# GL6850

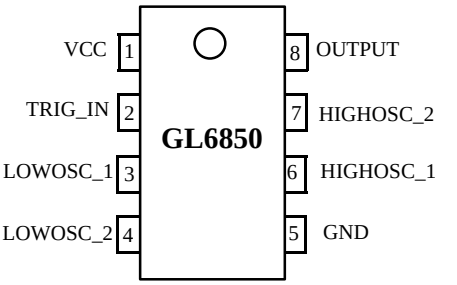
## TWO TONE RINGER

### Description

The GL6850 tone ringer is a monolithic device, which incorporates two oscillators, and output amplifier and a power supply control circuit. The oscillator frequencies can be adjusted over a wide range by selection of external components. One oscillator, normally operated at a low frequency, causes the second oscillator to alternate between its nominal frequency and a related higher frequency. The resulting output is a distinct warbling tone. The output amplifier will drive either a transformer coupled loudspeaker or a piezo-ceramic transducer.

The device can be powered from a telephone line or a fixed d.c. supply. The power control circuit has built-in hysteresis to prevent false triggering and rotary dial chirps. The GL6850 can be triggered externally under logic control.

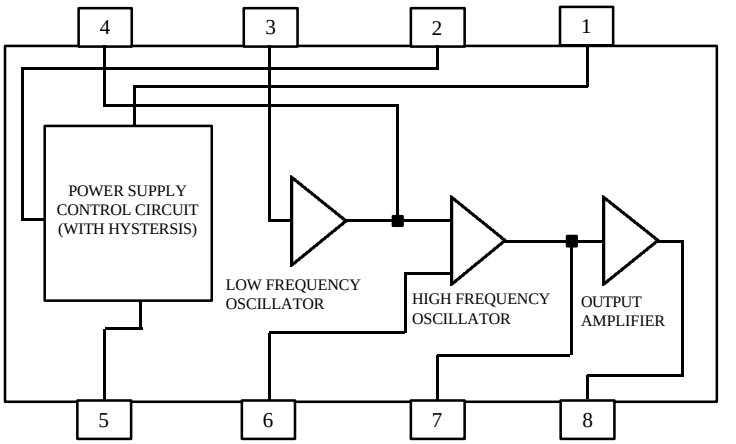
### Pin Configuration




### Features

- Low current consumption.
- Designed for telephone bell replacement.
- Small size MINIDIP package.
- Adjustable 2- frequency tone.
- Built-in hysteresis prevents false triggering and rotary dial CHIRPS.
- Alarms or other alerting devices.
- External triggering or ringer disable.
- Include ESD protection.

### Block Diagram



**Absolute Maximum Ratings (Ta = 25¡ É)**

| CHARACTERISTICS | SYMBOL | VALUE | UNIT |
|---|---|---|---|
| Supply Voltage | $V_{CC}$ | 30 | V |
| Power Dissipation | Po | 400 | mW |
| Operating Temperature | Topr | -25 to 65 | ¡ É |
| Storage Temperature | Tstg | -65 to 150 | ¡ É |

**Electrical Characteristics (Ta = 25¡ É)**

| CHARACTERISTICS | SYMBOL | TEST CONDITION | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Operating Supply Voltage | $V_{CC}$ | | - | - | 29.0 | V |
| Initiation Supply Voltage[1] | $V_{SI}$ | | 17 | 19 | 21 | V |
| Initiation Supply Current[1] | $I_{SI}$ | | 0.9 | 2.0 | 3.7 | mA |
| Sustaining Voltage[2] | $V_{SUS}$ | | 9.7 | 11.0 | 12.0 | V |
| Sustaining Current[2] | $I_{SUS}$ | | 0.4 | 1.0 | 2.0 | mA |
| Trigger Voltage[3] | $V_{TR}$ | $V_{CC}$ = 15 V | 9.5 | - | - | V |
| Trigger Current[3] | $I_{TR}$ | $V_{CC}$ = 15 V | 40 | - | 1000[5] | µA |
| Disable Voltage[4] | $V_{DIS}$ | $V_{CC}$ = 21 V | - | - | 0.8 | V |
| Disable Current[4] | $I_{DIS}$ | $V_{CC}$ = 21 V | -50 | - | - | µA |
| Output Voltage High | $V_{OH}$ | $V_{CC}$ =21V, $I_8$=-10mA Pin6 =6V,Pin7=GND | 17 | 19 | 21 | V |
| Output Voltage Low | $V_{OL}$ | $V_{CC}$ =21V, $I_8$= -10mA Pin6= GND,Pin7=6V | - | - | 2 | V |
| High Frequency 1 | $f_{H1}$ | R3=191K, C3=6800Pf | 461 | 461 | 563 | Hz |
| High Frequency 2 | $f_{H2}$ | R3=191K, C3=6800pF | 576 | 640 | 704 | Hz |
| Low Frequency | $f_L$ | R2=165K, C2=0.47µF | 9.0 | 10 | 11.0 | Hz |

* NOTE

1. Initial supply voltage ($V_{SI}$) is the supply voltage required to start the tone ringer oscillation.
2. Sustaining voltage ($V_{SUS}$) in the supply voltage required to maintain oscillation.
3. $V_{TR}$ and $I_{TR}$ are the conditions applied to trigger to start for $V_{SUS}$¡ Â$V_{CC}$¡ Â$V_{SI}$
4. $V_{DIS}$ and $I_{DIS}$ are the conditions applied to trigger to inhibit oscillation for $V_{SI}$¡ Â$V_{CC}$
5. Trigger current must be limited to this value externally.

## PIN DESCRIPTION

| PIN NUMBER | PIN FUNCTION | DESCRIPTION |
|---|---|---|
| PIN 1 | VCC | Operating supply D.C. voltage rectified from ringing signal. |
| PIN2 | TRIG_IN | Oscillator External Trigger/Inhibit pin (must beconnected through a current limiting resistor, which is used to program the slope of supply current vs voltage.) |
| PIN3 | LOWOSC_1 | Low Frequency Time Constant Adjustment pins $f_L$ is controlled externally by $R_2$ and $C_2$ $f_L = 1/1.289R_2C_2$ |
| PIN 4 | LOWOSC_2 | |
| PIN 5 | GND | Ground |
| PIN 6 | HIGHOSC_1 | High Frequency Time Constant Adjustment Pins $f_{H1}$ and $f_{H2}$ are controlled externally by $R_3$ and $C_3$. $f_{H1}=1/1.504R_3C_3$, $f_{H2} = 1/1.203R_3C_3$ |
| PIN 7 | HIGHOSC_2 | |
| PIN 8 | OUTPUT | Tone output |

## APPLICATON CIRCUIT