

A woman in a white leotard is holding a large, curved architectural blueprint. The blueprint features detailed line drawings of buildings and urban layouts. The background is a light, neutral color. Two teal-colored rectangular blocks are overlaid on the left side of the image, one above the other. The word "Semiconductors" is written in white text on the lower teal block.

Semiconductors

Philips Innovative UART Solutions

PHILIPS

Philips Innovative UART Solutions

As the number one supplier in the Industrial UARTs (Universal Asynchronous Receiver Transmitters) for over 20 years, Philips Semiconductors, continues to offer an extensive portfolio of high performance (SC28Lxxx and SC16Cxxx series) as well as legacy (SCNxxx, SCCxxx and SC26xxx) UARTs to meet a broad variety of application needs. Philips' single, dual, quad and octal channel UARTs include a broad variety of FIFO depths ranging from 4 up to 64 bytes. These UARTs include a large variety of high performance, low power, high speed UARTs that operate at 5 V, 3.3 V as well as 2.5 V (SC16Cxxx series). All our products are specified at industrial temperature range (-40°C to +85°C). The combination of these features in our products allows us to provide cost effective solutions that lowers the cost of ownership. In addition we offer a wide variety of packages that take into account the space saving constraints that exist in more and more systems. This one stop shopping of cost effective solutions will help you resolve a large number of your connectivity needs for current and next generation applications.

Typical Applications Using UARTs

- ADSL boxes
- Base stations
- PC's
- PABX systems
- Cellular phones
- Fax servers
- Modems
- Hubs and routers
- Industrial automation controls
- Medical instrumentations and scanners
- Navigation systems
- Point of sales
- Slot machines
- And many more....

Industrial UARTs

Philips Industrial UARTs Series

This family of products includes: SCCxxxx, SCNxxx, SC28xxx, SC26xxx and SC28Lxxx (High Performance Impact Line) series. This family includes specific features which are unique to the industrial UART line.

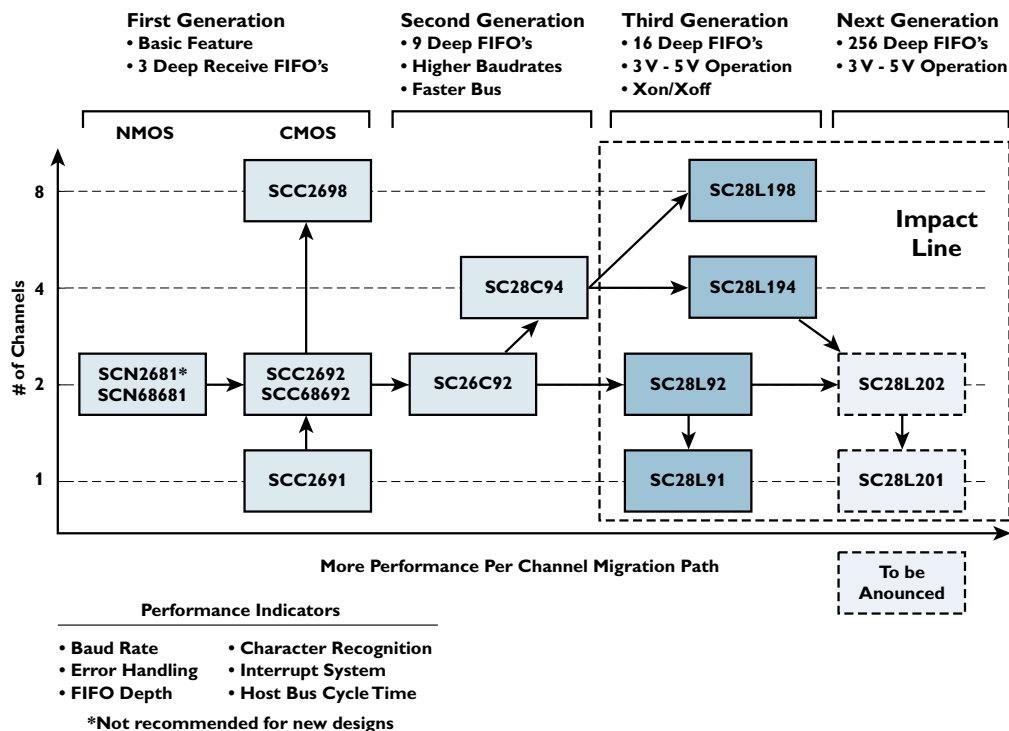
Features

- Broad line of UARTs from single to octals
- Power down mode
- Extensive interrupt support
- Hardware RS485/Multidrop support
- Automatic outband flow control
- All receivers and transmitters are fully independent with respect to speed and clock frequency.
- Flexible and programmable I/O structure

