software compatible	YES	YES
	TSSOP16	Different pin map. SC16IS740 does not have these features: 8X sampling rate, fractional baud rate generator. Software compatible	YES	YES
	TSSOP24	Different pin map. SC16IS760 does not have these features: 8X sampling rate, fractional baud rate generator. SC16IS760 supports SPI speed up to 15 MH while XR20M1170 supports SPI speed of 5 MH max. Software compatible	YES	YES
	TSSOP16	Different pin map. SC16IS740 does not have these features: 8X sampling rate, fractional baud rate generator. 5 MH max. Software compatible	YES	YES
	HVQFN24	Use SC16IS760IBS + external RS-232 drivers	YES	YES
	HVQFN32	Different pin map. SC16IS762 does not have these features: ENIR and EN485 pins, 8X sampling rate, fractional baud rate generator. SC16IS762 supports SPI speed up to 15 MH while XR20M1172 supports SPI speed of 5 MH max. Software compatible	YES	YES
	TSSOP28	Different pin map. SC16IS762 does not have these features: 8X sampling rate, fractional baud rate generator. SC16IS762 supports SPI speed up to 15 MH while XR20M1172 supports SPI speed of 5 MH max. Software compatible	YES	YES
	HVQFN24	Use SC16IS762IBS + external RS-232 drivers	YES	YES

