SYC SEMICONDUCTORES Y COMPONENTES

AR-BLE

PLACA BLUETOOTH 4.0 PARA ARDUINO

Bluetooth 4.0 BLE module

Datasheet V303

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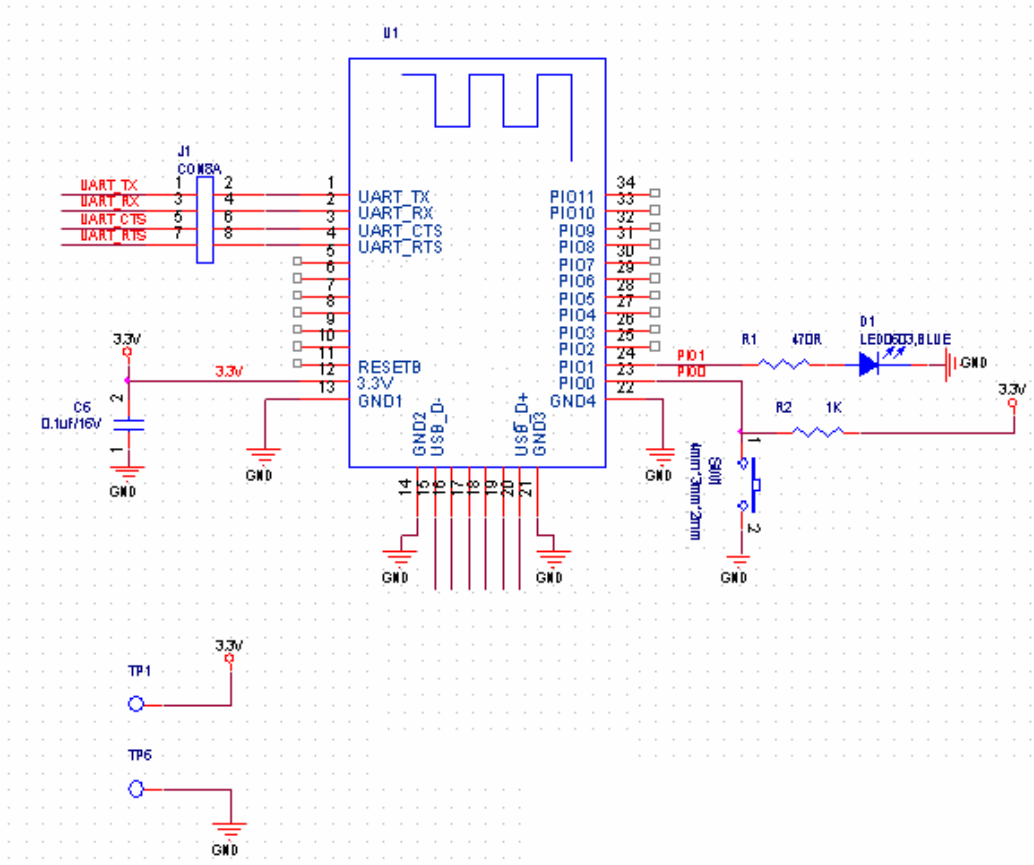
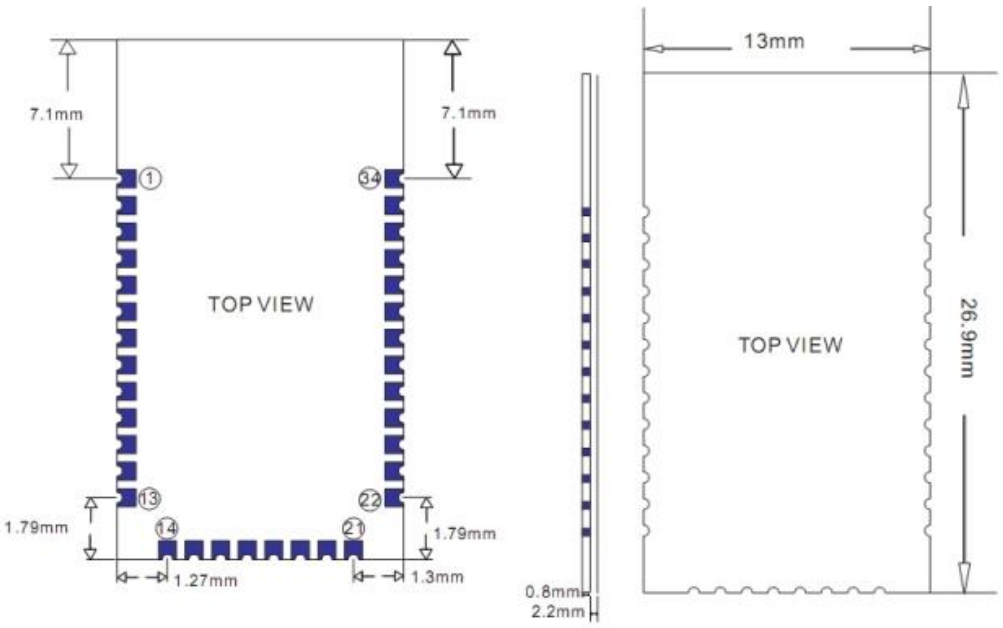
1. Product technical specifications

