



# SHACKNEWS

## HIGHVELD AMATEUR RADIO CLUB

JANUARY 2010

### COMMUNICATION IS THE NAME OF THE GAME

**Meeting** The meeting discussed the Hobbitech Exhibition which takes place on the weekend 27&28 March 2010. The venue is at the John Barrable Hall, Rynfield, Benoni. Under general a few other items were discussed. Ton also gave us a short talk on radio voting/vetting systems which seem to be coming into fashion in amateur radio in SA.

OM Ray ZS6QM has tendered his resignation from the club. This means that next meeting will be held at another venue. More about that in further communications via email or on the air.

A vote of thanks to Ray and Wits Rifles Command for allowing the club to use their premises for our club meetings.

At the next meeting we're planning a discussion on lightning and lightning protection. If you have any ideas bring them along.

**SSC Meeting** The next meeting is to be held at the home of Berridge and Sandra on the 20 March.



ROTARY CLUB OF BENONI VAN RYN

**HOBBITECH** Exhibition 2010

*is at John Barrable Hall, Benoni*

Saturday and Sunday 27th & 28th March 2010; Set up Friday March 26th

9.30am to 4.30pm Saturday and to 4.00pm on Sunday

The necessary application forms have been submitted to the Rotary Club and the required deposit has been paid.

A site has been held between the club committee members concerned as well as other interested radio amateurs from the area to see how and where we can set up a station and it looks like a good spot has been found. It appears that the organisers (Rotary) are quite excited about having amateur radio represented. We have requested a site meeting with them regarding the antenna masts etc. Don't forget that we need operators to man the station at all times as mentioned above. More info will be given once we hear from the organisers.

---oooOOOooo---

The fourth-grade teacher had to leave the room for a few minutes.

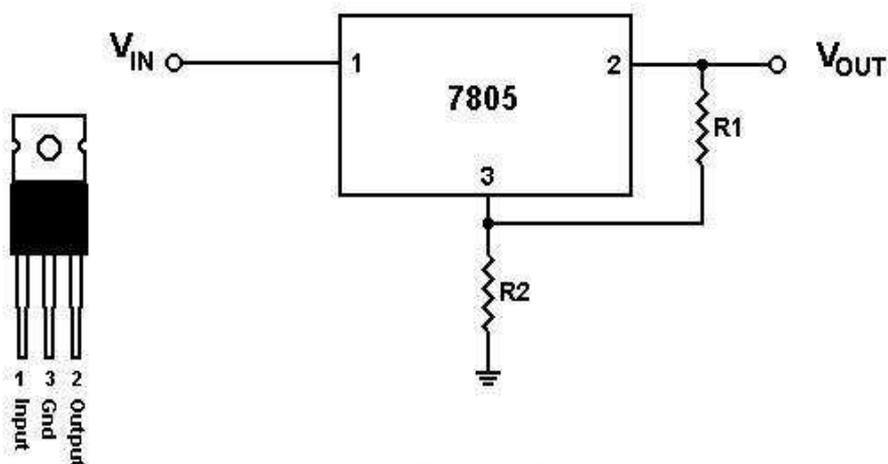
When she returned, she found the children in perfect order. Everybody was sitting absolutely quiet.

She was shocked and stunned and said, "I've never seen anything like it before. This is wonderful. But, please tell me, what came over all of you? Why are you so well behaved and quiet?"

Finally, after much urging, little Sally spoke up and said, "Well, one time you said that if you ever came back and found us quiet, you would drop dead."

Many amateurs have heard about and used the famous LM317T adjustable voltage regulator. But, did you know that all voltage regulators are adjustable? Yes, any IC voltage regulator can be adjusted to a higher voltage than its fixed voltage by just adding a couple of resistors.