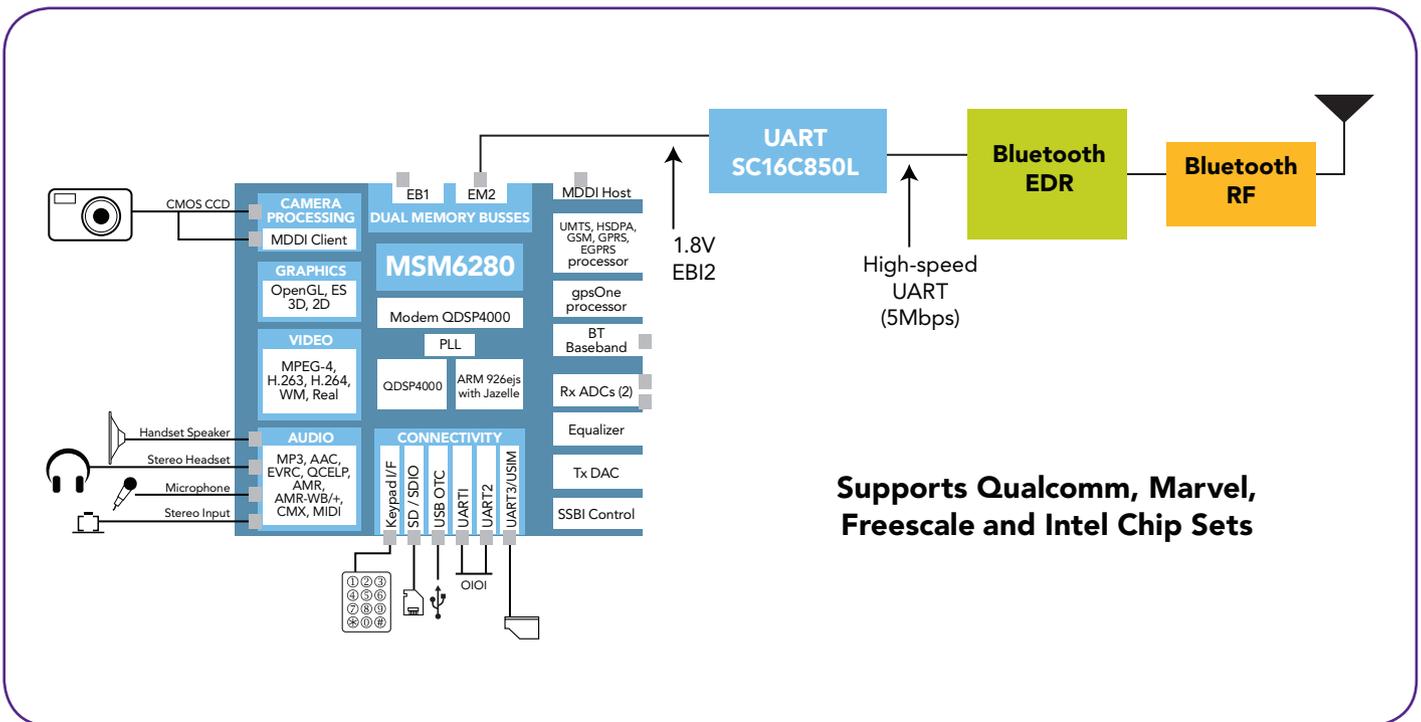
TI 16C competitive cross-reference

TI Part Number	TI Description	TI Package	Cross Type	NXP Part Number	NXP Description	NXP Package	Hardware Change?	Software Change?	Comment if not drop-in
Single UART									
TL16C450	Single UART without FIFO	PLCC-44	Similar	SC16C550B	5 V, 3.3 V and 2.5 V UART with 16-byte FIFO	HVQFN-32, PLCC-44, LQFP-48, DIP-40	No	Yes	
TL16C451	Single UART without FIFO and with Parallel Port	PLCC-68	No Cross	N/A	N/A	N/A	N/A	N/A	
TL16C550C	Single UART with 16-Byte FIFO and Auto Flow Control	PLCC-44, LQFP-48, TQFP-48	Drop-in	SC16C550B	5 V, 3.3 V and 2.5 V UART with 16-byte FIFO	HVQFN-32, PLCC-44, LQFP-48, DIP-40	No	No	
TL16C550D	Asynchronous Communications Element with Auto Flow Control	BGA-24 μ Jr, QFN-32, LQFP-48, TQFP-48	Drop-in	SC16C550B	5 V, 3.3 V and 2.5 V UART with 16-byte FIFO	HVQFN-32, PLCC-44, LQFP-48, DIP-40	No	No	
TL16C750	Single UART with 64-Byte FIFO, Auto Flow Control and Low Power Modes	PLCC-44, LQFP-64	Drop-in	SC16C750B	5 V, 3.3 V and 2.5 V UART with 64-byte FIFO	HVQFN-32, PLCC-44, LQFP-64	No	No	
TL16PC564B	Single UART with 64-Byte FIFO, PCMCIA Interface	LQFP-100	No Cross	N/A	N/A	N/A	N/A	N/A	
Dual UART									
TL16C2550	1.8 V to 5 V Dual UART with 16-Byte FIFO	QFN-32, TQFP-48, DIP-40	Similar	SC16C2550B	5 V, 3.3 V and 2.5 V Dual UART, 5-Mbit/s (max.), with 16-byte FIFO	HVQFN-32, PLCC-44, LQFP-48, DIP-40	No	Yes	No Auto RTS/CTS, 32 pin package is not drop-in
TL16C2552	1.8 V to 5 V Dual UART with 16-Byte FIFO	PLCC-44	Similar	SC16C2552B	5 V, 3.3 V and 2.5 V Dual UART, 5-Mbit/s (max.), with 16-byte FIFO	PLCC-44	No	Yes	No Auto RTS/CTS
TL16C2752	1.8 V to 5 V Dual UART with 64-Byte FIFO	PLCC-44	Similar	SC16C752B	5 V, 3.3 V and 2.5 V Dual UART, 5-Mbit/s (max.), with 64-byte FIFO	LQFP-48, HVQFN-32	Yes	Yes	Does not support these registers: EMSR, FLVL, AFR, DREV, DVID, TRG, FC, FCTR
TL16C452	Dual UART without FIFO and with Parallel Port	PLCC-68	No Cross	N/A	N/A	N/A	N/A	N/A	
TL16C552	Dual UART with 16-Byte FIFO and Parallel Port	PLCC-68	No Cross	N/A	N/A	N/A	N/A	N/A	
TL16C552A	Dual UART with 16-Byte FIFO and Parallel Port	PLCC-68, LQFP-80	No Cross	N/A	N/A	N/A	N/A	N/A	
TL16C752B	Dual UART with 64-Byte FIFO	LQFP-48	Drop-in	SC16C752B	5 V, 3.3 V and 2.5 V Dual UART, 5-Mbit/s (max.), with 64-byte FIFO	LQFP-48, HVQFN-32	No	No	
TL16C752B-EP	Enhanced Product, 3.3 V Dual UART with 64-Byte FIFO	LQFP-48	Drop-in	SC16C752B	5 V, 3.3 V and 2.5 V Dual UART, 5-Mbit/s (max.), with 64-byte FIFO	LQFP-48	No	No	-40 to 85 while TI support -55 to 110
TL16C752C	Dual UART with 64-Byte FIFO	QFN-32, TQFP-48	Similar	SC16C752B	5 V, 3.3 V and 2.5 V Dual UART, 5-Mbit/s (max.), with 64-byte FIFO	LQFP-48, HVQFN-32	No	Yes	Does not support AFR register
TL16PIR552	Dual UART with 16-Byte FIFO, Selectable IR and 1384 Modes	QFP-80	No Cross	N/A	N/A	N/A	N/A	N/A	
TL28L92	3.3 V / 5 V Dual UART	QFP-44, QFN48	Drop-in	SC28L92	3.3 V / 5 V Dual UART	QFP44, HVQFN48	No	No	
Quad UART									
TL16C554	Quadruple UART with 16-Byte FIFO	PLCC-68, LQFP-80	Drop-in	SC16C554B, SC16C554DB	5 V, 3.3 V and 2.5 V Quad UART, 5-Mbit/s (max.), with 16-byte FIFO	PLCC-68, LQFP-64, LQFP-80, HVQFN-48	No	No	
TL16C554A	Quadruple UART with 16-Byte FIFO	PLCC-68, PQFP-64, TQFP-80	Drop-in	SC16C554B, SC16C554DB	5 V, 3.3 V and 2.5 V Quad UART, 5-Mbit/s (max.), with 16-byte FIFO	PLCC-68, LQFP-64, LQFP-80, HVQFN-48	No	No	
TL16C754B	Quadruple UART with 64-Byte FIFO	PLCC-68, TQFP-80	Drop-in	SC16C754B	5 V, 3.3 V and 2.5 V Quad UART, 5-Mbit/s (max.), with 64-byte FIFO	PLCC-68, LQFP-64, LQFP-80	No	No	
TL16C754C	1.8 V to 5 V Quadruple UART with 64-Byte FIFO	LQFP-64, TQFP-64	Drop-in	SC16C754B	5 V, 3.3 V and 2.5 V Quad UART, 5-Mbit/s (max.), with 64-byte FIFO	PLCC-68, LQFP-64, LQFP-80	No	No	Does not support 1.8 V