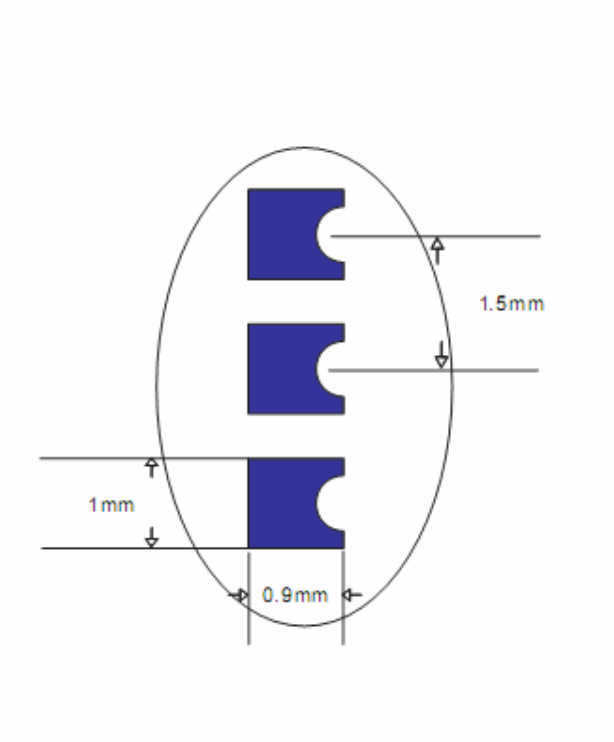
1.1 HM-10 Schematic



1.2 HM-10 Size



1.3 HM-10 package information



1.4 HM-10 Device Terminal Functions

No	Name	Description
1	UART_TX	UART interface
2	UART_RX	UART interface
3	UART_CTS	UART interface

4	UART_RTS	UART interface
5	NC	NC
6	NC	NC
7	NC	NC
8	NC	NC
9	NC	NC
10	NC	NC
11	RESETB	Reset if low >100ms.
12	VCC	3.3V
13	GND	Ground
14	GND	Ground
15	USB_D-	USB interface
16	NC	NC
17	NC	NC
18	NC	NC
19	NC	NC
20	UB_D+	USB interface
21	GND	Ground
22	GND	Ground
23	PIO0	System Key
24	PIO1	System LED
25	PIO2	Programmable input/output line
26	PIO3	Programmable input/output line
27	PIO4	Programmable input/output line
28	PIO5	Programmable input/output line
29	PIO6	Programmable input/output line
30	PIO7	Programmable input/output line
31	PIO8	Programmable input/output line
32	PIO9	Programmable input/output line

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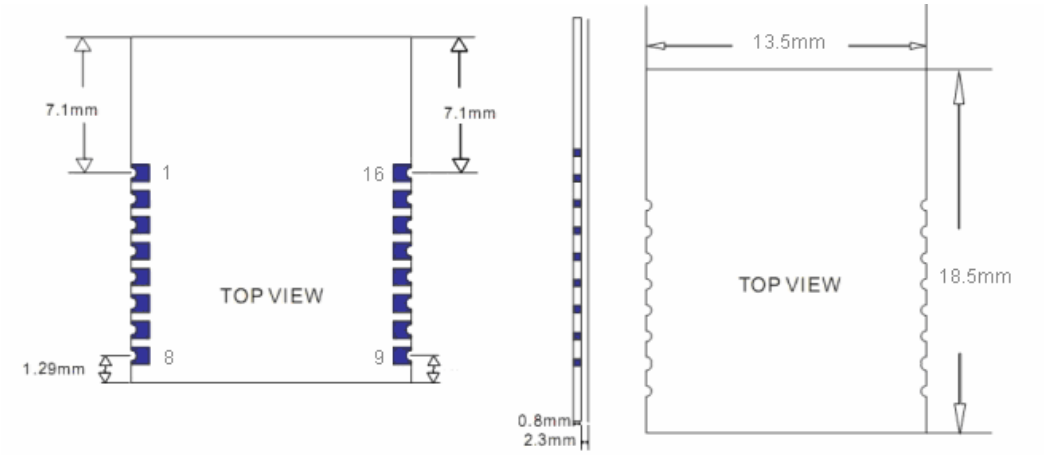
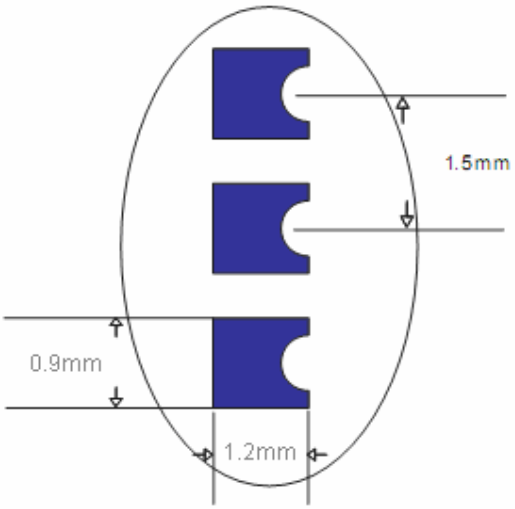
33	PIO10	Programmable input/output line
34	PIO11	Programmable input/output line

