



# **AMICCOM SOC Reference code for UART RC\_SOC\_19**

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## **Document Title**

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## **Revision History**

Rev. No.	History	Date	REV.BY
0.0	Initial issue.	May. 6, 2014	Jones
0.1	Add A8106, A8325 & A9108 in support list	Mar.17, 2015	Jones
0.2	PM mode wake up issue	Aug. 20, 2015	Jones
0.3	Add notice in Timer2, UART.	Aug. 17, 2015	Jones
0.4	Add Baud rate supporting table	Jan. 22, 2018	Jarvis
0.5	Add Post Script in Note2	Mar. 09, 2018	Jarvis
0.6	Delete support list	Apr. 27, 2018	Jarvis

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## 1. General Description :

This article describes how to use AMICCOM SOC UART to send and receive data.

### 1.1 AMICCOM SOC MCU TIMER Description

AMICCOM SOC includes a full-duplex standard 8051 UART interface Rxd(P3.0) & Txd(P3.1).

### 1.2 BAUD RATE SUPPORTING TABLE

Crystal	16MHz	Timer1				
Baud Rate(bps)	T1M	SMOD	COUNTER	TH1/TL1	Actual(bps)	Error(<2%)
2400	1	1	104	152	2404	0.17%
4800	1	1	52	204	4808	0.17%
9600	1	1	26	230	9615	0.16%
19200	1	1	13	243	19231	0.16%
38400	--	--	--	--	--	x

Crystal	8MHz	Timer1				
Baud Rate(bps)	T1M	SMOD	COUNTER	TH1/TL1	Actual(bps)	Error(<2%)
2400	1	1	52	204	2404	0.17%
4800	1	1	26	230	4808	0.17%
9600	1	1	13	243	9615	0.16%
19200	--	--	--	--	--	x
38400	--	--	--	--	--	x

Crystal	12.8MHz	Timer1				
Baud Rate(bps)	T1M	SMOD	COUNTER	TH1/TL1	Actual(bps)	Error(<2%)
2400	1	1	83	173	2410	0.42%
4800	1	1	42	214	4762	-0.79%
9600	1	1	21	235	9524	-0.79%
19200	--	--	--	--	--	x
38400	--	--	--	--	--	x

Crystal	6.4MHz	Timer1				
Baud Rate(bps)	T1M	SMOD	COUNTER	TH1/TL1	Actual(bps)	Error(<2%)
2400	1	1	42	214	2381	-0.79%
4800	1	1	21	235	4762	-0.79%
9600	--	--	--	--	--	x
19200	--	--	--	--	--	x
38400	--	--	--	--	--	x

Crystal	19.2MHz	Timer1				
Baud Rate(bps)	T1M	SMOD	COUNTER	TH1/TL1	Actual(bps)	Error(<2%)
2400	1	1	125	131	2400	0.00%
4800	1	1	63	193	4762	-0.79%
9600	1	1	31	225	9677	0.80%
19200	--	--	--	--	--	x
38400	--	--	--	--	--	x

Crystal	16MHz	Timer2			
Baud Rate(bps)	COUNTER	TH2	TL2	Actual(bps)	Error(<2%)
2400	208	255	48	2404	0.17%
4800	104	255	152	4808	0.17%
9600	52	255	204	9615	0.16%
19200	26	255	230	19231	0.16%
38400	13	255	243	38462	0.16%

Crystal	8MHz	Timer2			
Baud Rate(bps)	COUNTER	TH2	TL2	Actual(bps)	Error(<2%)
2400	104	255	152	2404	0.17%
4800	52	255	204	4808	0.17%
9600	26	255	230	9615	0.16%
19200	13	255	243	19231	0.16%
38400	--	--	--	--	x

Crystal	12.8MHz	Timer2			
Baud Rate(bps)	COUNTER	TH2	TL2	Actual(bps)	Error(<2%)
2400	167	255	89	2395	-0.21%
4800	83	255	173	4819	0.40%
9600	42	255	214	9524	-0.79%
19200	21	255	235	19048	-0.79%
38400	--	--	--	--	x

Crystal	6.4MHz	Timer2			
Baud Rate(bps)	COUNTER	TH2	TL2	Actual(bps)	Error(<2%)
2400	83	255	173	2410	0.42%
4800	42	255	214	4762	-0.79%
9600	21	255	235	9524	-0.79%
19200	--	--	--	--	x
38400	--	--	--	--	x

Crystal	19.2MHz	Timer2			
Baud Rate(bps)	COUNTER	TH2	TL2	Actual(bps)	Error(<2%)
2400	250	255	6	2400	0.00%
4800	125	255	131	4800	0.00%
9600	63	255	193	9524	-0.79%
19200	31	255	225	19355	0.81%
38400	--	--	--	--	x

Note:

1. When using UART to wake up MCU from PM mode (PM1, PM2), please note the following items:
  - A. When the UART baud rate is greater than 300Hz (not including 300Hz), the first Byte transmitted must be "0xFF" to wake up the MCU.
  - B. The first Byte "0xFF" will not be viewed as data received by UART, it is only used to wake up the MCU. For example: In PM mode(PM1, PM2)  
UART will receive 0xFF, 0x01, 0x02 ,0x03...

At this time, 0xFF will be discarded by the UART, and 0x01, 0x02, 0x03 ... will be processed by the UART.

- C. When the UART baud rate is less than 300Hz (including 300Hz), 0xFF will be received and viewed as data by the UART.

2. For the following ICs, when UART uses Timer2 to generate Baud rate, it will make Baud rate calculation error if SFR is written. Therefore, it is recommended that when UART uses Timer2 to generate Baud rate, do not write SFR or it will cause baud rate error.

A8100, A8101, A8102, A8105, A8106, A8107, A8108, A8113, A8137, A8153, A8301, A9101, A9108, A9109 & A9112.

## 2. Program example

This sample program demonstrates how to use AMICCOM SOC UART to transmit and receive data. Users can connect Txd and Rxd directly to allow Txd data be directly transmitted to Rxd to test UART.

```

/*****
//initHW
P0 = 0xFF;
P1 = 0xFF;
P2 = 0xFF;
P3 = 0xFF;

P0OE=0xFF;
P1OE=0xFF;
P3OE=0xFE;

IOSEL = UART0_SEL; //enable UARTIOS=1
CKCON = 0x00; //TM1=system clock/12
SCON = UART0_MODE1;

PCON = 0x00; // SMOD = 0
TMOD = TIMER1_8BITSAUTO;
TH1 = (256-4);
TL1 = (256-4);
REN = ENABLE;
TR1 = ENABLE;
ES = ENABLE;
EA = ENABLE;

```

```
TXBuf = 0xAA;
```

```
while(1)
```

```
{
```

```
    SBUF = TXBuf;
```

```
    while(1);
```

```
}
```

```
/******
```

```
**  ISR_UART
```

```
*****
```

```
void ISR_UART (void) interrupt 4
```

```
{
```

```
    P0_0 = ~P0_0;
```

```
    if(TI)
```

```
    {
```

```
        TI = 0;
```

```
    }
```

```
    else
```

```
    {
```

```
        RI = 0;
```

```
        TXBuf++;
```

```
        SBUF = TXBuf;
```

```
    }
```

```
}
```

```
/******
```