GL6840A

Electronic Two Tone Ringer

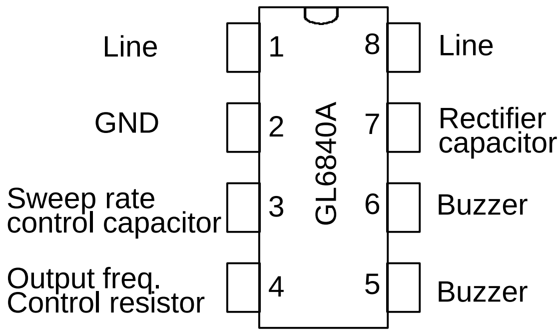
Description

GL6840A are monolithic integrated circuits designed to replace the mechanical bell in telephone sets, in connection with an electro acoustical converter. The device can drive either directly a piezo ceramic converter(buzzer) or a small loudspeaker. In this case a transformer is needed. The two tone frequencies generated are switched by an internal oscillator in a fast sequence and made audible across output amplifiers in the transducer, both tone frequencies and switching frequency can be externally adjusted. The supply voltage is obtained from the AC rings signal and the circuit is designed so that noise on the line or variations on the ringing signal cannot affect the correct operation of the devices.
The output bridge configuration allows to use a high impedance transducer with acoustical results much better than in a single ended configuration. The two outputs can also be connected independently to different converters or actuators(acoustical, opto and logic)

Features

- Low current consumption, in order to allow the parallel operation of 4 devices
- Integrated rectifier bridge with zener diodes to protect against overvoltages
- Little external circuitry
- Tone and switching frequencies adjustable by external components
- Integrated voltage and current hysteresis
- Bridge output configuration

Pin Configuration



(Top View)

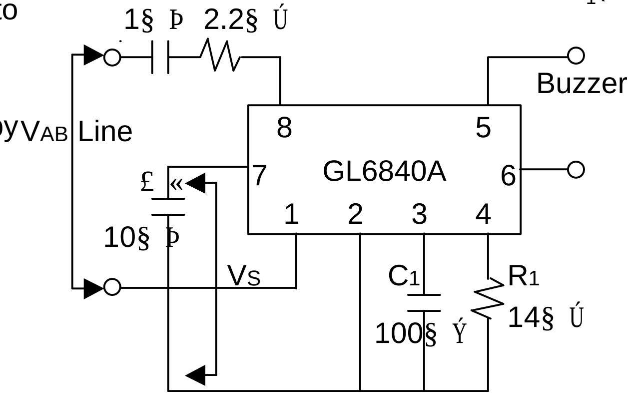
Absolute Maximum Ratings

Calling Voltage(f=50§ Ô) continuous	120Vrms
Calling Voltage(f=50§ Ô) 5s ON/10s OFF	200Vrms
Supply Current	22§ Ì
Operating Temperature	-20 to 75¡ É
Storage Temperature	-65 to 150¡ É

