**FEATURES**

- Extremely low power requirement
- Any voltage supply 5-10 VDC
- Runs on 006P transistor battery
- Self-completing, jam proof dots, dashes and spaces
- Instant starting clock
- Iambic mode for squeeze keying
- Dynamic dot and dash memories
- Key debounce circuitry for faultless operation
- Weight control
- Internal sidetone generator
- Low impedance inputs for R.F. immunity
- Double diode protected inputs
- Output for speedmeter (8044M)
- Standard 16 and 18 pin packaged

**APPLICATIONS**

- Build homebrew miniature keyer
- Build into your regular rig
- Build into your QRP rig
- Update your present keyer
- Include in new commercial tranceivers
- Use in commercial keyers

**DESCRIPTION**

The 8044 Integrated Electronic Keyer Circuits are space age components designed specifically for the CW operator. Products of the latest design and processing technology available in the integrated circuit industry, the 8044/8044M represent the same advancements which make possible the one chip electronic calculator and the digital electronic wrist watch. By coupling the latest technology with experience gained in eleven years of building state-of-the-art electronic keyers, Curtis Electro Devices has built into the 8044/8044M all the most wanted features in an electronic keyer. And beyond the standard features are some immeasurable qualities. One is the "transparency" of the keyer when you use it. Do you make allowances for it, or vice versa? A good keyer exhibits no idiosyncrasies and needs no "getting used to". Also, a keyer must be absolutely immune to bouncing or dirty contacts. The 8044/8044M incorporate filters which eliminate the effects of keybounces on both make and break.

Another invisible quality is r.f. Immunity. To prevent false triggering by r.f. on the paddle leads, the 8044/8044M dot and dash inputs are equipped with active pull-up resistors which exhibit only a few hundred ohms impedance to the power supply when the key is open.

**CMOS TECHNOLOGY**

In order to insure that the 8044/8044M dissipate as little power as possible, CMOS (Complementary Metal-Oxide Semiconductor) circuit techniques were used in its design. As a result, the quiescent current required is less than 60 microamperes at 5 Vdc. This makes an on-off switch unnecessary even when using a battery supply. The keydown current is on the order of 30 milliamperes with about 99.9% of this current required for sidetone output and drive for the output transistor. This current can be reduced greatly for QRP operation.
OPERATING FEATURES

Self-Completing Dots, Dashes and Spaces — Once a dot, dash or space is commenced, there is no way to prevent it from transmitting at the exact standard length. It may be neither cut short nor extended by improper key action.

Iambic Operation — When the dot paddle is depressed, a continuous string of dots is produced. When the dash paddle is depressed, continuous dashes are produced. When both paddles are closed, an alternating series of dots and dashes is produced. The series can be started with either a dot or dash depending on which key was closed first. Iambic operation allows squeeze keying if desired by using a twin lever paddle. A single lever paddle allows the non-squeeze (slap) mode.

Dot and Dash Memories — The self-completing function of electronic keyers can cause dots to get lost because the operator tends to lead the keyer. To prevent lost dots, the 8044/8044M employ a memory to remember when a dot is called for and to insert it at the proper time. The dot memory also helps in squeeze keying where a tap on the dot paddle will insert a dot into a series of dashes. The dash memory serves the same purpose as the dot memory except that since dashes are naturally held, there is less natural tendency to lose dashes. However, for iambic keying, dash insertion is definitely required.