As an example, let's consider using the popular 7805 (5 volt) voltage regulator as a 12 volt regulator. In the figure below, let's assume 470 for R1 which means that a constant current of 10.6 mA will be seen between terminals 2 and 3. This constant current plus a regulator standby current of about 2.5mA will flow through R2 to ground regardless of its value. Because of this constant 13.1 mA, R2 can now be set to a value which will give us a constant 7 volts across this resistor. A resistor value of 533 ohms or 510 (standard value) will give us the necessary 7 volts. With 5 volts across R1 and 7 volts across R2, a total regulated value of about 12 volts will appear across terminal 2 and ground. If a variable resistor is used for R2, then the output voltage can be easily fine tuned to any value greater than 5 volts. The regulator standby current will vary slightly in the 7805 but 2.5mA will yield good results in the calculations. If an exact voltage (within .3 volts) is needed then R2 must be a variable resistor.



To make any fixed regulator adjustable, use the following formula:

$$V_{out} = V_{fixed} + R_2(V_{fixed}/R_1 + I_{standby})$$

$V_{out}$  = Desired output voltage

$V_{fixed}$  = Fixed voltage of IC regulator (5 volts for 7805 or 1.25 volts for LM317T)

$R_1$  = Assume any value from about 470 to 1K for best results

$I_{standby}$  = Standby current of regulator (use 2.5mA for 7805 or zero for LM317T)

Common Resistor Combinations for the 7805 regulator:

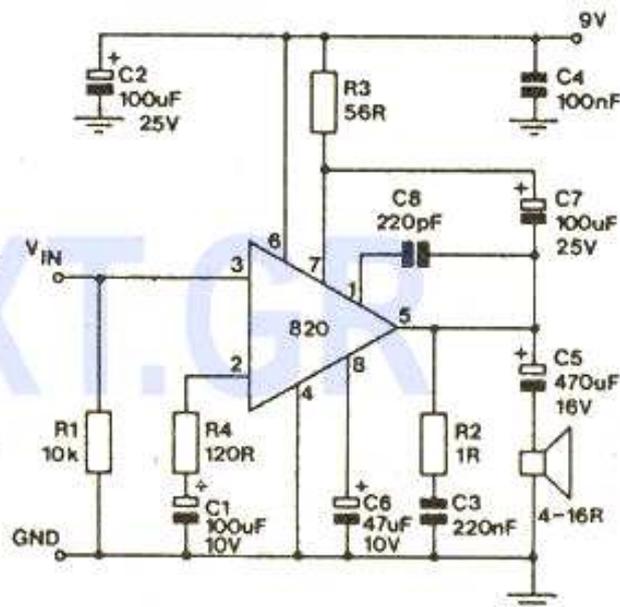
$V_{out}$ (Approx.)	$R_1$	$R_2$
6 Volts	470	100
8 Volts	470	220
9 Volts	470	330
12 Volts	470	510

Incidentally, the famous LM317T adjustable regulator is really nothing more than a fixed regulator with an output voltage of 1.25 volts. Amateurs seldom need voltages below 5 volts so the 7805 regulator is a good choice and it even costs a little bit less than the LM317T.

## The TBA820 audio amplifier

A very useful audio amp in an 8-pin DIL package. The IC features a very low minimum working supply voltage of 3V, low quiescent current, good ripple rejection, no crossover distortion and low power dissipation. Maximum supply voltages is 16 Volts into 16 Ohms speaker, 12Volts into 8 Ohms and 9Volts into 4 Ohms.