Benefits

- Many choices for various applications
- Ideal for low power consumption
- Reduced software overhead
- Reduction of CPU overhead
- Avoids loss of data
- Transmit and receive channel can operate at different baud rates
- Allows usage of I/O pins for general purposes

Industrial UARTs Product Overview



Features to Impact Line

- Single part can be used for multiple operating environment
- 3.3 V and 5 V operation
- Interfaces to Intel and Motorola processors
- Industrial temperature range -40°C to +85°C

Benefits to Impact Line

- Broad feature set makes it an ideal solution for multiple applications
- Single stock for multiple usage
- 8 x less inventory than competitor solutions
- No price adder for industrial temperature range
- Single part to be qualified

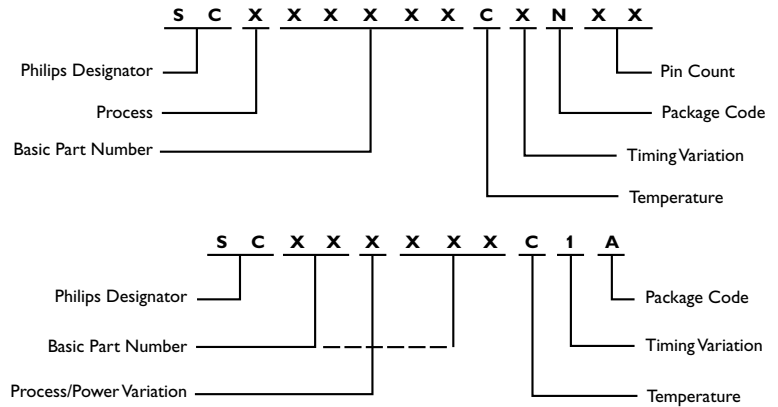
Industrial UARTs

Philips Industrial UART Selection Line Chart

All Philips Industrial UART devices have the following common features

- RTS/CTS flow control signals to prevent receiver overrun
- Automatic RS485 Half duplex control
- Power Down Mode (Except SCNxxx series)
- Support 9 bit mode (also called multidrop or wakeup mode)
- 16-bit counter/timer
- General purpose I/O pin