Weight Control — Although a dot-space ratio of one-to-one is correct timing, some operators like a heavier dot and dash to give a smoother sound and to cut through heavy QRM. The 8044/8044M allow weight control if desired, or it may be omitted.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>Supply Voltage</th>
<th>4Vdc min., 10Vdc max. (5 or 9 Vdc recommended)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quiescent Current</td>
<td>Less than 50 μA at 5Vdc</td>
</tr>
<tr>
<td>Operating Current</td>
<td>Depends on sidetone and keying arrangement. Averages 10-30 mA.</td>
</tr>
<tr>
<td>Speed Range</td>
<td>Unlimited using external R and C. Normally about 6 to 50 wpm.</td>
</tr>
<tr>
<td>Weight Control</td>
<td>Weight can be added via weight control pot.</td>
</tr>
<tr>
<td>Dot-Space-Dash Ratio</td>
<td>1:1:3 standard.</td>
</tr>
<tr>
<td>Sidetone Oscillator</td>
<td>Internal using external R and C.</td>
</tr>
<tr>
<td>Key Debouncing</td>
<td>Internal using external R and C.</td>
</tr>
<tr>
<td>Package</td>
<td>16 pin dual-in-line for 8044. 18 pin dual-in-line for 8044M.</td>
</tr>
</tbody>
</table>

TYPE 8044/8044M INTEGRATED CIRCUIT

<table>
<thead>
<tr>
<th>Supply Voltage</th>
<th>4Vdc min., 10Vdc max. (5 or 9 Vdc recommended)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Current</td>
<td>Less than 50 μA quiescent. 10 to 30 mA keydown.</td>
</tr>
<tr>
<td>Speed Range</td>
<td>0-50 wpm.</td>
</tr>
<tr>
<td>Weight Control</td>
<td>1:1 and heavier.</td>
</tr>
<tr>
<td>Sidetone</td>
<td>Adjustable pitch and volume, 8 ohm for output speaker.</td>
</tr>
<tr>
<td>Keying Output</td>
<td>Either plus or minus 300V at 200 mA maximum (transistor switching). Reverse voltage protection.</td>
</tr>
<tr>
<td>Dimensions</td>
<td>PCB is 2&quot; x 3.5&quot; (5.08 x 8.89 cm). Height .75&quot; (1.905 cm) when completed.</td>
</tr>
<tr>
<td>Parts Complement</td>
<td>Type 8044 or 8044M IC, drilled glass epoxy PCB, solder plated runs, Transistors, resistors, capacitors, trimmers, diodes, speaker transformer, battery connector, pots, standoffs, screws, nuts, solder, IC socket and 24-pin edge connector. (You supply speaker, battery or power supply, chassis, switches, jacks, knobs and meter.)</td>
</tr>
</tbody>
</table>

(See photo on rear page.)
### Ordering Information

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8044</td>
<td>Integrated Circuit</td>
<td>1-9</td>
</tr>
<tr>
<td>8044M</td>
<td>Integrated Circuit</td>
<td>10-49</td>
</tr>
<tr>
<td>0044-3</td>
<td>IC, PCB, Socket</td>
<td>10-49</td>
</tr>
<tr>
<td>8044M-3</td>
<td>IC, PCB, Socket</td>
<td>50-99</td>
</tr>
<tr>
<td>8044-4</td>
<td>Limited Kit*</td>
<td>100-499</td>
</tr>
<tr>
<td>8044M-4</td>
<td>Limited Kit*</td>
<td>500-999</td>
</tr>
<tr>
<td>M-1</td>
<td>0 to 50 wpm meter (1½“ sq.)</td>
<td>8.50</td>
</tr>
</tbody>
</table>

*California residents add 6½% tax (Bay Area 6½%)

Prices and specifications subject to change without notice. Add $1.75 to cover handling and mailing.

Note: "D" type 8044 adds following extra element after squeeze is released. Standard 8044's simply complete the element in progress.

### 8044-3, -4

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**NOTES:**

1. ADD R17 OR R18 TO RAISE KEYING CURRENT CAPABILITY FROM 100 TO 200 mA.
2. USE SHIELDED EXTERNAL CABLES.
3. ONLY NECESSARY FOR 9V BATTERY OPERATION. FOR A.C. OPERATION, JUMPER R20 AND Omit D10.
4. IF USING EXTERNAL VOLUME & PITCH CONTROLS, OMIT R114A & R6A RESPECTIVELY.
5. ASTERISKED PARTS NOT PART OF KITS.
6. CIRCLED NUMBERS ARE EDGE CONDUCTOR PINOUTS.
7. S1 IS KEYPAD POLARITY SWITCH.
8. SQUARED NUMBERS ARE 81 TERMINALS.
9. USE MOVING COIL TYPE METER ONLY.
10. Use 1 Meg. for R1 and R2, .001 uF for C1 and C2.
11. C5 is mylar cap.