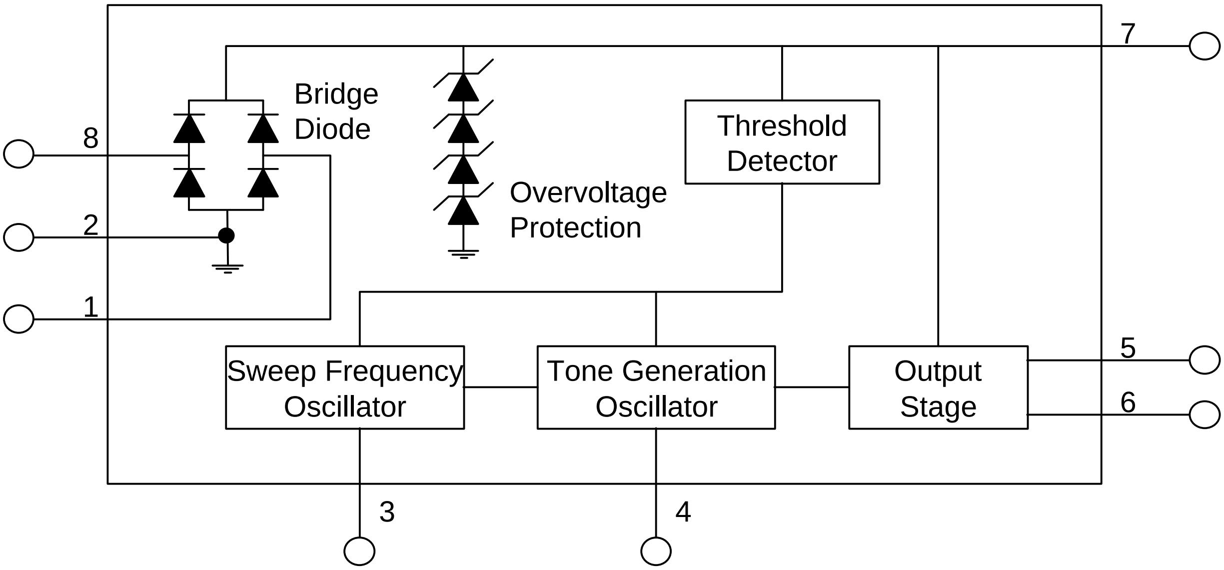
Test Circuit

For GL6840A $f_1 = \frac{3.26 \times 10^4}{R_1(§ Ú)} \times (2 - e^{\frac{14 - R_1(§ Ú)}{95}})$

$f_2 = 0.717 \times f_1$ $f_{sweep} = \frac{1000}{C_1(§ Ý)}$



Block Diagram



Pin Description

PIN	NAME	DESCRIPTION
1,8	LINE	Input terminals to bridge diode. The AC ringing signal from the telephone line drives the ringer through bridge.
2	GND	Ground
3	Sweep Rate Control Capacitor	This pin is connected to external capacitor to control the sweeping frequency(f_{SWEEP})
4	Output Frequency Control Resistor	This pin is connected to external resistor to control the two tone frequency(f_1, f_2)
5,6	Buzzer	The tone ringer output terminals which have inverse output phase each others.
7	Rectifier Capacitor	This pin is connected to external capacitor to change AC ringing signal into DC voltage.

Electrical Characteristics : T_A=25¡ Éunless otherwise specified

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_S(pin7)				26	V
Current Consumption witho load(pin 1-8)	I_B	V_S=16.5 to 29.5V		1.2	1.8	§ Ì
Activation Voltage	V_{ON}		12.3	13.3	14.4	V
Sustaining Voltage	V_{OFF}		8	8.9	9.7	V
Differential Resistance in OFF condition(pin 8-1)	R_D		6.4			§ Ú
Output Voltage Swing	V_{OUT}			V_S-5		V
Short Circuit Current (pin 5-6)	I_{OUT}	V_S=20V		35		§ Ì
Voltage Drop between pin 8-1 and pin 7-2	V_D			3		V
Output Frequencies F_{OUT1} F_{OUT2}	 F_1 F_2	V_S=26V R_1=14§ V_S=0V V_S=6V	 1.96 1.42	 2.3 1.67	 2.65 1.92	§ Õ
Programming Resistor Ran			8		20	§ Ú
Sweep Frequency	F_{SWEEP}	C_1=100§ Ý	7	10	13	§ Ô