1.5 HM-11 Size



1.6 HM-11 Package information



1.7 HM-11 Device Terminal Functions

No	Name	Description
1	UART_RTS	UART interface
2	UART_TX	UART interface

3	UART_CTS	UART interface
4	UART_RX	UART interface
5	NC	NC
6	NC	NC
7	NC	NC
8	NC	NC
9	VCC	V3.3
10	NC	NC or VCC
11	RESETB	Reset if low <100ms
12	GND	Ground
13	PIO3	Programmable input/output line
14	PIO2	Programmable input/output line
15	PIO1	System LED
16	PIO0	System KEY

2. System LED and System KEY

2.1 System KEY function (PIO0)

Press if high > 100ms:

2.1.1 If Module role is Master

Unconnected status: Clear last connected remote device address information.

Connected status: Disconnect.

2.1.2 If Module role is Slave

Unconnected status: None.

Connected status: Disconnect.

2.2 System LED function (PIO1)

If AT+PIO10 is setup

Unconnected status: Output High 500 ms, Low 500 ms

Connected status: Output High

If AT+PIO11 is setup

Unconnected status: Output Low.

Connected status: Output High.

3 AT Commands

Factory default setting:

Name: HMSoft; Baud: 9600, N, 8, 1; Pin code: 000000; transmit Version.

AT Command format:

Uppercase AT command format. string format, without any other symbol. (e.g. \r or \n).

On Transmit version: Only accept AT Command from UART interface when Bluetooth device is not connected with remote device.

On Remote version: Can accept AT Command from UART interface when Bluetooth Device is not connected with remote device, Also can accept AT Command from remote Bluetooth device when connected that.

On PIO collection version: Only accept AT Command from UART interface when Bluetooth device is not connected with remote device.

1. Test Command

Send	Receive	Parameter
AT	OK	None

2. Query/Set baud rate

Send	Receive	Parameter
AT+BAUD?	OK+Get:[para1]	Para1: Baud rate No. 0---------9600 1---------19200
AT+BAUD[para1]	OK+Set:[para1]	

		2---------38400 3---------57600 4---------115200 Default: 0(9600)

e.g.

Query baud:

Send: AT+BAUD?

Receive: OK+Get:0

Setup baud:

Send: AT+BAUD1

Receive: OK+Set:1

3. Query/Set Parity bit

Send	Receive	Parameter
Query: AT+PARI?	OK+Get:[para1]	None
Set: AT+PARI[para1]	OK+Set:[para1]	Para1: 0,1,2 0:None 1:EVEN 2:ODD Default: 0 (None)

3. Query/Set Stop bit

Send	Receive	Parameter
AT+STOP?	OK+Get:[para1]	None
AT+STOP[para1]	OK+Set:[para1]	Para1:0, 1 0: One stop bit 1: Two stop bit Default: 0 (One stop bit)

4. Query/Set Module Work Mode

Send	Receive	Parameter
AT+MODE?	OK+Get:[para1]	Para1: 0, 1, 2 0: Transmission Mode 1: Remote Control Mode 2: 0 Mode + 1 Mode Default: 0
AT+MODE[para1]	OK+Set:[para1]	

In mode 2, all data receive from UART or remote device will be handled and send to each other.

