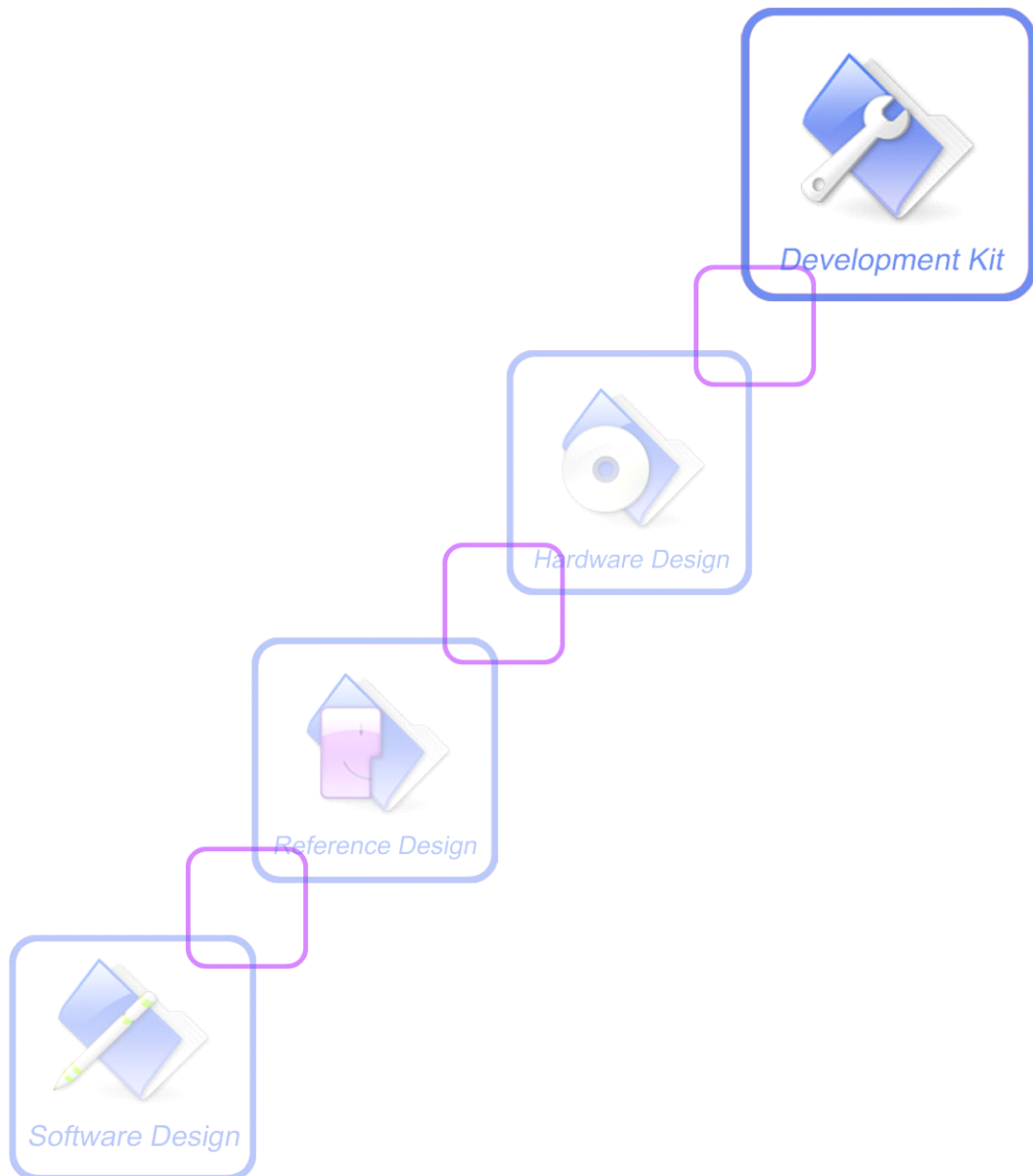


# UART **Application Note**



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## Version History

Version	Chapter	Comments	Author
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# 1. Introduction

## 1.1 Overview

This document will depict the usage of UART functions supplied by SIM52XX. User can get useful information about the SIM52XX's UART function quickly through this document.

### **SIM52XX UART can work in two modes:**

- Standard mode.
- Null mode (default mode)

### **Seven UART pins: RX, TX, RI, DCD, DTR, RTS, CTS.**

*Note: This UART application note is to help user understand the above seven related GPIOs, which can be used as UART function and GPIO function. Please take care of the references.*

## 1.2 References

- [1] SIMCOM\_SIM52XX\_ATC\_EN\_Vx.xx.doc.
- [2] SIM52xx\_GPIO\_Application\_note\_V0.01.doc
- [3] SIM5215E & SIM5216E\_HD\_Vx.xx.DOC

## 1.3 Terms and Abbreviations

For the purposes of the present document, the following abbreviations apply:

- AT                    ATtention; the two-character abbreviation is used to start a command line to be sent from TE/DTE to TA/DCE

# 2. UART function

## 2.1 Standard mode (7 lines mode)

When UART is in standard mode, all of the UART pins must follow the standard RS232 protocol. User can not set the UART pins to other functions, meaning that AT+CGFUNC is invalid.

Example:

```
AT+CSUART=1            // to set UART to work in standard mode
OK
AT+CGFUNC=10,0        // to disable DCD function of DCD pin
```

ERROR //invalid AT command

## 2.2 Null mode (3 lines mode)

When UART is in NULL mode (the default mode) , just RX and TX must follow the standard RS232 protocol. The other UART pins can be set to other function, such as GPIO function. User can get more information from the function table.

Pin name	Pin number	Function	Detail
CTS	33	Flow control	Standard UART pin
		GPIO	General GPIO(input, output)
		ISR	Interrupt
RTS	34	Flow control	Standard UART pin
		GPIO	General GPIO(input, output)
		ISR	Interrupt
DTR	35	Data terminal ready	Standard UART pin
		Wake up me	Interrupt to wake up the module
		GPIO	General GPIO(input, output)
		ISR	Interrupt
DCD	36	Data carrier detect	Standard UART pin
		GPIO	General GPIO(input, output)
		ISR	Interrupt
RI	37	Ring indicator	Standard UART pin
		GPIO	General GPIO(input, output)
		ISR	Interrupt

Table 1 function table

In NULL mode, the UART pins except RX and TX will be set to their own special function. One simple example is the DCD function:

DCD pin number: 36

Special function: DCD function

GPIO function: general GPIO (default: output GPIO)

```

AT+CSUART=0 //to set UART to NULL mode
OK
AT+CGFUNC=10 //to get the current function of the DCD pin
+CGFUNC: 1 //it's DCD function
AT+CGSETV=36,1 //it's invalid in DCD function
ERROR
AT+CGFUNC=10,0 //to disable DCD function, and enable GPIO function
OK
AT+CGSETV=36,1 //to set the DCD pin to output high-level voltage
OK

```

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