Industrial UARTs Naming Convention

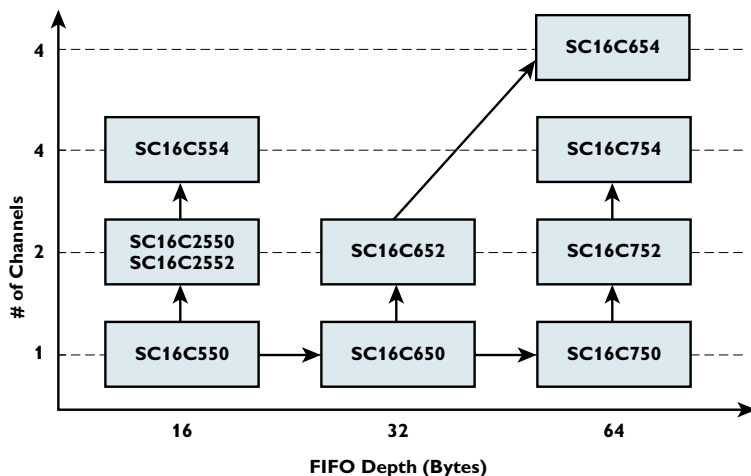


UART Device	Comment	Channel	VCC	Data Rate at VCC	Rx/Tx FIFO Bytes	Arbitrating Interrupt	I/O PINS Multi-function by program	16-BIT Counter/Timer	Rx & Tx FIFO Counters	Rx/Tx FIFO INT Trigger (Xon/Xoff)	5V Flow Control	Data Bus Interface	Package	Part Number Temp Range -40 to +85C	Part Number Temp Range 0 to +70C
SCC2691	Single Channel of SCC2692 Low Power	1	5V	125 Kbps	3/1	Normal	2	1	No	1/3 LEVEL	No	Intel	DIL24 SO24 PLCC28	SCC2691AE1N24 SCC2691AE1A28	SCC2691AC1N24 SCC2691AC1D24 SCC2691AC1A28
SC28L91 Impact Line	Single Channel of SC28L92 Low Power	1	3.3V- 5V	1 Mbps	16/16 or 8/8	Normal Multi level Vectored IACK/DACK	15	1	Yes	ALL	No	Intel or Motorola	PLCC44 QFP44	SC28L91A1A SC28L91A1B	
SCN2681*	N-MOS Products	2	5V	125 Kbps	3/1	Normal	15	1	No	1/3 LEVEL	No	Intel	DIL28 DIL40 PLCC44	SCN2681AE1N28 SCN2681AE1N40 SCN2681AE1A44	SCN2681AC1N28 SCN2681AC1N40 SCN2681AC1A44
SCN68681*	N-MOS product	2	5V	125 Kbps	3/1	Normal Vectored	14	1	No	1/3 LEVEL	No	Motorola	DIL40 PLCC44	SCN68681E1N40 SCN68681E1A44	SCN68681C1N40 SCN68681C1A44
SCN2681T*	Faster version of SCN2681	2	5V	500 Kbps	3/1	Normal	15	1	No	1/3 LEVEL	No	Intel	PLCC44		SCN2681TC1A44
SCC2692	CMOS Version of SCN2681	2	5V	125 Kbps	3/1	Normal	15	1	No	1/3 LEVEL	No	Intel	DIL28 DIL40 PLCC44 QFP44	SCC2692AE1N28 SCC2692AE1N40 SCC2692AE1A44 SCC2692AE1B44	SCC2692AC1N28 SCC2692AC1N40 SCC2692AC1A44 SCC2692AC1B44
SCC68692	CMOS Version of SCN68681	2	5V	125 Kbps	3/1	Normal Vectored IACK/DACK	14	1	No	1/3 LEVEL	No	Motorola	DIL40 PLCC44	SCC68692AE1N40 SCC68692AE1A44	SCC68692AC1N40 SCC68692AC1A44
SC26C92	Faster Version of SCC2692	2	5V	1 Mbps	8/8	Normal Multi Level	15	1	Yes	ALL	No	Intel	DIL40 PLCC44 QFP44	SC26C92A1N SC26C92A1A SC26C92A1B	SC26C92C1N SC26C92C1A SC26C92C1B
SC28L92 Impact Line	Faster Version of SC26C92 and Low Power	2	3.3V - 5V	1 Mbps	16/16 or 8/8	Normal Multi Level Vectored IACK/DACK	15	1	Yes	ALL	No	Intel or Motorola	PLCC44 QFP44	SC28L92A1A SC28L92A1B	
SC28C94	Enhanced Quad Version of SC26C92	4	5V	1 Mbps	8/8	Normal Multi Level IACK/ DACK IIA	16	2	Yes	ALL	No	Intel or Motorola	DIL48 PLCC52	SC28C94A1N SC28C94A1A	
SC28L194 Impact Line	High Speed and Low Power	4	3.3V - 5V	1 Mbps	16/16	Normal Multi Level IACK/ DACK IIA	16	2	Yes	ALL	Auto	Intel or Motorola	PLCC68 LQFP80	SC28L194A1N SC28L194A1A	
SCC2698	Quad Version of SCC2692	8	5V	125 Kbps	3/1	Normal	32	4	No	1/3 LEVEL	No	Intel	PLCC84	SCC2698BE1A84	SCC2698BC1A84
SC28L198 Impact Line	High Speed and Low Power	8	3.3V - 5V	1 Mbps	16/16	Normal Multi Level IACK/ DACK IIA	32	2	Yes	ALL	Auto	Intel or Motorola	PLCC84 LQFP100	SC28L198A1A SC28L198A1BE	

*Not recommended for new design

16C PC UARTs

16Cxxx UARTs Product Overview



SC16Cxxx UART Selection Chart

All Philips 16Cxxx devices have the following common features:

- V_{CC} : 5 V, 3.3 V, 2.5 V
- Baud Rates up to 5 Mbps
- Industrial Temperature range: -40°C to +85°C
- RTS/CTS (Hardware) flow control
- Power Down Mode
- DMA Mode

* For details see latest datasheet.