Application notes (industrial)

	SCC2681	SCC2681T	SCC68681	SCC2691	SCC2692	SCC68692	SCC2698B	SC26C92	SC28L91	SC28L92	SC28C94	SC28L194	SC28L198	SC28L202	SC28L201
AN405 SCN2681/SCN68681 and SCC2691 data communications	▶	▶	▶	◀	▶	▶	▶	▶	▶	▶	▶			▶	◀
AN410B SC2698B Octal Universal Asynchronous Receiver/Transmitter	▶	▶	▶	▶	▶	▶	◀	▶	▶	▶	▶				
AN413 Using the Datacom product's on-chip oscillator	◀	◀	◀	◀	◀	◀	◀	▶	▶	▶	▶				
AN414 SCC2692 differences from the SCN68681			▶		◀	▶									
AN415 SCC68692 differences from the SCN68681			▶		▶	◀									
AN421 SCC2698A differences from the SCC2698B							◀								
AN462 Hardware and software verification procedure	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶
AN4004 Electrostatic discharge protection	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶
AN10251 Automatic '485' turn-around	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶
AN10313 Reduce CPU overhead with Intelligence Interrupt Arbitration (I2A) feature												▶	▶	◀	◀
AN10319 8051 microcontroller to UART serial interface evaluation board	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶
AN10320 Addressing migrations of SCN devices to more advanced technologies	◀	◀	◀	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶
AN10339 UART serial interface through USB evaluation board	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶
AN10307 UART to Bluetooth interfacing	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶
AN10353 Application of UART in GPS navigation system	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶
AN10380 Ensure data integrity with real-time data error detection												▶	▶	◀	◀
Article Extended baud rates for SCN2681/68681, SCC2691, SCC2692/68681 and SCC2698B	▶	▶	▶	◀	◀	▶	◀	▶							
Article Functional description of Philips arbitrating interrupt systems											◀	▶	▶	▶	▶

