

# NXP SC16IS7xx, SC18IS604, SC18IS606 AND SC18IM704 BRIDGES

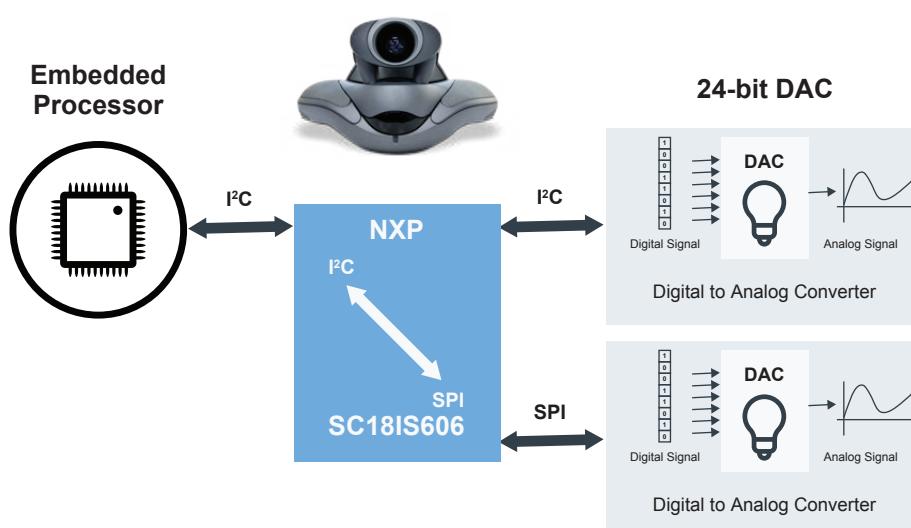
NXP bridges overcome the limitation of the host bus interface to peripheral and allow protocol translation between UART, I<sup>2</sup>C and SPI.



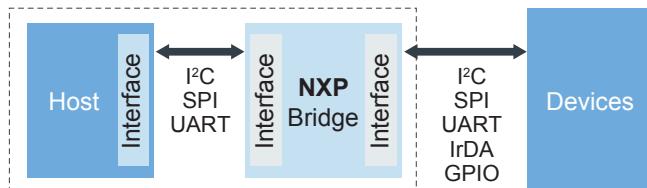
NXP has a range of UART, I<sup>2</sup>C and SPI bridges that allow conversion between protocols.

Generally, the host and peripheral protocols are matched. The bridges are useful in situations such as a conference camera example, where the 24-bit I<sup>2</sup>C DAC is no longer available but the embedded processor cannot be changed.

This is due to extensive firmware library or even in new designs where the legacy processor cannot be changed but the desired peripheral is only available with non-preferred protocol.

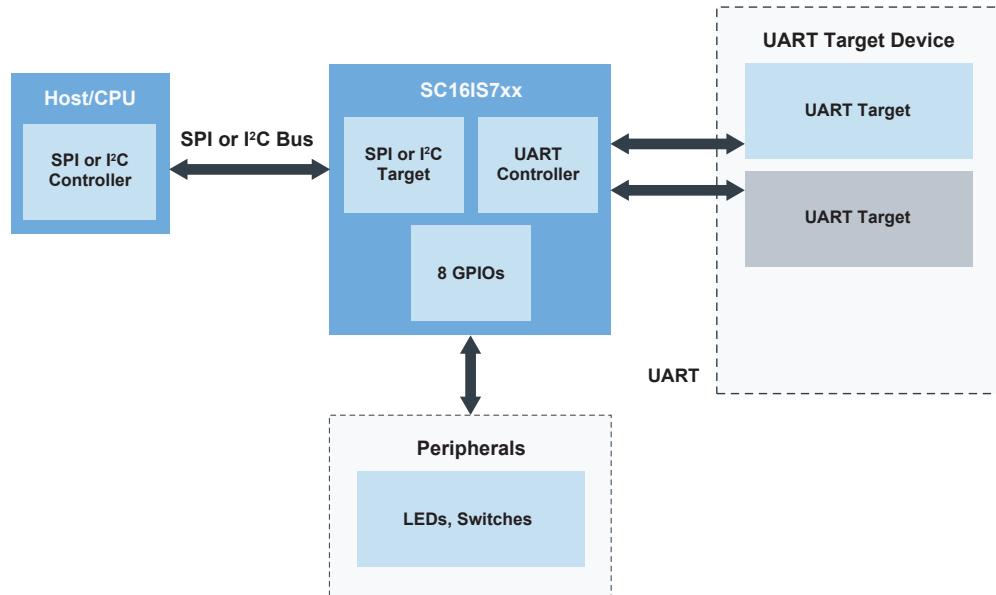


BRIDGE TRANSLATION	TARGET	CONTROLLER	GPIO	NEW	EXISTING
I <sup>2</sup> C or SPI to UART bridge	I <sup>2</sup> C or SPI	UART	0/4/8	No change	SC16IS7xx
SPI to I <sup>2</sup> C-bus bridge	SPI	I <sup>2</sup> C	5	SC18IS604PW	SC18IS600IPW/S8
I <sup>2</sup> C-bus to SPI bridge	I <sup>2</sup> C	SPI	3	SC18IS606PW	SC18IS602BIPW/S8
UART to I <sup>2</sup> C-bus bridge	UART	I <sup>2</sup> C	8	SC18IM704PW	SC18IM700IPW/S8