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**IMPORTANT**

ADD 470 Ohms series resistors at key inputs for extra static protection.

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### Read These Reviews on Related Curtis Equipment

**Reference**

<table>
<thead>
<tr>
<th>Model</th>
<th>June 1980 OST</th>
</tr>
</thead>
<tbody>
<tr>
<td>EK-480</td>
<td></td>
</tr>
</tbody>
</table>

### Other References

The Radio Amateurs' Handbook (ARRL) 1977 to 1982
The Radio Amateurs' Handbook (ARRL) 1982 page 11-7

### Curtis Electro Devices, Inc.

**Box 4090, Mountain View, CA 94040 (415) 964 3646**

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**Limited Warranty**

The 8044/8044M Integrated Circuits are guaranteed for ninety (90) days from date of purchase as established by copy of sales slip. Return defective IC, copy of sales slip and $1.75 for handling and postage.

After 90 days, return defective IC plus $9.50 exchange fee and $1.75 handling and postage.

Other kit parts are warranted to ninety (90) days also. Return defective part plus $1.75 handling and mailing fee.
NEW LSI ICs FROM CURTIS

8045 Keyboard-on-a-chip — A large scale integrated CMOS IC housed in a 40-pin dual-in-line package. It forms the basis for a high quality Keyboard Morse code generator with all the features of the popular Curtis KB-4200 unit which was constructed from discrete ICs.

Using the 8045, an unencoded keyboard, a 3341 FIFO (First In-First Out Buffer) and an 8043 or 8044 based electronic keyer, you can construct a keyboard keyer with a minimum 32 character buffer. Or by adding 3341's, the buffer length can be extended; 32 additional characters per 3341. An analog output from the 8045 directly drives a one milliamphere meter to indicate buffer status. A preload function is also available in addition outputs for "buffer full" and "empty" lamp indicators. The FIFO can be dumped with a "buffer dump" push switch.

8046 Instructkeyer-on-a-chip — A CMOS large scale 24-pin integrated circuit (LSI) designed to produce random Morse code practice when mated to an 8043 or 8044 based keyer. It requires one 256x4 Read-Only-Memory (ROM) to serve as a look-up table of Morse characters.

The 8046 system provides completely random characters and spaces over the complete speed range of the keyer, typically 6 to 50 wpm. For low speed practice, the intervals between characters can be lengthened to retain the proper character sound while allowing slower speed copy. In addition, the user can switch between alphabetic only (for Novice study) to alphanumeric plus punctuation for General class study.

Another feature of the 8046 is a unique speed indicating system. By connecting a one milliamphere meter to an analog output, the exact code speed being used is displayed. This feature is independent of the random code generation function and can be used when in the standard keying mode.

8047 Message Memory-on-a-chip — A LSI (Large Scale Integration) CMOS device designed to provide reprogrammable Morse message storage when used in conjunction with a 8043 or 8044 or compatible electronic keyer. Housed in a 28-pin dual-in-line package, the 8047 utilizes one or more external 2102 static RAMs (Random Access Memories) for the storage media.

In its simplest form, using one 2102, the 8047 allows four message selections of about 32 Morse characters each. The number of message selections and/or the message lengths can be expanded indefinitely by employing additional 2102 RAMs.

Messages are selected and started by depressing the associated (normally open) push button switch. Provisions are made for a corresponding lamp or LED indicator which lights as long as the message is in progress or selected for repeat.

A repeat function allows for either immediate or delayed repeat (to two minutes).

Write for more information on these devices.