- ▶ = Applicable
- ◀ = Recommended



Application notes (16C)

	SC16C550B	SC16C650B	SC16750B	SC162550B	SC16B2552B	SC16C652B	SC16C752B	SC16C554B	SC16C554DB	SC16C654B	SC16C654DB	SC16C754B	SC16IS740/741/750/760/752/762
AN10219 Using SC16C650B to implement an IrDA interface	▶	◀				▶				▶	▶		
AN10224 SC16C554B/SC16C654B ISA bus hardware interface example								◀	▶	◀	▶	▶	
AN10249 SC16C752B/SC16C2550B ISA bus hardware interface example	▶	▶	▶	◀	▶	▶	◀						
AN10250 Using a Philips 16C UART to implement a simple RS-485 transmitter and receiver node	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶
AN10257 Differences between Philips SC16C devices and Philips low power SC16CxxxB devices	◀	◀	◀	◀	◀	◀	◀						
AN10307 UART to Bluetooth interfacing	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶
AN10312 Differences between Philips 4-channel SC16C devices and Philips low power SC16CxxxB devices								◀	◀	◀	◀	◀	
AN10319 8051 microcontroller to UART serial interface evaluation board	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	
AN10333 SC16CXXXB baud rate deviation tolerance	▶	▶	▶	▶	▶	▶	▶						▶
AN10339 UART serial interface through USB evaluation board	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	
AN10353 Application of UART in GPS navigation system	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶
AN10366 HVQFN application information	▶	▶	▶	▶		▶	▶	▶	▶	▶	▶		
AN10386 Baud rate calculation for NXP 16C UARTs	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶
AN10608 XTAL1 clock and -IOW pulse synchronization	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	
AN10251 Automatic RS-485 turn-around	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶
AN10486 Automatic RS-485 address detection	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶
AN10631 Possibility of erroneous transmitter interrupt In 16C 4-Channel UARTs								▶	▶	▶	▶	▶	
AN10485 SDA pin connection in SPI mode													▶
AN10571 Sleep programming for Bridge ICs	◀	◀	◀	◀	◀	◀	◀	◀	◀	◀	◀	◀	▶
AN10587 Interface NXP Bridge ICs with NXP ARM controller													▶
AN10417 SC16IS760/762 Fast IrDA mode													▶

Application notes (Bridges)

	SC18IS600	SC18IS601	SC18IS602B	SC18IS603	SC18IM700
AN10397 How to use the SC18IM700 to control any I ² C-Bus device					▶
AN10452 Interfacing NXP Bridge ICs with microcontroller	↙	↙	↙	↙	
AN10462 SPI Programming for NXP Bridge ICs	↙	↙	↙	↙	
AN10587 Interfacing NXP Bridge ICs with NXP ARM micro-controller	↙	↙	↙	↙	
AN10688 SC18IS602 Rev A Errata			▶	▶	