Typical Application

Figure1 : Single output applied pin#5

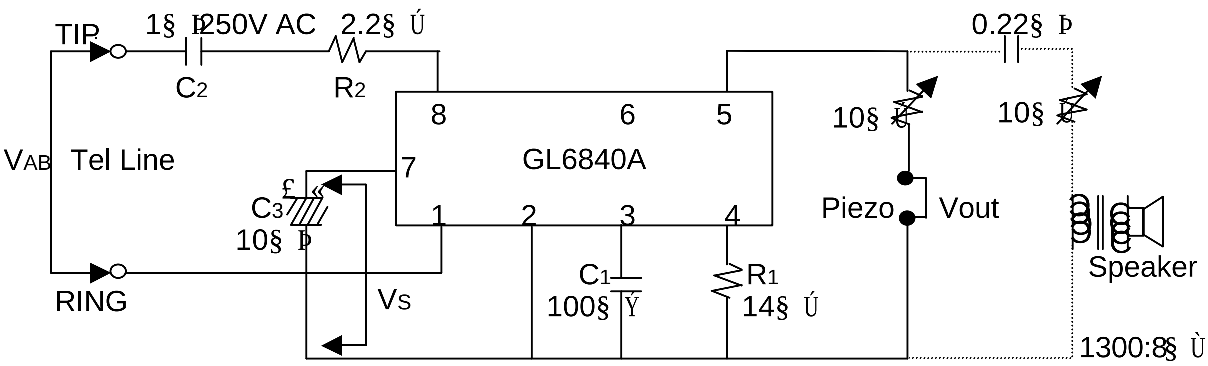
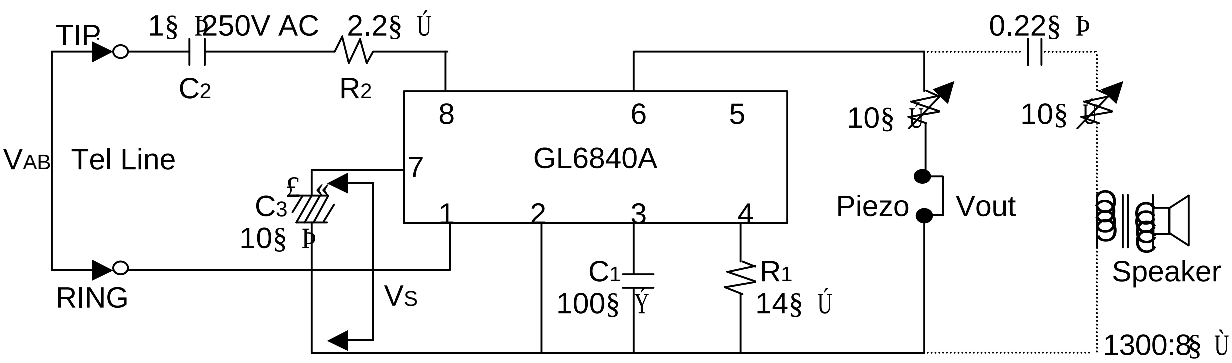
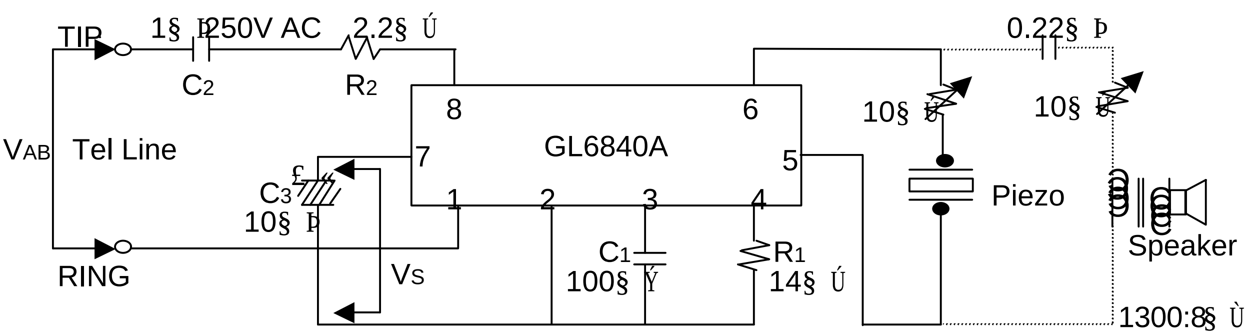


Figure2 : Single output applied pin#6



Note) Using a big size buzzer, pin#6 output is better than pin#5 output.

Figure3 : Differential output



GL6840B

Electronic Two Tone Ringer

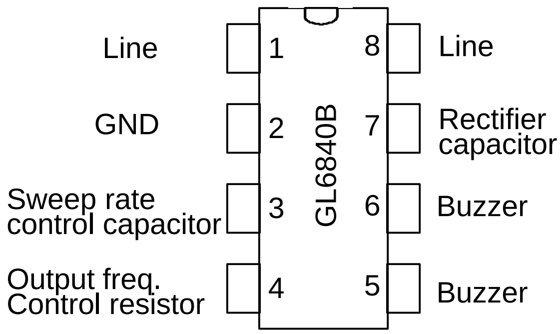
Description

GL6840B are monolithic integrated circuits designed to replace the mechanical bell in telephone sets, in connection with an electro acoustical converter. The device can drive either directly a piezo ceramic converter(buzzer) or a small loudspeaker. In this case a transformer is needed. The two tone frequencies generated are switched by an internal oscillator in a fast sequence and made audible across output amplifiers in the transducer, both tone frequencies and switching frequency can be externally adjusted. The supply voltage is obtained from the AC rings signal and the circuit is designed so that noise on the line or variations on the ringing signal cannot affect the correct operation of the devices.
The output bridge configuration allows to use a high impedance transducer with acoustical results much better than in a single ended configuration. The two outputs can also be connected independently to different converters or actuators(acoustical, opto and logic)

