

## Product Description

The **RSB6505** is an easy to use, low cost IC that buffers up to 64 bytes of RS232 format serial data for a host microprocessor. The **RSB6505** offers a variety of interface methods and baud rate conversions which takes a great deal of timing burden off of the host processor.

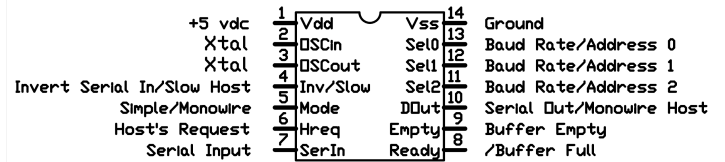
Single thread processors like the FBasic TICKit, Basic Stamp, and ATOM may use the RSB6505 to receive serial data while they are busy with other processing tasks. Because the host baud rate can be higher than the input rate, the host gains processing time per byte received.

The **RSB6505** implements both a simple handshake buffer mode as well as a complex **Mono-wire™** mode. This enables multiple devices to share a single processor I/O pin. Multiple devices can be chained together to increase the buffer size.

Connecting the 14 pin **RSB6505** is easy. Only a few resistors and a crystal or resonator are required. The **RSB6505** requires as few as one I/O connection to the host processor. The single wire interface uses Protean's **Mono-wire** protocol, while a 2-wire simple handshake can be used where a simpler protocol is required. The /ready output can be polled by the host processor as well.

Multiple **RSB6505** devices can be chained together in simple mode for larger buffers by connecting data out lines to data in and /ready to host's request.

## Pin Diagram



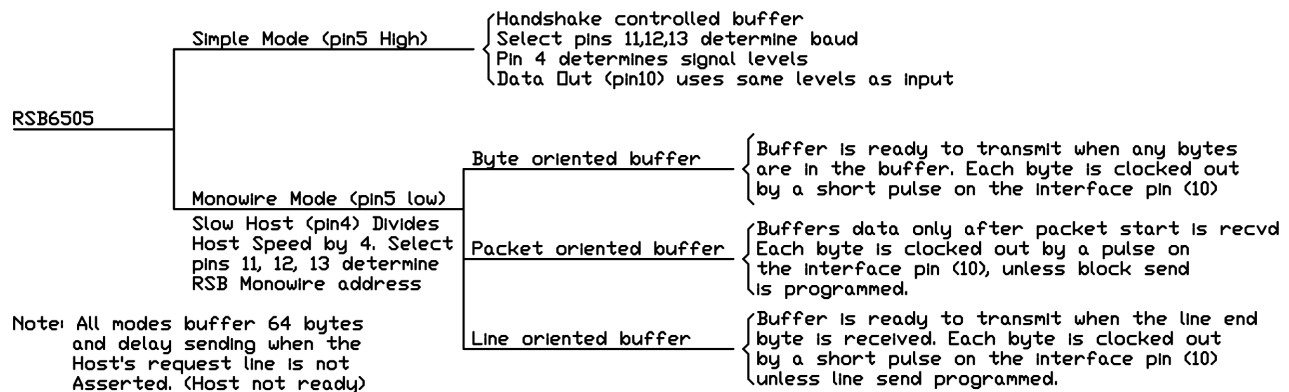
## Features

- 14 pin PDIP or SOIC package. Requires pull down resistors and crystal, resonator, or clock source.
- 64 Byte buffer receives data and transmits it to the host at higher interface baud rate upon requested.
- One host processor pin **Mono-wire** interface.
- Programmable RSB6505 operating parameters.
- 6 I/O pins strap baud rate, I/O level, and protocol for simple handshake buffering mode.
- 8 Programmable input baud rates: Host rate divide by one to Host rate divide by 128. Lower Host baud rates using lower crystal frequency on the RSB6505.
- Input programmable for inverted (pull down) or non-inverted (RS232 driver output) signal polarity.
- Typical communicates rates with host of 38400, 19200, 9600, or 4800 baud depending upon crystal.
- Host clocks data by pulsing interface pin when RSB6505 is in **Mono-wire** mode.
- Byte match before buffering for addressed packets.
- Programmable break required before byte match option.
- Byte match before ready for line buffering.
- Buffer empty output and buffer full outputs.

