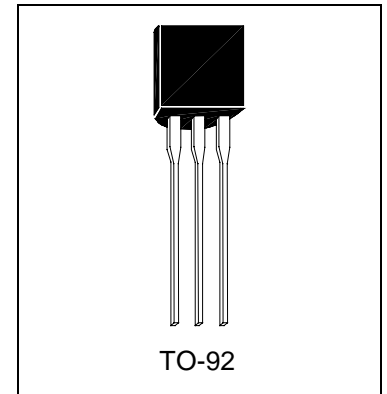




# H66T19/32/68 Series

## Description

The H66T19/32/68 series is a CMOS LSI designed for use in door bell, telephone and toy applications. It is an on-chip ROM program-med for music performance. Produced by COMS technology, the device results in very low power consumption. Since the H66T19/32-/68 series includes oscillation circuits, a compact melody module can be constructed with only a few additional components.



## Feature

- 64-Note ROM memory
- 1.5V to 3V power supply and low power consumption
- Dynamic speaker can be driven with external NPN transistor
- OSC resistor is built-in
- Built-in level hold mode
- Power on reset: melody begins from the first note

## Absolute Maximum Ratings

- DC Supply Voltage ..... 1.5 V to +3 V
- Operating Ambient Temperature..... -10 °C to 60 °C
- Storage Temperature..... -55 °C to 125 °C

## Pin Configuration

| Pin No. | Symbol | Description           |
|---------|--------|-----------------------|
| 1       | Ground | Negative Power Supply |
| 2       | Vin    | Positive Power Supply |
| 3       | Vout   | Melody Output         |

## Song Titles

| Part No. | Title   |
|----------|---|
| H66T19AA | For Alice (Play time between 21s to 26s at Vcc=1.5V)          |
| H66T19BA | For Alice (Play time between 18.5s to 22.5s at Vcc=1.5V)      |
| H66T32AA | Coo Coo Waltz (Play time between 16.5s to 20s at Vcc=1.5V)    |
| H66T32BA | Coo Coo Waltz (Play time between 15s to 18.5s at Vcc=1.5V)    |
| H66T68AA | It's A Small World (Play time between 30s to 36s at Vcc=1.5V) |
| H66T68BA | It's A Small World (Play time between 28s to 34s at Vcc=1.5V) |

Note: During time bases on circuit in fig-2 in page 3.



### Comment

Stress above those listed as "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only. Functions of this device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Any exposure to absolute maximum rating conditions for extended periods may affect device reliability.

### Electrical Characteristics

(VSS=0V, Ta=25°C, FOSC=65536Hz, unless otherwise specified)

| Parameter                   | Symbol             | Min  | Typ | Max   | Conditions   |
|-----------------------------|--------------------|------|-----|-------|--|
| Operating Voltage           | V <sub>DD</sub>    | 1.5V | -   | 3V    |  |
| Operating Current           | I <sub>D</sub>     | -    | -   | 20uA  | V <sub>DD</sub> =1.5V, O/P Open  |
| Drive Current               | I <sub>Drive</sub> | -    | -   | 200uA | V <sub>DD</sub> =1.3V, O/P=0.8V  |
| O/P Sink Current            | I <sub>Sink</sub>  | -    | -   | 5uA   | V <sub>DD</sub> =1.3V, O/P=0.5V Open                                     |
| Frequency Deviation Per Lot | ΔF/F               | -12% | -   | +33%  | V <sub>DD</sub> =1.5V  |
| Frequency Stability         | ΔF/F               | 10%  | -   | -     | (F <sub>OSC(1.6V)</sub> -F <sub>OSC(1.3V)</sub> )/F <sub>OSC(1.3V)</sub> |

### Functional Description

- **Oscillator Circuit**  
 The oscillation frequency is used for tone and beat generators. Its accuracy affects the quality of the music.
- **Tone Generator**  
 Tone frequencies are oscillator frequencies-M, where M is any even number from 64 to 256. Within a melody 14 scales can be selected including PAUSE code and END code. The tone generator is a programmed divider. The range of scales is from "C4" to "C6" and that for frequency varies from 258Hz to 23768Hz.
- **Rhythm Generator**  
 The rhythm generator is also a programmed divider. It contains 15 available rhythms as follows:

|       |       |       |   |
|-------|-------|-------|---|
| 1/4   | 1/2   | 3/4   | 1   |
| 1-1/4 | 1-1/2 | 1-3/4 | 2   |
| 2-1/4 | 2-1/2 | 2-3/4 | 3   |
| 3-1/4 | 3-1/2 | 3-3/4 | J. Four rhythms can be selected from these. |

- **Melody Rom**  
 The Mask ROM can memorize 64 notes with 6 bits. 4 bits are used for controlling the scale code and 2 bits are used for controlling the rhythm code.
- **Tempo Generator**  
 There are 15 available tempos in the H66T19/32/68 Series. The 15 tempos are: 128, 137, 148, 160, 175, 192, 213, 240, 274, 320, 480, 640, 960, 1920 J / minute.