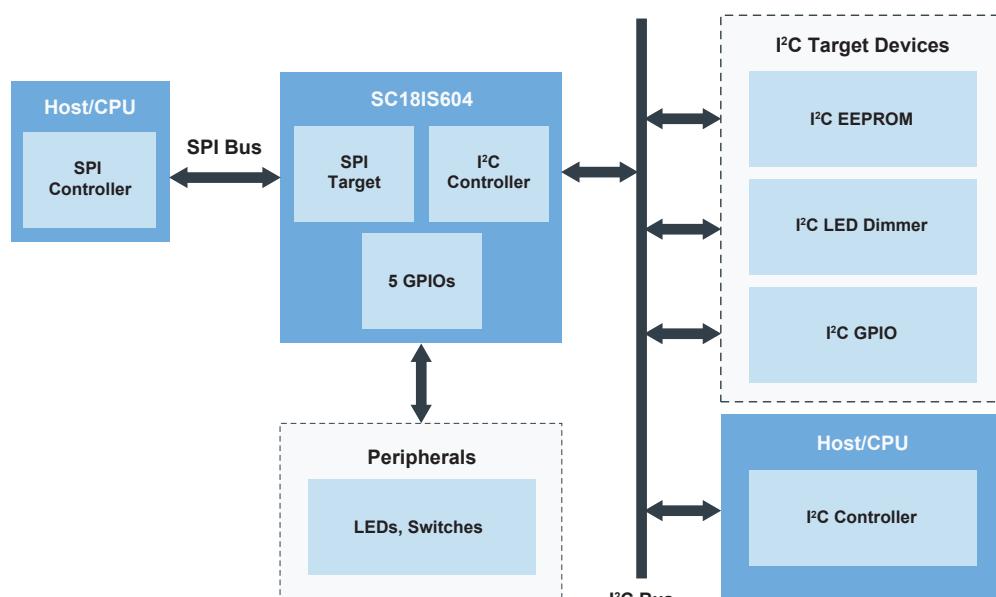


NXP has four different categories of bridges with the I<sup>2</sup>C or SPI to UART bridge having five different devices within that function with different SPI speeds, number of downstream UART channels or number of general purpose pins. The part numbers written in red are released but will be phased out in the 2024/25 timeframe. They are being replaced with the part numbers in green which are functional replacements in the same TSSOP16 package but with different pinouts.

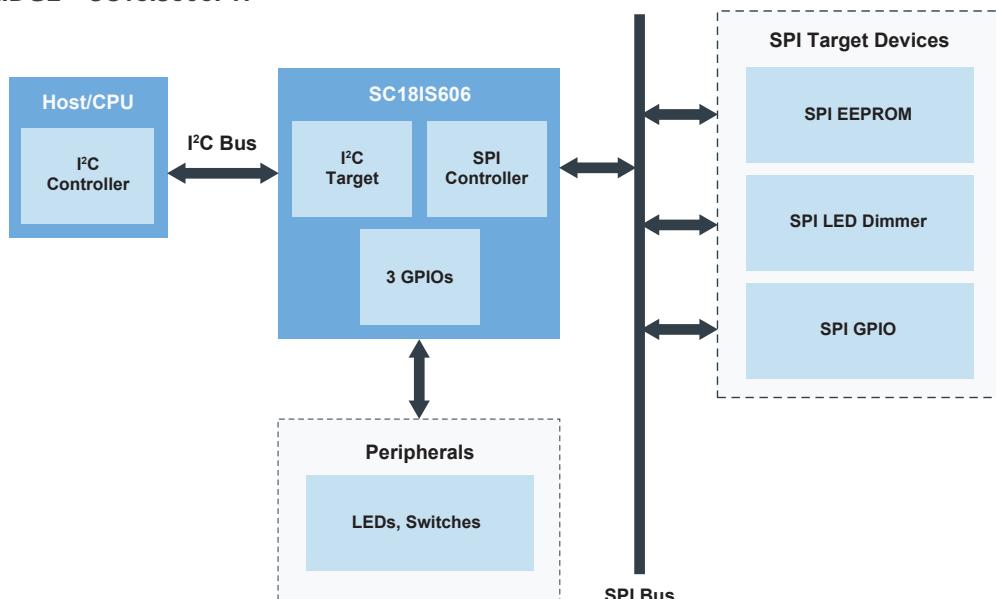
#### SPI OR I<sup>2</sup>C-TO-UART BRIDGE – SC16IS7xx