## Pin I/O Mapping and Descriptions

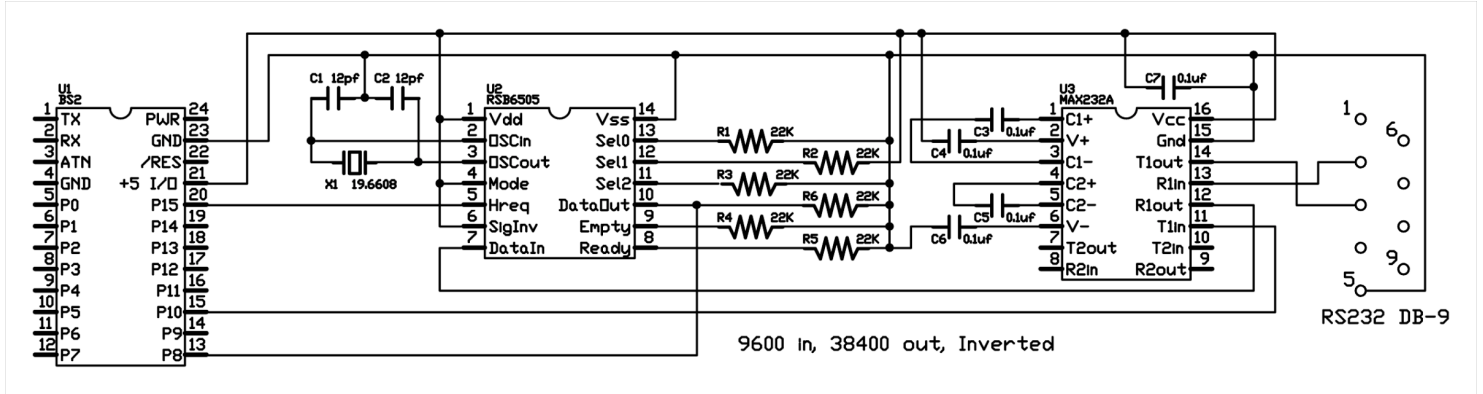
Name	PDIP pin#	SOIC pin#	I/O Type	Description
Vdd	1	1	Supply	+5 Vdc input
OSCI <sub>n</sub>	2	2	Input	Crystal connection or input from external oscillator. If an external oscillator is used, pin 3 should be left floating.
OSC <sub>o</sub> <sub>t</sub>	3	3	Output	Crystal connection for use with internal oscillator
Inv/Slow	4	4	Input*	In simple mode: High indicates serial in will be inverted e.g. A space is ground. Low indicates serial in is true e.g. A space is high. In monowire mode: High indicates the host connection is at ¼ speed. Low indicates the host connection is full speed. With a 22K resistor
Mode	5	5	Input	A low places the IC in simple, handshake controlled mode. A high places the IC in monowire mode.
Hreq	6	6	Input	A low halts transmission to the host. A high lets transmission proceed. If this pin is not used, it should be tied low.
SerIn	7	7	Input	Serial bit stream input. The level assignments are determined by pin 4 in simple mode, or by command programming in monowire mode.
Ready	8	8	Output*	Outputs a mark level when buffer has space to receive serial data. Pull low
Empty	9	9	Output*	Outputs a space level when the buffer is full. Pull low
DataOut	10	10	I/O*	Serial Output (inverted) in simple mode. In monowire mode this is a bidirection host interface. This pin must be pulled low for proper operation in either mode. Pull low
Sel2	11	11	Input	See Sel0
Sel1	12	12	Input	See Sel0
Sel0	13	13	Input	Sel0, Sel1, and Sel2 comprise a three bit binary input that selects the input baudrate when in simple mode. In monowire mode, the select lines determine the address that RSB will respond to. Up to eight RSBs can communicate to a single host via a single host I/O pin.
Vss	14	14	Supply	Ground

## Operational Mode Diagram



## Connection Example for a TICKit 63 in Monowire Mode

## Connection Example for a STAMP BS2 in Simple Mode



The diagram above shows the RSB6505 wired for simple mode buffering with the baud rate jumpered to 9600 baud input (i.e. Host baud rate divide by 4). The following program illustrates how to use the circuit above to read in a NEMA string.

```
' sample program for RSB6505 on STAMP II

inval  VAR  byte

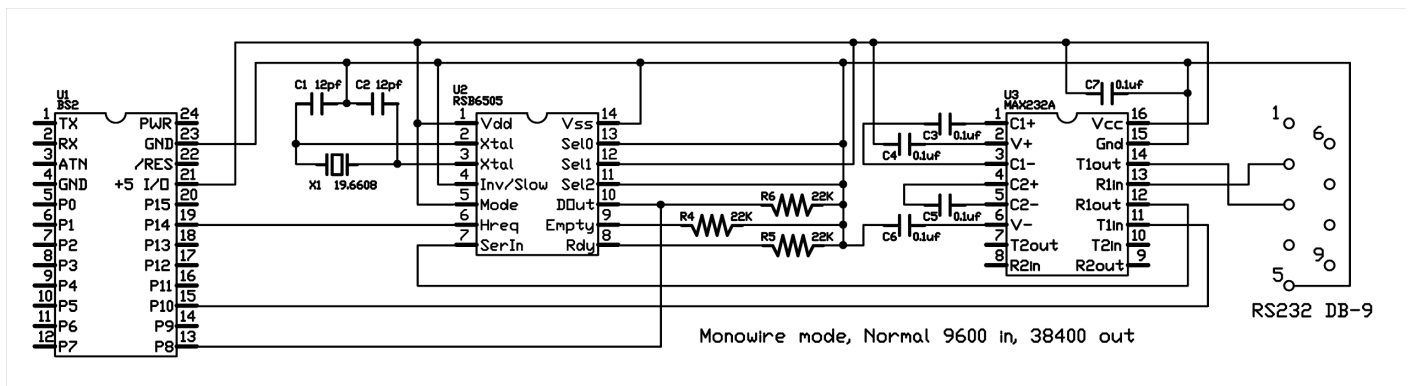
around:
' pin P8 is used for input and P15 is used for flow control.
' we are using open, inverted, 38400, 8N1 format
' if a byte is not received within 1 ms branch to
' "around" to poll again.
' data will only be displayed when byte is received
SERIN 8/15, 16390, 1, around, [inval]

' show character received on debug window
DEBUG inval

GOTO around

END
```

## Connection Example for a STAMP BS2 in Monowire Burst Mode



**Connection Example for chaining RSB6505 devices.**

**DRAFT**