

A CODE PRACTICE OSCILLATOR

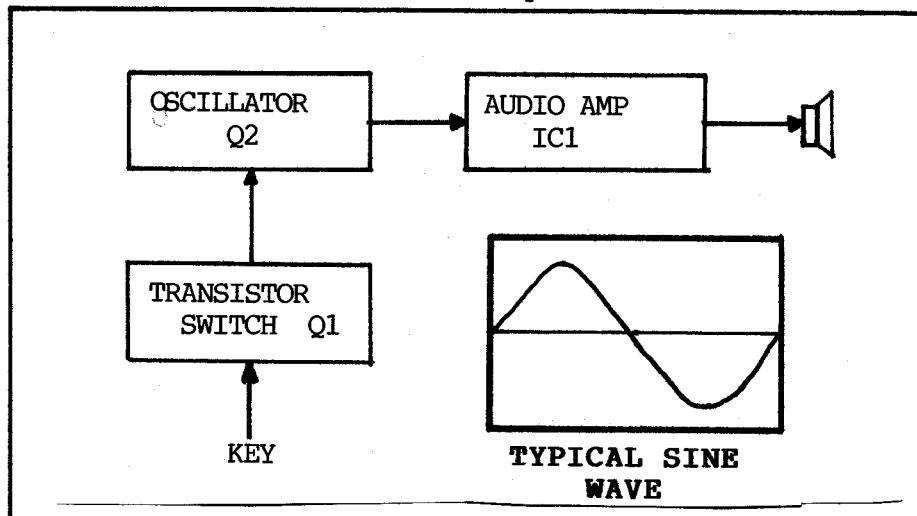
The simple oscillator (see Fig. 1) is a good introduction to electronic construction as well as a useful tool for learning to send the Morse code. The costs can be cut dramatically through intelligent substitution and liberal scrounging from a ham's junk box.

Parts placement is not critical and various construction techniques can be used (i.e. wire wrap, pc board, etc). The project can be assembled in an evening. This code practice oscillator is intended for beginners using hand keys. Because the circuit is keyed in the oscillator stage, the oscillator is compatible with most electronic keys.

A printed circuit board artwork is not given, however if demand warrants, a kit, including pcb can be assembled. Parts can be found at any Radio Shack, Active, or Addison outlets.

HOW IT WORKS

The circuit comprises three basic blocks. An oscillator, transistor switch and an audio amplifier.

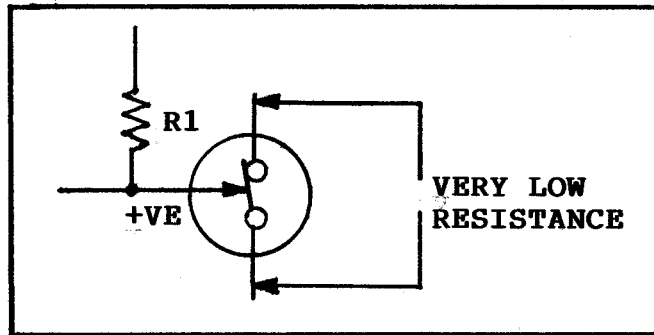


OSCILLATOR

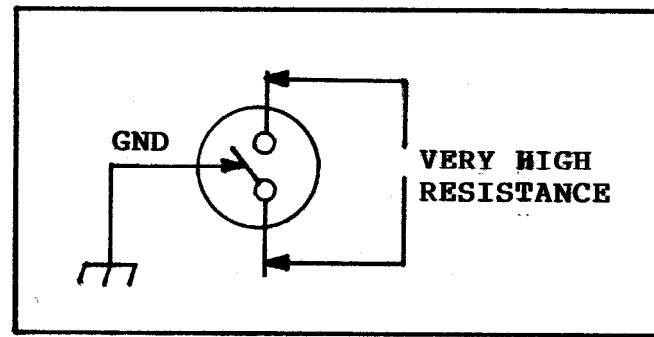
Components C1, C2, C3, R2, R3, R4 and Q2 form a standard sine wave audio phase shift oscillator whose output at C5 is approximately 25mV. The frequency of the tone may be changed by varying R2 or R3.