Features

- Low current consumption, in order to allow the parallel operation of 4 devices
- Integrated rectifier bridge with zener diodes to protect against overvoltages
- Little external circuitry
- Tone and switching frequencies adjustable by external components
- Integrated voltage and current hysteresis
- Bridge output configuration

Pin Configuration



(Top View)

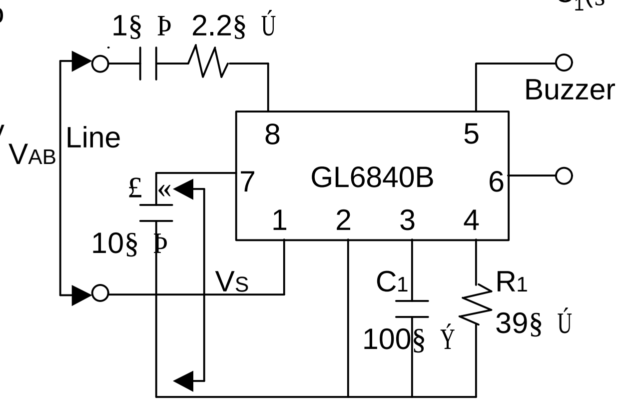
Absolute Maximum Ratings

Calling Voltage(f=50§ Ð) continuous	120Vrms
Calling Voltage(f=50§ Ð) 5s ON/10s OFF	200Vrms
Supply Current	22§ Ì
Operating Temperature	-20 to 75¡ É
Storage Temperature	-65 to 150¡ É

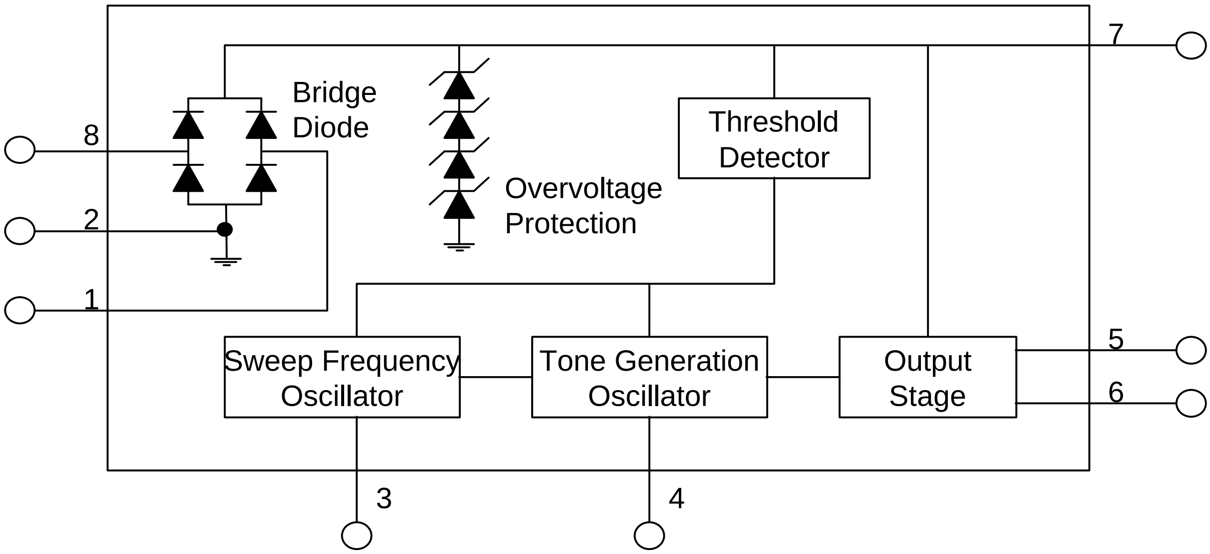
Test Circuit

For GL6840B $f_1 = \frac{3.32 \times 10^4}{R_1(§\ Ú)} \times (2 - e^{\frac{39 - R_1(§\ Ú)}{358}})$

$f_2 = 0.717 \times f_1$ $f_{sweep} = \frac{1000}{C_1(§\ Ý)}$



Block Diagram



Pin Description

PIN	NAME	DESCRIPTION
1,8	LINE	Input terminals to bridge diode. The AC ringing signal from the telephone line drives the ringer through bridge.
2	GND	Ground
3	Sweep Rate Control Capacitor	This pin is connected to external capacitor to control the sweeping frequency(f_{SWEEP})
4	Output Frequency Control Resistor	This pin is connected to external resistor to control the two tone frequency(f_1, f_2)
5,6	Buzzer	The tone ringer output terminals which have inverse output phase each others.
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Electrical Characteristics : T_A=25¡ Éunless otherwise specified