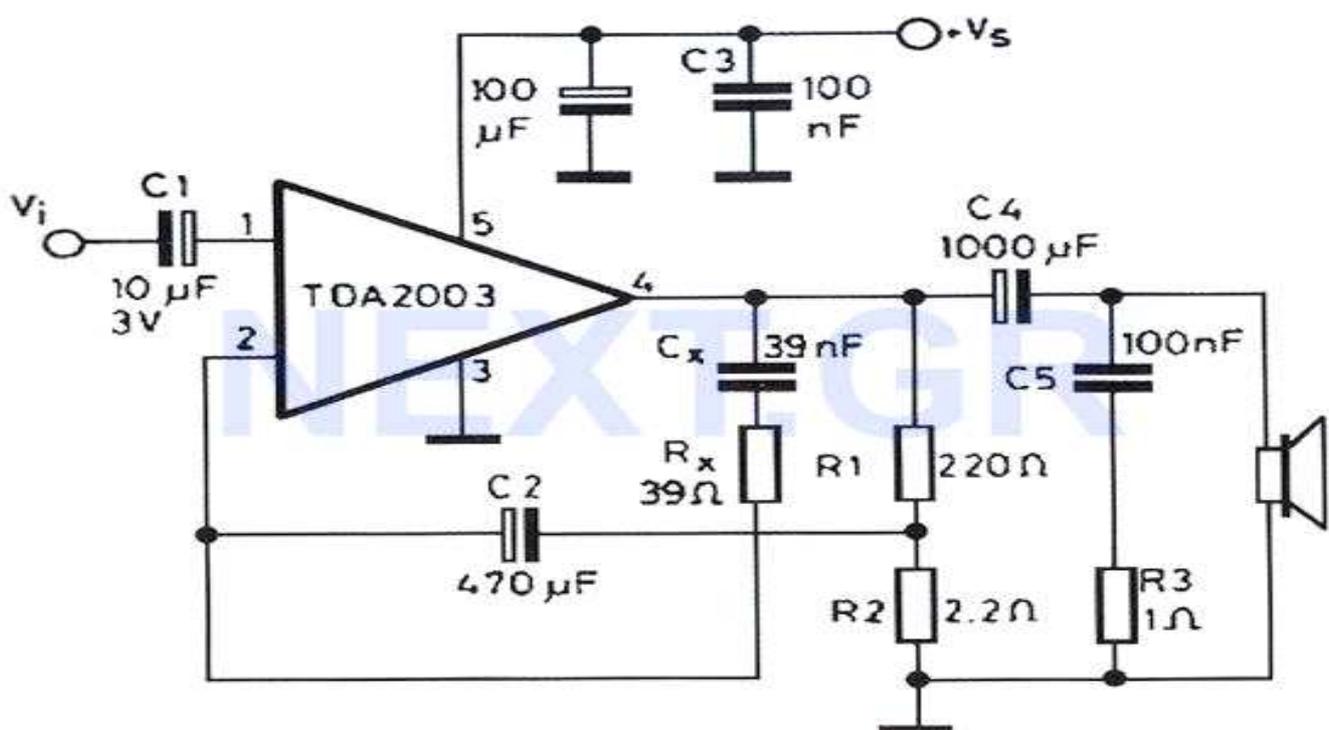
- R1 Min Res 10k
- R2 Min Res 1 $\Omega$
- R3 Min Res 56 $\Omega$
- R4 Min Res 120 $\Omega$
- C1 PC Elect 100 $\mu$ F 10V
- C2,7 PC Elect 100 $\mu$  25V
- C3 0.22 $\mu$ F Polyester
- C4 0.1 $\mu$ F Polyester
- C5 PC Elect 470 $\mu$ F 16V
- C6 PC Elect 47 $\mu$ F 25V
- C8 Polystrene 220pF



