

THE "CHEAPER-BEEPER" CODE PRACTICE OSCILLATOR

The "Cheaper-Beeper" code practice oscillator was developed to provide a low cost, quickly built project for the first time kit builder. This provides a way everyone in a code practice class could have their own low cost code practice oscillator. The idea was to use parts that could be easily obtained at the builder's local Radio Shack store. Surplus part stores and hamfests can help you locate needed parts too. The use of a perfboard in the design was to provide a quick and easy circuit board for the project. Note that a 6-inch by 8-inch perfboard can be scored and broke into thirty-five one inch squares. Just count eleven holes and score and break on the eleventh hole. Do this on horizontal and vertical axis. We have made up a double-sided instruction sheet that provides a parts list, schematic diagram and pictorial diagram showing the component side of the perfboard layout. Note also that the series voltage-dropping resistor in the keying line can also easily be mounted on the board with the rest of the components. This series resistor allows the use of a standard 9-volt battery for an easy voltage source to power the oscillator.

It is recommended that one unit be built up as a test unit with transistor sockets or alligator clips to be used as a test unit to test both the PNP and NPN transistors. You will find that the variety of substitute transistors offered in the Radio Shack packages may not always work in this circuit. Some different types of PNP transistors work, others do not work. We found the NPN transistors have a higher success rate. The code practice oscillator has normally good tone quality much like the CW side tone of a modern

amateur transceiver and good volume level. Pick out your best transistors by substituting them in your test circuit first, before adding them to your handout kit. The handout kit (s) has seven parts in a plastic bag with an instruction sheet. They are a 9-volt battery clip, one inch by one-inch square of perfboard, .22 MFD capacitor, 47 k ohm resistor, 22 ohm resistor, a PNP transistor and an NPN transistor. The builder needs to add a speaker*, solder, wire, project box (if wanted) and a 9 volt battery. This is a fun low cost first project for the amateur radio hobbyist. Also, it helps you enjoy learning and sending the code to others. Have fun with this “Cheaper-Beeper”.

* Note: (2" to 2 ¼") replacement speaker -- Radio Shack part number is unavailable at this time! You may have to substitute a hamfest or junk box speaker in 3.2 ohm to 8-ohm range.

William R. Gardner (W8WG) was first licensed in 1968. Retired from Ohio University WOUB-TV as a Broadcast Technician. My wife Sally (N8EEG) was first licensed in 1982. Also retired from Ohio University as a Secretary. We live in Athens Ohio; 950 East State Street, Plaza Apt. 6A, Athens OH 45701

William Robert Gardner
Sally S. Gardner

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"The Cheaper-Beeper" Code Practice Oscillator makes a nice group project due to its low cost. All parts can be obtained at a Radio Shack store nearest you. If your local Radio Shack does not have all your requested parts, they will order what you need and have it sent to your home postpaid! Your "junk box" parts or parts purchased at hamfests can help too. Note: (small speaker). The code practice oscillator can be built on a one inch square piece of perfboard (score and break perfboard into one inch squares). Follow the base diagram on back of the transistor package for proper EBC hook up. Approximately one inch square of perfboard holds all parts with battery and key lead wires hanging free for hook up. The optional voltage dropping resistor can shift the tone of the oscillator if you wish to add it in the telegraph line. Building these oscillators in quantity keeps the single unit price very low. Add this to your project box and have fun with this "Cheaper-Beeper".

"THE CHEAPER-BEEPER" PARTS AND PRICE LIST

<u>Quantity in Package</u>	<u>Item</u>	<u>Radio Shack Part Number</u>	<u>Approx. Price</u>
(15)	PNP Transistor (2N3906)	276-1604	(\$2.59)
(15)	NPN Transistor (2N2222)	276-1617	(\$2.59)
*(5)	9 volt heavy duty battery connectors	270-324	(\$2.59)
#(5)	47 K ohm ½ watt resistor	271-1130	(\$.99)
(2)	.22 MFD. Capacitor	272-1070	(\$1.29)
+(1)	6 inches x 8 inches perfboard	276-1396	(\$4.29)

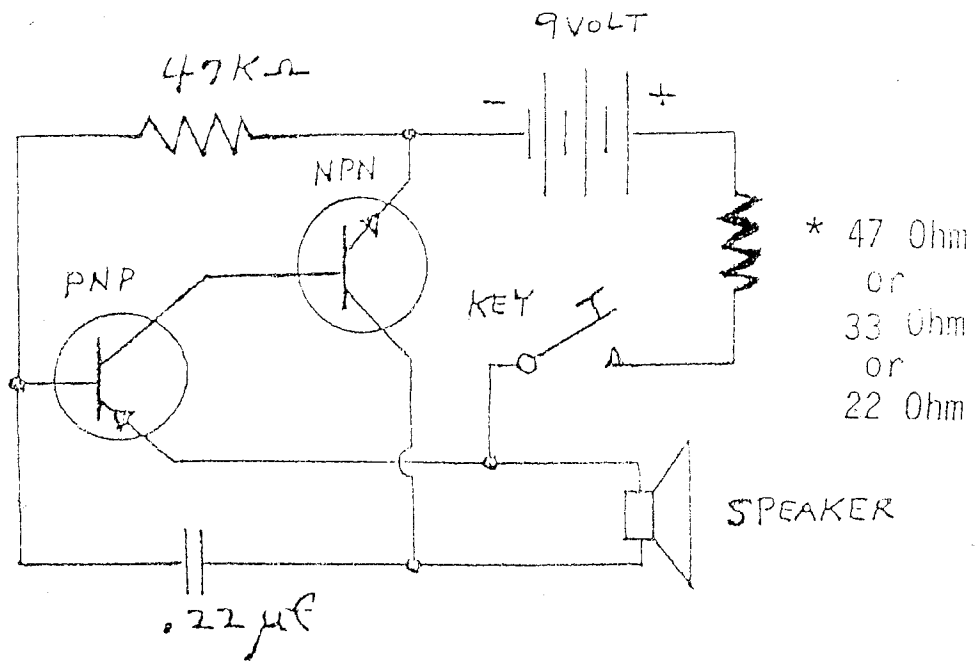
(Optional Parts) with voltage drop resistors:

(2)	9 volt battery holder	270-326B	(\$.99)
(5)	47 ohm ½ watt resistor	271-1105	(\$.99)
(5)	33 ohm ½ watt resistor	271-1104	(\$.99)
(5)	22 ohm ½ watt resistor	271-1103	(\$.99)

Substitute Parts:

*(5)	9 volt battery clips	270-325	(\$1.99)
#(5)	47 K ohm ¼ watt resistor	271-1342	(\$.99)
+(1)	2 ¾ inch x 6 inch perfboard	276-1395	(\$2.59)

NOTE: (2" to 2 ¼") replacement speaker -- Radio Shack part number is unavailable at this time! You may have to substitute hamfest or junkbox speaker in 3.2 ohm to 8 ohm range.



RESISTOR COLOR CODE

FIRST AND SECOND COLOR BAND	THIRD COLOR BAND
Black 0	Black x 1
Brown 1	Brown x 10
Red 2	Red x 100
Orange 3	Orange x 1k
Yellow 4	Yellow x 10k
Green 5	Green x 100k
Blue 6	Blue x 1Meg
Violet 7	Silver - 100
Gray 8	Gold - 10
White 9	

Fourth color band. Tolerance
Gold 5%. Silver 10%. None 20%

COMPONENT SIDE OF PERFORATED BOARD