Differences between NXP industrial UARTs* and NXP SC16CxxxB devices

Feature	Industrial	SC16CxxxB
Supply voltage	3.3 and 5.0 V	2.5, 3.3 and 5.0 V
Temperature range	-40 to +85°C1	-40 to +85°C1
Channels	1, 2, 4, and 8	1, 2, and 4
Synchronous bus interface	Yes ²	No
Independent transmit and receive baud rates	Yes	No
Maximum FIFO depth	Up to 256 bytes	64 bytes
Transmit and receive FIFOs	Yes ³	Yes ³
In-band (software) flow control (xon/xoff)	Yes	Yes
Out-of-band (hardware) flow control (RTS/CTS)	Yes	Yes
Multi-drop mode/RS485	Auto	Software required
Character recognition (also used for xon/xoff)	Yes	Yes
Bus cycle time (read strobe and read cycle delay)	40 ns – 125 ns	43 ns
Bus interface	Intel, Motorola, or both	Intel, Motorola, or both
Interrupt priority	Programmable	Fixed
Programmable interrupt vector format	Yes	No
IACKN and DACKN signal pins	Yes	No
Transmitter and receiver software reset	Yes	No
Independent transmitter and receiver enable/disable	Yes	No
Maximum baud rate	3.125 Mbps	5 Mbps
Receiver Watchdog timer	Yes	No
Programmable data format	5 to 8 data bits	5 to 8 data bits
Parity format	Odd, even, forced, none	Odd, even, forced, none
Number of stop bits	1, 1-1/2, or 2	1, 1-1/2, or 2
Baud rate selection	Programmable	Programmable
Parity, framing, and overrun detection	Yes	Yes
Line-break detection and generation	Yes	Yes
Automatic echo of received character	Yes	No
Local loop back	Yes	Yes
Remote loop back	Yes	No
Loop back error check	Yes	No
Programmable I/O port pins	Yes	No
Infrared IrDA interface	No	Yes
Change-of-state detection	CD, RI, CTS, DSR, and all I/O pins	CD, RI, CTS, DSR
Power-down mode	Yes ⁴	Yes ⁴
Clock frequency using on-chip oscillator and external crystal	Up to 16.2 MHz	Up to 24 MHz
TTL input levels	Yes	Yes
Software	Similar structures but different low-level routines	
Receiver time-out mode	Yes	Yes

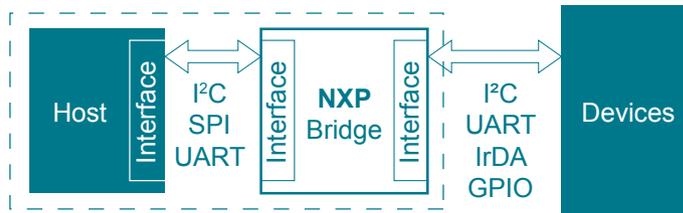
* Note: UART products falling into industrial category: SCCxxx, SC28xxx, SC26xxx, SC28Lxxx

¹ Industrial temperature at commercial price ² Synchronous use requires a clock from host
³ FIFO depth varies depending on UART ⁴ Clock is shut off but register contents remain

NXP Bridges

NXP bridge ICs are the new generation of serial interface solutions for managing host-to-device communications among wide variety of serial bus interfaces such as I²C, SPI, and UART. Our bridges allow you to simply connect devices that use a different serial bus than your current system. These products operate at low voltages, consume little power, and come in ultra-small packaging. They are ideal for battery-operated applications. In addition, our bridges improve overall system performance by reducing software overhead while increasing design flexibility.

A host processor may not be able to communicate with devices using multiple I²C, SPI, UART, IrDA, and GPIO interfaces. For many advanced applications, multiple bus ports are required. Without using our bridges, host processing and system complexity can be overwhelming. Our bridges free up processor resources for code and data memory by handling the interfacing directly. Our bridge products are optimized for high speed data throughput.