5. Query/Set PIO1 output status (System LED)

Send	Receive	Parameter
AT+PIO1?	OK+Get:[para1]	Para1: 0, 1 0:Unconnected Output 500ms High 500ms Low, Connected output High. 1:Unconnected output Low, Connected output High. Default: 0
AT+ PIO1 [para1]	OK+Set:[para1]	

6. Query/Set PIO pins output high or low (Only this time, when module next power on, this value is not be used)

Send	Receive	Parameter
AT+PIO[para1]?	OK+PIO:[para1][para2]	Para1: 2~B Para2: 0, 1 HM-11 only have 4 pins. Para1 is which PIO pin you want to Query/Set Value: 2,3,4,5,6,7,8,9,A,B. Para2 is Query or setup
AT+PIO[para1][para2]	OK+PIO:[para1][para2]	

		value. 0 is low and 1 is high

e.g.

Query PIO2

Send: AT+PIO2?

Setup PIO2 output high

Send: AT+PIO21

Receive: OK+PIO21

7. Query/Set Module name

Send	Receive	Parameter
AT+NAME **?**	OK+NAME[para1]	Para1: module name, Max length is 12. Default: HMSoft
AT+NAME[para1]	OK+Set[para1]	

e.g.

change module name to bill_gates

Send: AT+NAMEbill_gates

Receive: OK+SetName:bill_gates

8. Restore all setup value to factory setup

Send	Receive	Parameter
AT+RENEW	OK+RENEW	None

9. Reset module

Send	Receive	Parameter
AT+RESET	OK+RESET	None

10. Query/Set Master and Slaver Role

Send	Receive	Parameter
AT+ROLE?	OK+ROLE:[para1]	Para1: M, S M: Master
AT+ROLE[para1]	OK+Set:[para1]	

		S: Slaver Default: S

11. Query/Set Pin Code

Send	Receive	Parameter
AT+PASS?	OK+PASS:[para1]	Para1 is Pin Code, 000000~999999 Default: 000000
AT+PIN[para1]	OK+Set:[para1]	

e.g.

Query Pin Code

Send: AT+PIN?

Receive: OK+PIN:000000

Setup Pin Code 008888

Send: AT+PIN008888

Receive: OK+Set:008888

12. Clear Last Connected device address

Send	Receive	Parameter
AT+CLEAR	OK+CLEAR	None

Notice: Only Master role is used.

13. Query Software Version

Send	Receive	Parameter
AT+VERS AT+VER?	Version Information	None

14. System Help Information

Send	Receive	Parameter
AT+HELP?	Help Information	None

15. Query Last Connected Device Address

Send	Receive	Parameter
AT+RADD?	OK+RADD:MAC Address	None

16. Query module address

Send	Receive	Parameter
AT+ADDR?	OK+ADDR:MAC Address	None

17. Query/Set Module work type

Send	Receive	Parameter
AT+IMME?	OK+IMME:[para1]	Para1: 0, 1 0: When module is powered on, only respond the AT Command, don't do anything. until AT + WORK is received 1: When power on, work immediately Default: 1
AT+IMME[para1]	OK+Set:[para1]	

This command is only used for Master Role.

18. Work immediately

Send	Receive	Parameter
AT+WORK	OK+WORK	None

This command is only used when AT+IMME1 is setup.

19. Query/Set module connect remote device timeout value

Send	Receive	Parameter
AT+TCON?	OK+TCON:[para1]	None
AT+TCON[para1]	OK+Set:[para1]	Para1 is timeout value. when time is up module will not connect this address anymore, then enter search mode. Para1 allowed value: 0000~9999 Unit is second. Default: 0000 Connect

		forever

This value is only used for Master Role, when module has Last Connected address.

20. Query/Set Module Bond Mode

Send	Receive	Parameter
AT+TYPE?	OK+Get:[para1]	None
AT+TYPE[para1]	OK+Set:[para1]	Para1: 0~1 0:Not need PIN Code 1:Need PIN Code Default: 0

21. Query RSSI Value

Send	Receive	Parameter
AT+RSSI?	OK+RSSI:[para1]	None

This command only used by Remote device query when connected.

22. Switch Remote Control Mode to Transmission Mode(Only this time)

Send	Receive	Parameter
AT+START	OK+START	None

This command is used to change Remote Control Mode or PIO Collection Mode into Transmission state this time.

23. Query/Set Module Power

Send	Receive	Parameter
AT+POWE?	OK+Get:[para1]	None
AT+ POWE [para1]	OK+Set:[para1]	Para: 0 ~ 3 0: -23dbm 1: -6dbm 2: 0dbm 3: 6dbm Default: 2

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24. Query/Set Notify information

Send	Receive	Parameter
AT+NOTI?	OK+Get:[para1]	Para1: 0, 1 0: Don't Notify 1: Notify Default: 0
AT+NOTI[para1]	OK+Set:[para1]	

If this value is set to 1, when link ESTABLISHED or LOSTED module will send OK+CONN or OK+LOST string through UART.