Features

- Broad Portfolio of single, dual and quad UARTs
- All devices operate at 2.5 V, 3.3 V and 5 V and are specified at industrial temperature range (-40°C to +85°C)
- Fastest bus cycle times of the industry
- Power down mode
- Supports IRDA feature
- Shareware for programming readily available
- Automatic hardware and software flow control
- Supports DMA mode and includes a wide variety of FIFO depth.
- Pin to pin compatible with existing 16C devices

Benefits

- One stop shopping for various applications
- One part fits multiple needs/applications (lowers the cost of inventory, compared to competitor solutions)
- Shortens design cycle
- DMA and deep FIFOs reduce CPU overhead
- Compatibility with high speed processors
- Ideal for battery operated systems
- Allows wireless short range applications
- Alternative source to other manufacturers

UART Device	Channel	Rx & Tx FIFO Bytes	IrDA	Modem Control Pins	General Purpose Outputs	Rx/Tx FIFO INT Trigger	S/W Flow Control (Xon,Xoff)	Data Bus Interface	Package	Part Number
SC16C550	1	16	Yes	6 (Note 1)	2	4 levels/none	Yes	Intel	PLCC44 LQFP48 DIP40	SC16C550IA44 SC16C550IB48 SC16C550IN40
SC16C650	1	32	Yes	6 (Note 1)	2	4 levels/4 levels	Yes	Intel	PLCC44 LQFP48 DIP40	SC16C650IA44 SC16C650IB48 SC16C650IN40
SC16C750	1	16 or 64	No	6 (Note 1)	2	4 levels/none	Yes	Intel	PLCC44 LQFP64	SC16C750IA44 SC16C750IB64
SC16C2550	2	16	Yes	12 (Note 1)	2	4 levels/none	Yes	Intel	PLCC44 LQFP48 DIP40	SC16C2550IA44 SC16C2550IB48 SC16C2550IN40
SC16C2552	2	16	No	12 (Note 1)	2	4 levels/none	Yes	Intel	PLCC44	SC16C2552IA44
SC16C652	2	32	Yes	12 (Note 1)	2	4 levels/4 levels	No	Intel	LQFP48	SC16C652IB48
SC16C752	2	64	No	12 (Note 1)	2	4 levels/4 levels programmable/programmable	Yes	Intel	LQFP48	SC16C752IB48
SC16C554	4	16	Yes	24 (Note 1)	0	4 levels/none	Yes	Intel or Motorola (Note 2)	PLCC68 LQFP64 LQFP64 LQFP80	SC16C554DIA68 SC16C554DIB64 SC16C554IB64 SC16C554IB80
SC16C654	4	64	Yes	24 (Note 1)	0	4 levels/4 levels	Yes	Intel or Motorola (Note 2)	LQFP64 PLCC68 LQFP64	SC16C654DIB64 SC16C654IA68 SC16C654IB64
SC16C754	4	64	No	24 (Note 1)	0	4 levels/4 levels programmable/programmable	Yes	Intel	PLCC68 LQFP80	SC16C754IA68 SC16C754IB80