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Differential Resistance in OFF condition(pin 8-1)	R_D		6.4			§ Ú
Output Voltage Swing	V_{OUT}			V_S-5		V
Short Circuit Current (pin 5-6)	I_{OUT}	V_S=20V		35		§ Ì
Voltage Drop between pin 8-1 and pin 7-2	V_D			3		V
Output Frequencies		V_S=26V R_1=39§				
F_{OUT1}	F_1	V_S=0V	723	850	978	§ Ô
F_{OUT2}	F_2	V_S=6V	519	610	702	
Programming Resistor Ran			27		51	§ Ú
Sweep Frequency	F_{SWEEP}	C_1=100§ Ý	7	10	13	§ Ô

Typical Application

Figure1 : <u>Single output applied pin#5</u>

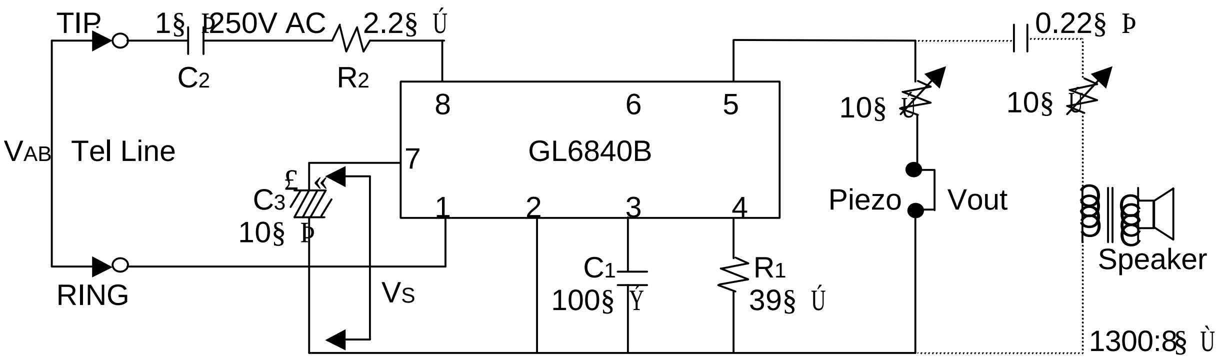
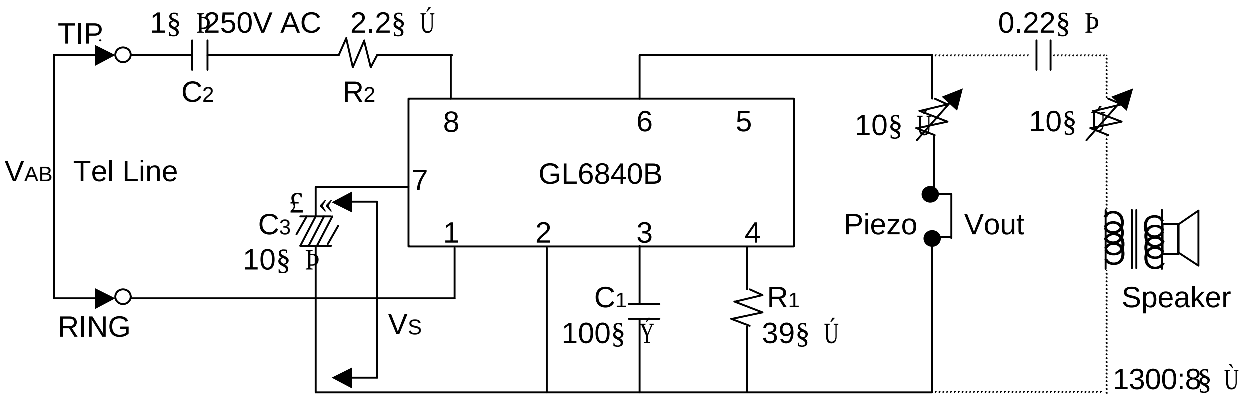


Figure2 : <u>Single output applied pin#6</u>



Note) Using a big size buzzer, pin#6 output is better than pin#5 output.

Figure3 : <u>Differential output</u>