### Application Circuits

Fig-1

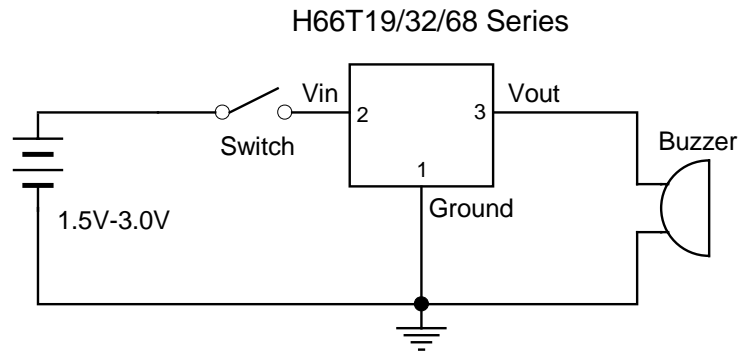


Fig-2

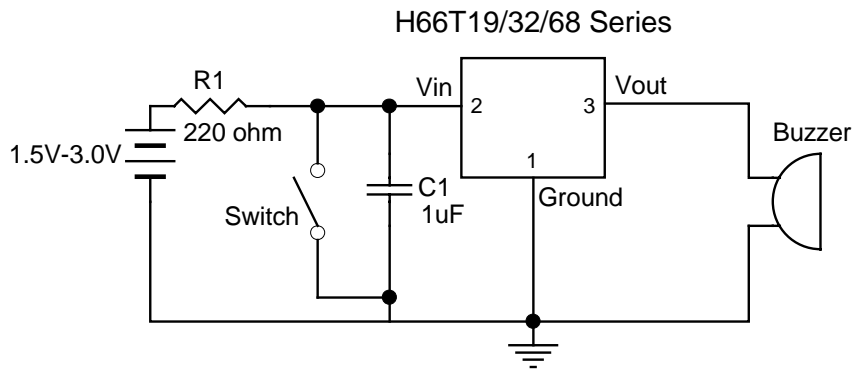


Fig-3

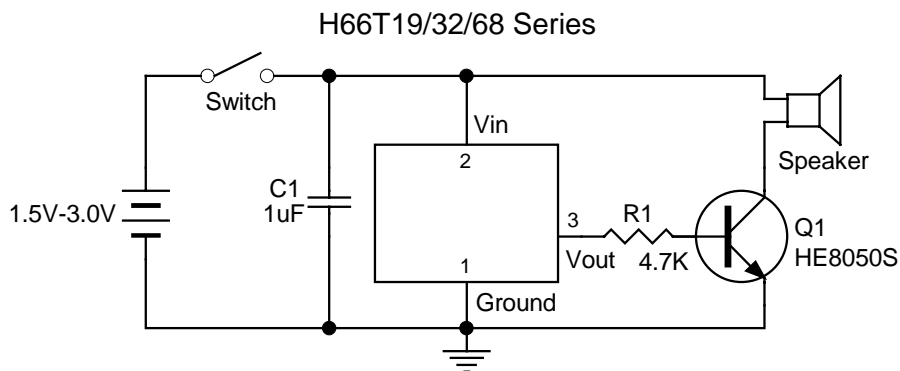
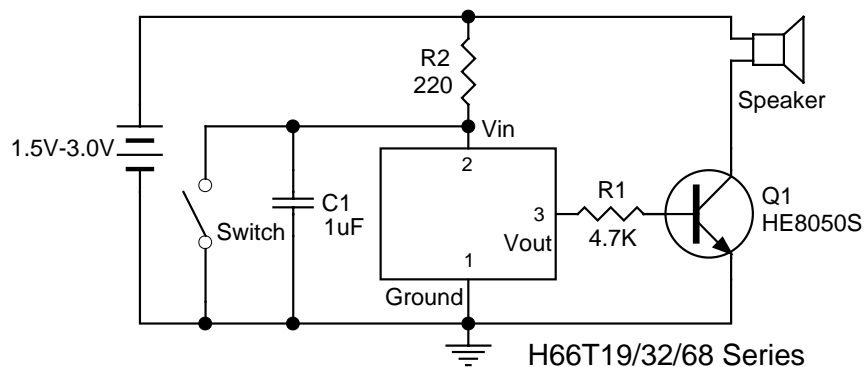
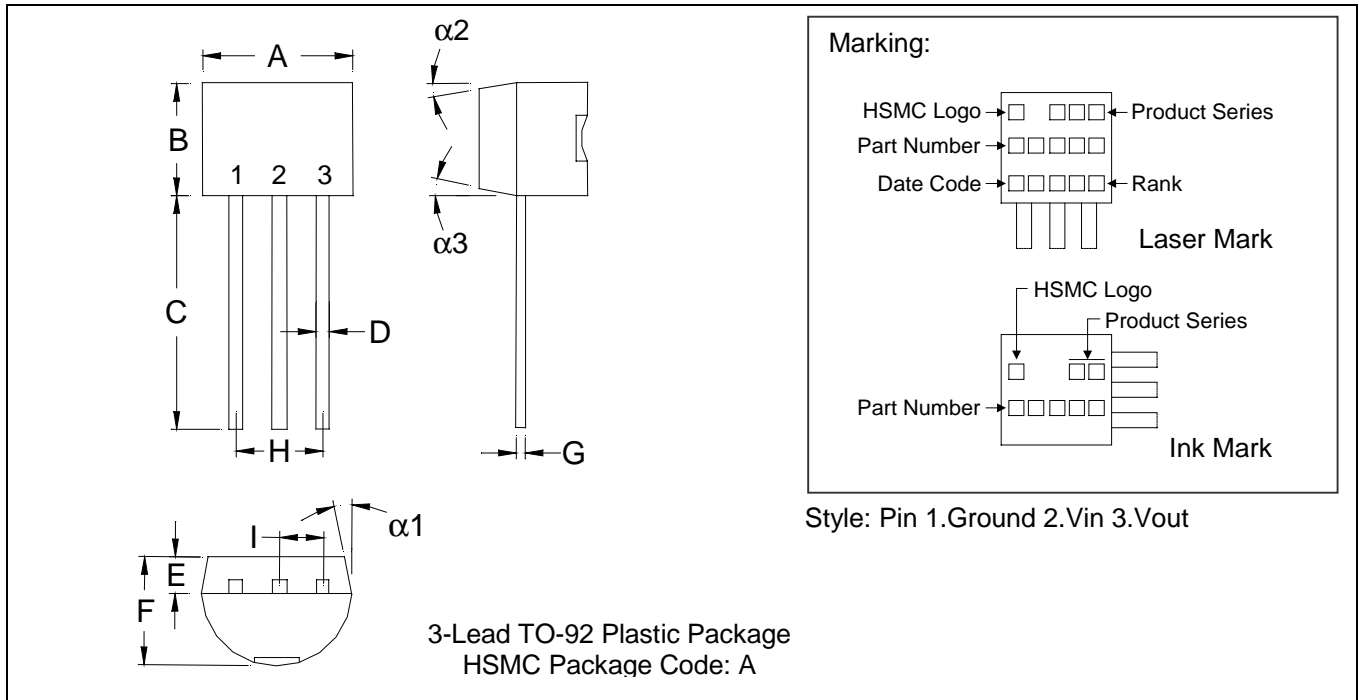


Fig-4





## TO-92 Dimension



\*: Typical

| DIM | Inches |         | Millimeters |       | DIM        | Inches |         | Millimeters |       |
|-----|--------|---------|-------------|-------|------------|--------|---------|-------------|-------|
|     | Min.   | Max.    | Min.        | Max.  |            | Min.   | Max.    | Min.        | Max.  |
| A   | 0.1704 | 0.1902  | 4.33        | 4.83  | G          | 0.0142 | 0.0220  | 0.36        | 0.56  |
| B   | 0.1704 | 0.1902  | 4.33        | 4.83  | H          | -      | *0.1000 | -           | *2.54 |
| C   | 0.5000 | -       | 12.70       | -     | I          | -      | *0.0500 | -           | *1.27 |
| D   | 0.0142 | 0.0220  | 0.36        | 0.56  | $\alpha 1$ | -      | *5°     | -           | *5°   |
| E   | -      | *0.0500 | -           | *1.27 | $\alpha 2$ | -      | *2°     | -           | *2°   |
| F   | 0.1323 | 0.1480  | 3.36        | 3.76  | $\alpha 3$ | -      | *2°     | -           | *2°   |

Notes: 1.Dimension and tolerance based on our Spec. dated Apr. 25,1996.  
 2.Controlling dimension: millimeters.  
 3.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.  
 4.If there is any question with packing specification or packing method, please contact your local HSMC sales office.

### Material:

- Lead: 42 Alloy; solder plating
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

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