Note 1: These pins can be used for general purpose input or output signals

Note 2: Intel and Motorola interface in the 68 pin PLCC package only

16C PC UARTs

16C Competitive Cross Reference Chart

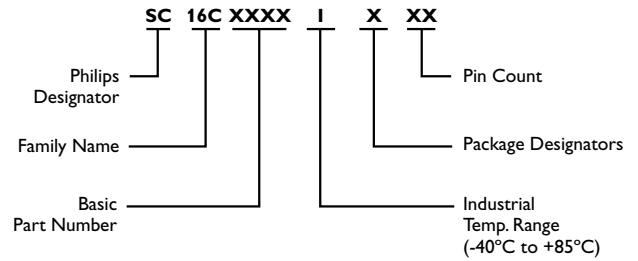
# ch	FIFO #bytes*	Exar	TI	National	Temp	Package*	Philips
1	0	ST16C450CP40	TL16C450N	—	C	DIP40	} use SC16C550IN40
		ST16C450IP40	—	—	I	DIP40	
		ST16C450CJ44	TL16C450FN	—	C	PLCC44	} use SC16C550IA44
		ST16C450IJ44	—	—	I	PLCC44	
		ST16C450CQ48	—	—	C	LQFP48	} use SC16C550IB48
		ST16C450IQ48	—	—	I	LQFP48	
	16	ST16C550CP40	TL16C550CN	PC16550DN	C	DIP40	} SC16C550IN40
		—	TL16C550BN	—	C	DIP40	
		ST16C550IP40	—	—	I	DIP40	} SC16C550IA44
		ST16C550CJ44	TL16C550CFN	PC16550DV	C	PLCC44	
		ST16C550IJ44	TL16C550CIFN	—	I	PLCC44	
		—	TL16C550BFN	—	C	PLCC44	
		—	TL16C550BIFN	—	I	PLCC44	
		—	TL16C550CPT	—	C	LQFP48	} SC16C550IB48
		—	TL16C550CPTR	—	C	LQFP48	
		—	TL16C550BIPT	—	I	LQFP48	
		—	TL16C550BPT	—	C	LQFP48	
		—	TL16C550CIPT	—	I	LQFP48	} use SC16C550IB48*
		ST16C550CQ48	TL16C550CPFBR	—	C	TQFP48	
		—	TL16C550CPFB	—	C	TQFP48	} SC16C650AIN40
		ST16C550IQ48	—	—	I	TQFP48	
	32	ST16C650AIP40	—	—	I	DIP40	} SC16C650AIB48
		ST16C650ACQ48	—	—	C	LQFP48	
		ST16C650AIQ48	—	—	I	LQFP48	} SC16C650AIA44
		ST16C650ACJ44	—	—	C	PLCC44	
		ST16C650AIJ44	—	—	I	PLCC44	} SC16C750IA44
		—	TL16C750FN	—	C	PLCC44	
	64	—	TL16C750IPM	—	I	LQFP64	} SC16C750IB64
		—	TL16C750PM	—	C	LQFP64	
2	0	ST16C2450CP40	—	—	C	DIP40	} Use SC16C2550IN40
		ST16C2450IP40	—	—	I	DIP40	
		ST16C2450CQ48	—	—	C	TQFP48	} Use SC16C2550IB48*
		ST16C2450IQ48	—	—	I	TQFP48	
		ST16C2450CJ44	—	—	C	PLCC44	} Use SC16C2550IA44
		ST16C2450IJ44	—	—	I	PLCC44	
	16	ST16C2550CP40	—	—	C	DIP40	} SC16C2550IN40
		ST16C2550IP40	—	—	I	DIP40	
		ST16C2550CQ48	—	—	C	TQFP48	} SC16C2550IB48*
		ST16C2550IQ48	—	—	I	TQFP48	
		ST16C2550CJ44	—	—	C	PLCC44	} SC16C2550IA44
		ST16C2550IJ44	—	—	I	PLCC44	
	32	ST16C2552CJ44	—	PC16552DV	C	PLCC44	} SC16C2552IA44
		ST16C2552IJ44	—	PC16552DVX	C	PLCC44	
		—	—	—	I	LQFP48	} SC16C652IB48
		—	TL16C752BPT	—	I	LQFP48	
		—	TL16C752PT	—	I	LQFP48	} SC16C752IB48
		—	—	—	I	LQFP48	
4	0	ST16C454CJ68	—	—	C	PLCC68	} Use SC16C554DIA68
		ST16C454IJ68	—	—	I	PLCC68	
		ST68C454CJ68	—	—	C	PLCC68	} SC16C554IB80
		ST68C454IJ68	—	—	I	PLCC68	
		—	TL16C554APN	—	C	LQFP80	} SC16C554IB80
		—	TL16C554IPN	—	I	LQFP80	
		—	TL16C554PN	—	C	LQFP80	
	16	ST16C554DCJ68	TL16C554FN/AFN	—	C	PLCC68	} SC16C554DIA68
		ST16C554DIJ68	TL16C554IFN	—	I	PLCC68	
		ST68C554DCJ68	—	—	C	PLCC68	} SC16C554IB64
		ST68C554DIJ68	—	—	I	PLCC68	
		ST16C554CQ64	—	—	C	LQFP64	} SC16C554IB64
		ST16C554IQ64	—	—	I	LQFP64	
	32	ST16C554DCQ64	—	—	C	LQFP64	} SC16C554DIB64
		ST16C554DIQ64	—	—	I	LQFP64	
		ST16C654CQ64	—	—	C	LQFP64	} SC16C654IB64
		ST16C654IQ64	—	—	I	LQFP64	
		ST16C654DCQ64	—	—	C	LQFP64	} SC16C654DIB64
		ST16C654DIQ64	—	—	I	LQFP64	
	64	ST16C654CJ68	—	—	C	PLCC68	} SC16C654IA68
		ST16C654IJ68	—	—	I	PLCC68	
		—	TL16C754BFN	—	I	PLCC68	} SC16C754IA68
		—	TL16C754FN	—	I	PLCC68	
		—	TL16C754BPN	—	I	LQFP80	} SC16C754IB80
		—	TL16C754PN	—	I	LQFP80	