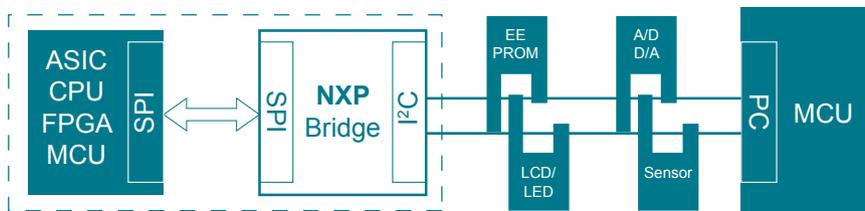
Our products seamlessly bridge hosts to serial and wireless devices with minimal wire interconnection. Our bridges enable you to overcome limitations of your system's host while adding design flexibility and reducing complexity to implement other bus interfaces.

SPI slave to I²C master/GPIO bridges – SC18IS600

NXP bridge solutions include products that provide seamless protocol convergence between the two widely-used, bus-shared architectures: SPI and I²C. Our bridges allow hosts having an SPI bus to easily communicate with I²C-bus devices such as LCD displays, temperature/voltage sensors, and EEPROM data storage. Our bridges' GPIOs further allow you to expand your system for detecting push buttons/keypads and controlling LEDs and fans.

The bridge interface to the SPI bus is a slave that uses four wires (2 data and 2 control signals) and operates at speeds as high as 1.2 Mbps. The bridge interface to the I²C bus is a master that uses two wires (SCL and SDA) and supports speeds up to 400 KHz. The bridge GPIOs are configurable.

These bridges operate from 2.4 V to 3.6 V and come in TSSOP packages and feature a power-down mode. They can be used in industrial applications with a temperature range of -40 to +85 °C.



An SPI slave to I²C-bus master bridge allows a host with SPI-bus capability to transparently communicate to an I²C-bus. Our bridge's I²C bus controller has multi-master capability. This allows it to share the bus with other I²C masters such as a microcontroller.

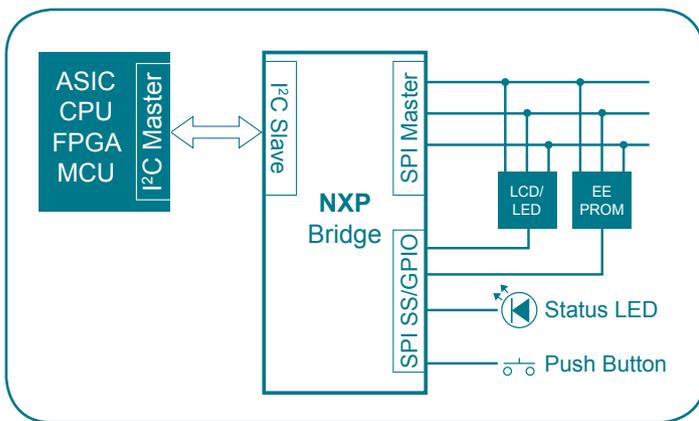
I²C slave to SPI master/GPIO bridges – SC18IS602B

These bridges connect to an I²C master port of a microcontroller or other host processor and allow you to communicate with SPI slave peripherals. The bridges have an I²C slave interface on one side and an SPI master interface on the other. The bridges can also be used to provide additional GPIO to an I²C master by utilizing unused SPI slave select outputs.

Each high-speed serial bridge allows you to add up to 4 SPI slave devices making them ideal for host processors without native SPI capabilities. The bridges have 8 selectable I²C addresses allowing you to further expand the host processor's SPI capabilities by using multiple bridges. The multiple I²C addresses also help avoid conflict with other I²C devices.

The SPI master interface of our bridges support SPI speeds up to 1.8 Mbps using an internal oscillator or up to 4 Mbps when used with an external oscillator. The I²C slave interface of our bridges supports speeds up to 400 KHz. Deep data buffers between the I²C and SPI interfaces enhance translation performance efficiency.

Our I²C slave to SPI master/GPIO bridges operate from 2.4 V to 3.6 V and feature a low-power mode. They are available in TSSOP packaging.