And one with more oomph

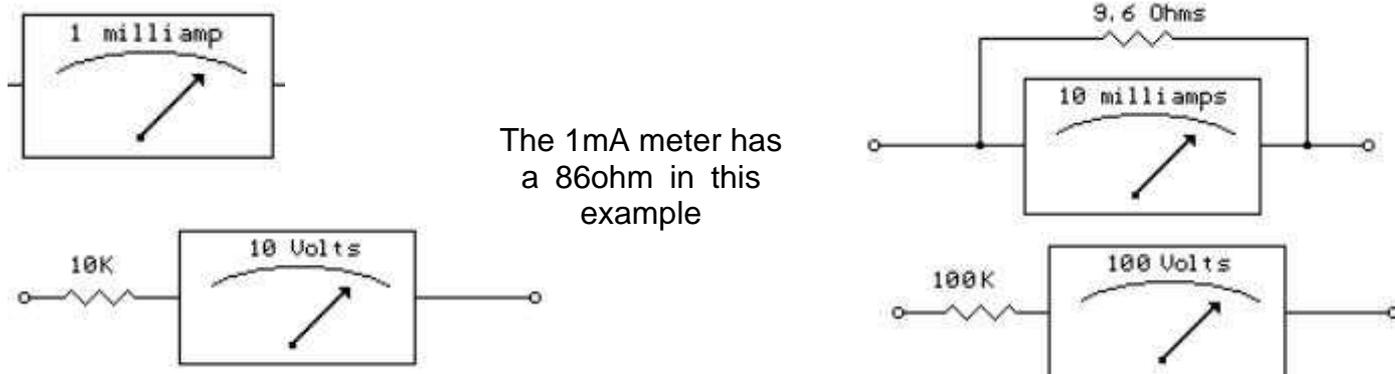
## 8 Watts Audio Amplifier (TDA2003)

Nice small audio amplifier which use only few parts to give good quality sound. This amp can be used as a simple booster, the heart of a more complicated amplifier or used as a guitar amp. Although not perfect, this amplifier does have a wide frequency response, low harmonic distortion about 1.5%, and is capable of driving an 8 ohm speaker to output levels of around 8 watts with slightly higher distortion. Any power supply in the range 12 to 18 Volts DC may be used.



## If you have a 1mA meter lying around you can....

A milliamp meter can be used as a volt meter by adding a series resistance. The resistance needed is the full scale voltage reading divided by the full scale current of the meter movement. So, if you have a 1 milliamp meter and you want to read 0-10 volts you will need a total resistance of  $10/.001 = 10K$  ohms. The meter movement itself will have a small resistance which will be part of the total 10K resistance, but it is usually low enough to ignore. The meter in the example below has a resistance of 86 ohms so the true resistor value needed would be  $10K-86$  or 9914 ohms. But using a 10K standard value will be within 1% so we can ignore the 86 ohms. For a full scale reading of 1 volt, the meter resistance would be more significant since it would be about 8% of the total 1K needed, so you would probably want to use a 914 ohm resistor, or 910 standard value. The milliamp meter can also be used to measure higher currents by adding a parallel resistance. The meter resistance now becomes very significant since to increase the range by a factor of ten, we need to bypass 9/10 of the total current with the parallel resistor. So, to convert the 1 milliamp meter to a 10 milliamp meter, we will need a parallel resistor of  $86/9 = 9.56$  ohms.



## CLUB INFORMATION

**Postal address** PO Box 19937 Sunward Park 1470

**Website** <http://www.qsl.net/zs6hvb/>

**e-mail** [zs6hvb@gmail.com](mailto:zs6hvb@gmail.com)

**Repeater** 145.1875 MHz input - 145.7875 MHz output

**Linked** to 70 cm - 438.850 Mhz (Sunday bulletins)

**Bulletins** Sunday morning - 145.7875 MHz & 7062 KHz @ 08h45.  
Relay - 80M - 3662KHz

### Monthly meeting venue

Venue to be announced later

*3rd Saturday of the month at 14:30*

### Committee

Chairman	Frank van Wensveen	ZS6TMV	082-294-2648
Vice Chairman	Frank Mercier	ZS6MER	011-845-1146
Secretary/Treasurer	Berridge Emmett	ZS6BFL	011-893-1291
Assistant Secretary	Marianne Treyvellan	ZR6JMT	084-403-3355
Repeater/Packet/Technical	Ton van Dijk	ZS6ANA	011-432-5494
Shacknews Editor	Berridge Emmett	ZS6BFL	011-893-1291
Shacknews Printing	Harry Lautenbach	ZS6LT	011-888-5362
Webmaster	Yvonne van Dijk	ZR6TBL	011-432-5494
Assistant Webmaster	Marianne Treyvellan	ZR6JMT	084-403-3355

### Club bank details

First National Bank - Current Account 62116557309  
Branch Code 201209 - Sunward Park