Note: All PHILIPS parts operate at:

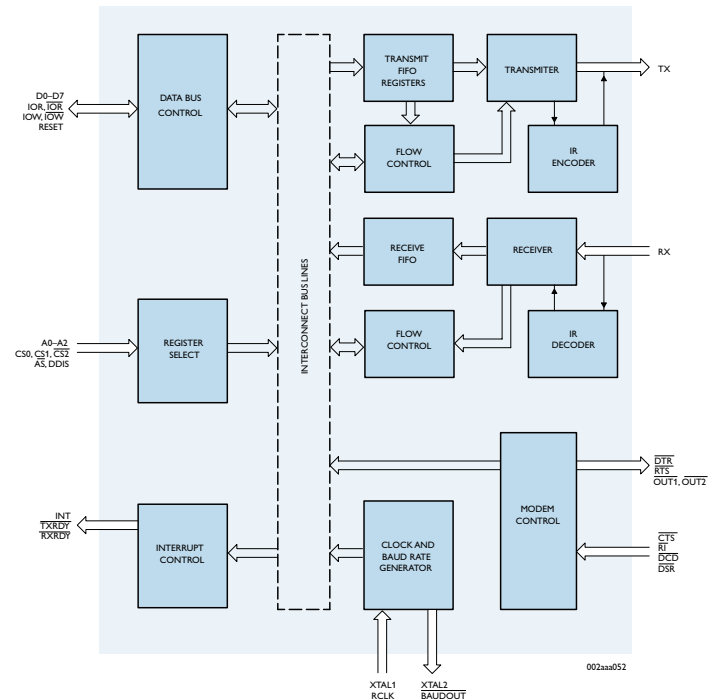
- 5V, 3.3V and 2.5V
- Commercial and Industrial temperature range

* TQFP & LQFP have the same footprint. TQFP package is 1 mm, the LQFP is 1.4 mm height.
The Philips parts only come in the LQFP version.

16Cxxx UARTs Naming Convention



Common UART Architecture



002aaa052

UART Support and Application Notes

For further information visit our website at www.philipslogic.com/datacom. You can send your technical support questions directly to datacom.tech-support@philips.com

Products	SCN2681	SCN68681	SCC2692	SCC68692	SCC2691	SCC2698	SC26C92	SC28L92	SC28C94	SC28L194	SC28L198
Application Notes and Other Information											
AN405: SCN2681/SCN68681 and SCC2691 Data Communications	●	●	■	■	●	■	■	■	■		
AN410B: SCC2698B Octal Universal Asynchronous Receiver/Transmitter	■	■	■	■	■	●	■	■	■		
AN413: Using The Datacomm Product's On-Chip Oscillator	●	●	●	●	●	●	■	■	■		
AN414: SCC2692 Differences From The SCN2681	●	■	●	■							
AN415: SCC68692 Differences From The SCN68681	●	■	●	■							
AN462: Hardware and software verification procedure	●	●	●	●	●	●	●	●	●	●	●
AN4004: Electrostatic Discharge Protection	●	●	●	●	●	●	●	●	●	●	●
Article: Extended baud rates for SCN2681/68681, SCC2691, SCC2692/68681 and SCC2698B	●	●	●	●	●	●					
Article: Functional description of Philips arbitrating interrupt systems								●	■	■	
Article: Interrupt Arbitrating, Interrupt System & FIFO control								■	●	●	

Products	SC16C550	SC16C554	SC16C650	SC16C654	SC16C750	SC16C752	SC16C2550	SC16C2552
Application Notes and Other Information								
AN10163: Comparing Philips SC16C550 and Other Industry Standard 16C550 UARTs	●	●					●	●
AN10164: Comparing Philips SC16C650/SC16C654 and Other Industry Standard 16C650/16C654 UARTs			●	●				
AN10165: Comparing Philips SC16C750/SC16C752 and Other Industry Standard 16C750/16C752 UARTs					●	●		

Legend

- Application Note specific for this product
- Application Note is useful for this product as well

Philips Semiconductors

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