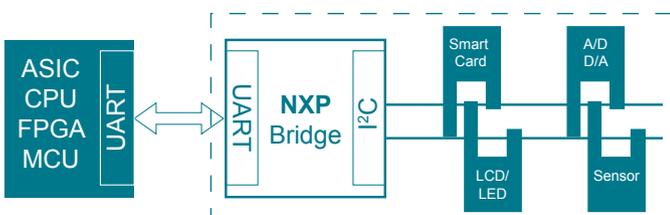
I²C slave to SPI master bridging allows a host with an I²C interface to transparently communicate with devices attached to the SPI-bus. This allows you to retain proprietary or specialized SPI peripherals such as an LCD display or an EEPROM in your I²C-based design.

UART to I²C master/GPIO bridges – SC18IM700

NXP Semiconductors offers easy-to-use bridge solutions that enable long distance communication with remote I²C or GPIO devices via a simple RS232 connection. By using our UART to I²C master/GPIO bridges, you can easily detect remote push button/keypad presses, sense environmental conditions in distant systems, control LEDs/displays, and operate fans.

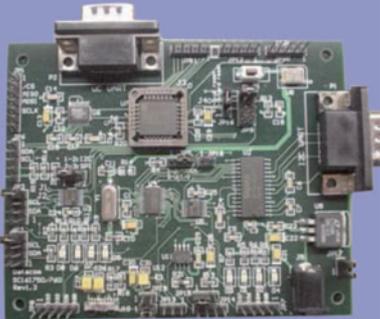
The bridges' I²C master interface controls the I²C bus without needing a remote host processor. For more advanced remote systems, the I²C interface is also multi-master capable. The I²C interface supports speeds up to 400 KHz. The bridges' UART interface offers high-speed transfer rates up to 460.8 Kbps and has a sleep/power-down mode with wake-up pin.

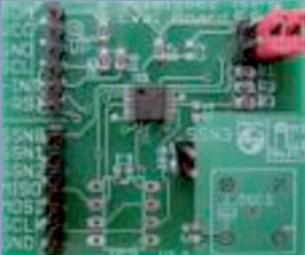
The bridges operate from 2.3 V to 3.6 V and come in TSSOP packages. They can be used in industrial applications with a temperature range of -40 to +85 °C.



The UART to I²C-bus master bridge functionality allows a host with RS232 capability to communicate with remote I²C devices. Remote I²C devices can include temperature sensors, LCD displays, A/D converters, and smart card readers.

NXP Bridge – Demo Board Kits

I ² C/SPI slave to UART	UART to I ² C master
SC16IS7xx	SC18IM700
	
<p>Kits include</p> <ul style="list-style-type: none"> ▶ Sample code: RS232, RS485, and IrDA ▶ User Manual 	<p>Kits include</p> <ul style="list-style-type: none"> ▶ Sample code: RS232 and NXP I²C devices ▶ User Manual
<p>Key Benefit</p> <ul style="list-style-type: none"> ▶ Easy interface to I²C/SPI host and IrDA, RS232/RS485, and GPIO devices. ▶ Selectable I²C or SPI-bus interface 	<p>Key Benefit</p> <ul style="list-style-type: none"> ▶ Easy interface to UART host and various I²C and GPIO devices. ▶ On-board I²C EEPROM and I²C LED Dimmer
OM6270 – SC16IS750	OM6272
OM6273 – SC16IS752	

SPI to I ² C master	I ² C to SPI master
SC18IS600	SC18IS602
	
<p>Kits include</p> <ul style="list-style-type: none"> ▶ Sample code: SPI and NXP I²C devices ▶ User Manual 	<p>Kits include</p> <ul style="list-style-type: none"> ▶ Sample code: I²C and NXP SPI devices ▶ User Manual
<p>Key Benefit</p> <ul style="list-style-type: none"> ▶ Easy interface to SPI host and various I²C and GPIO devices. ▶ On-board I²C EEPROM and I²C LED Dimmer 	<p>Key Benefit</p> <ul style="list-style-type: none"> ▶ Easy interface to I²C host and SPI and GPIO devices. ▶ Up to 4 SPI chip selects
OM6271	OM6274

NXP UARTs in HVQFN and TFBGA - an ideal solution for mobile applications



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