TRANSISTOR SWITCH

Components R1 and Q1 form a transistor switch that is controlled by the code key. When the key is open circuit, a positive current is applied to the Base of Q1. Therefore the Base is biased "ON" through R1. This causes the collector-emitter junction of Q1 to be effectively "CLOSED" circuit. With the C-E junction "CLOSED" the oscillator circuit is loaded down to ground potential thus preventing any oscillation.

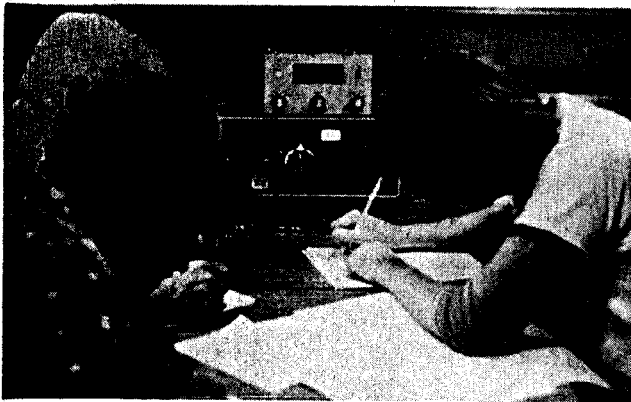
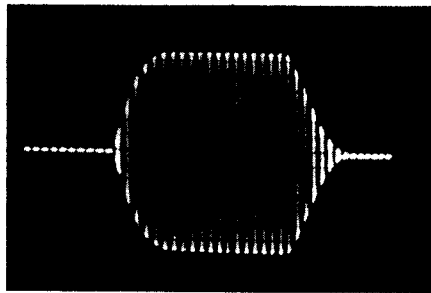


When the key is closed circuit, Q1 Base is pulled to ground potential. This causes the collector-emitter junction of Q1 to be effectively "OPEN" circuit. With Q1 C-E junction open, this permits Q2 to start oscillation, thus producing a sine wave output.

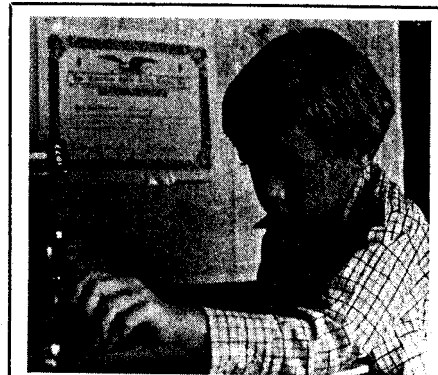


AUDIO AMPLIFIER

The audio oscillator output is fed to through the Volume control R6 and into audio amplifier IC1. This integrated circuit audio amplifier is set up with a voltage gain of 200 and an output of 500mW; thus it is capable of driving headphones or a speaker. Shown below is a typical CW signal waveform.



Listening to over-the-air practice transmissions is the best way to increase your speed and proficiency with the code. Members of the Mobile (Alabama) Amateur Radio Club put this philosophy to good use.



You Can Do It Too!

Think Morse code is a difficult hurdle that takes weeks and weeks of hard work to master? Think again! Guy Mitchell, WDØDVX, of Buckingham, Iowa, picked up Morse code from tapes his parents were using for their Novice class. Soon, he began studying on his own, and mastered the alphabet and numbers with little difficulty. What makes this story unique is that Guy Mitchell was four years old when he passed the five-words-per-minute code test! He had had another birthday when he passed the written test, however. At five years of age, Guy was the youngest licensed ham radio operator in the U.S., and perhaps the world!

Guy Mitchell started kindergarten five months after he passed the Novice code test.