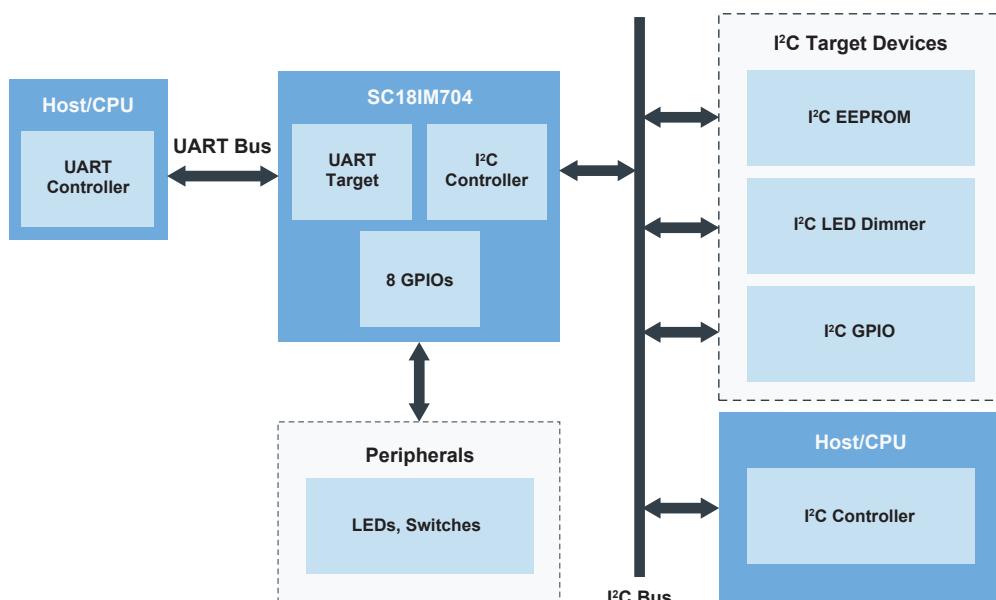
#### SPI-TO-I<sup>2</sup>C BRIDGE – SC18IS604PW



## I<sup>2</sup>C-TO-SPI BRIDGE – SC18IS606PW



## UART-TO-I<sup>2</sup>C BRIDGE – SC18IM704PW



## BRIDGE TRANSLATION TABLE

All devices are 5.5 V overvoltage tolerant.

DEVICE	FROM	BUFFER (BYTE)	TO	NUMBER OF GPIO	VOLTAGE RANGE (V)	TEMPERATURE RANGE (°C)	PACKAGE
SC16IS7xx	I <sup>2</sup> C or SPI	64	UART	0/4/8	2.3 to 3.6	-40 to 95	TSSOP16/24/28 and HVQFN32
SC18IS604PW	SPI	255	I <sup>2</sup> C	5	1.71 to 3.6	-40 to 105	TSSOP16
SC18IS606PW	I <sup>2</sup> C	1024	SPI	3	1.71 to 3.6	-40 to 105	TSSOP16
SC18IM704PW	UART	256	I <sup>2</sup> C	8	1.71 to 3.6	-40 to 105	TSSOP16

**SC16IS7xx SUB SELECTION TABLE**

UART DEVICE	CHANNEL	V <sub>CC</sub>	DATA RATE (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 <sup>2</sup> C SPEED MAX (KBIT/S)	SPI SPEED MAX (MBIT/S)	PACKAGE	PART NUMBER
SC16IS741	1	2.3 - 3.6 V	5	64	Yes	2	0	Programmable	Yes	Yes	Yes	400	4	TSSOP16	SC16IS741AIPW SC16IS740IPW/Q900
SC16IS750	1	2.3 - 3.6 V	5	64	Yes	6	8 [1]	Programmable	Yes	Yes	Yes	400	4	TSSOP24 HVQFN32	SC16IS750IPW SC16IS750IBS
SC16IS760	1	2.3 - 3.6 V	5	64	Yes	6	8 [1]	Programmable	Yes	Yes	Yes	400	15	TSSOP24 HVQFN32	SC16IS760IPW SC16IS760IBS
SC16IS752	2	2.3 - 3.6 V	5	64	Yes	6	4 [2]	Programmable	Yes	Yes	Yes	400	4	TSSOP28 HVQFN32	SC16IS752IPW SC16IS752IBS
SC16IS762	2	2.3 - 3.6 V	5	64	Yes	6	4 [2]	Programmable	Yes	Yes	Yes	400	15	TSSOP28 HVQFN32	SC16IS762IPW SC16IS762IBS

[1] 4 pins are shared with modem pins

[2] share with modem pins