*Good luck.
A. Katal
VE2TOW.*

RELEASE	DESCRIPTION	DATE	CHK	APPO
		16 Oct 50		

PARTS LIST

CAPACITORS

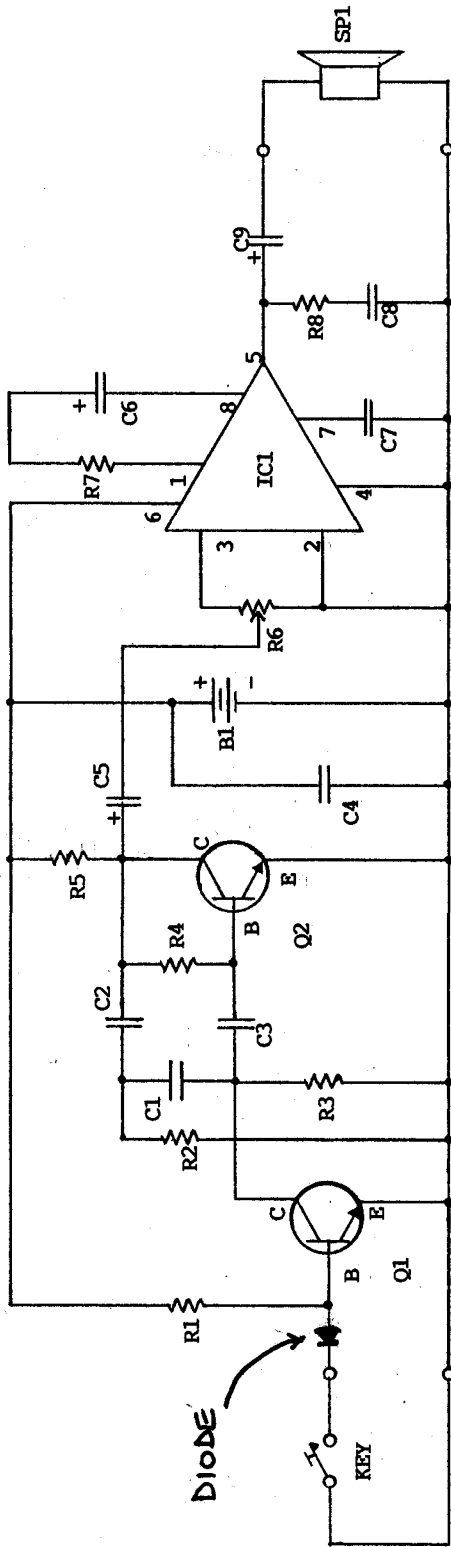
- C1, C2, C3..... .01uF, 50 Volt, Ceramic
- C4, C7, C8..... .1uF, 50 Volt, Ceramic
- C5, C6..... .10uF, 10 Volt, Electrolytic
- C9..... 220uF, 10 Volt, Electrolytic

RESISTORS

- R1..... 10K
- R2, R3..... 4.7K
- R4..... 220K
- R5..... 2.2K
- R6..... 10K Potentiometer
- R7..... 1K
- R8..... 10 Ohms

SEMICONDUCTORS

- Q1, Q2 Transistor 2SC945
 - IC1 Integrated Circuit LM-386
- MISC.**
- BI, 9 Volt Battery
 - SP1, 8 ohm speaker or headphones



Resistors, K=1000 ohms; all resistors 1/4 Watt unless otherwise specified. All capacitors are in microfarads (uF) unless otherwise specified.

UNLESS OTHERWISE SPECIFIED		CONTRACT	
XX	ANGLE	OWN	
+	+	CHK	
+	+	APP	
MATERIAL		APP (G.I.)	
NEXT ASSY		APP	
APPLICATION		DWG GRADE	
FINISH		SCALE	
		TITLE ROBOT TELECOMMUNICATIONS SCHEDULE, CODE PRACTICE OSCILLATOR	
USED ON		SIZE B	
APPLICATION		CODE IDENT NO. CPO-99	
FINISH		SHEET 1 OF 1	

FIGURE 1.