

## ELECTRONIC TWO – TONE RINGER

### 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.

### Description

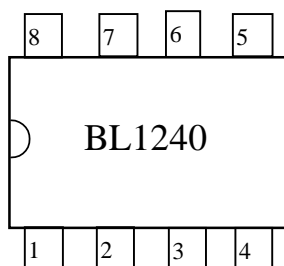
BL1240 is a monolithic integrated circuit designed to replace mechanical bell in telephone sets in connection with an electro-acoustical converter. It can drive directly a piezoceramic converter (buzzer) or a dynamic loudspeaker.

The output current capability of BL1240 is higher than standard ringer. For driving a dynamic loud-speaker BL1240 can simply use a decoupling capacitor, thus eliminating the usual transformer.

No current limitation is provided on the output stage of BL1240, so a minimum load DC of 50 ohm is advised, in series with a proper capacitor.

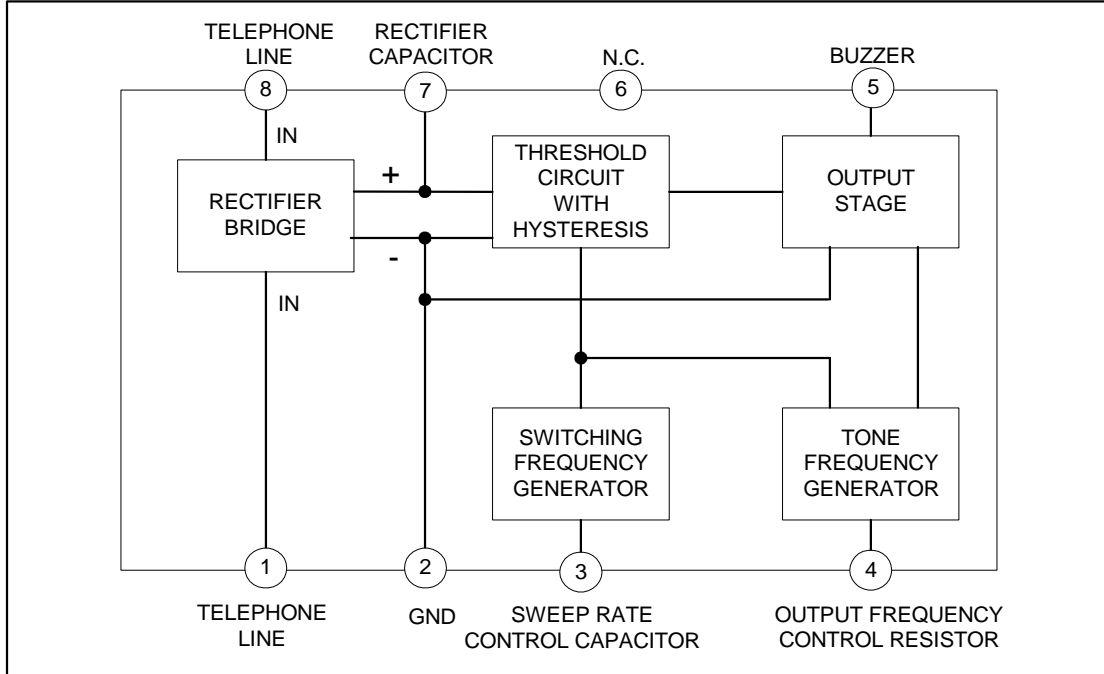
The two tone frequencies generated are switched by an internal oscillator in a fast sequence and made audible across an output amplifier in the loud-speaker, both tone frequencies and the switching frequency can be externally adjusted.

The supply voltage is obtained from the AC ring signal and the circuit is designed so that noise on the line or variations of the ringing signal cannot affect correct operation of the device.

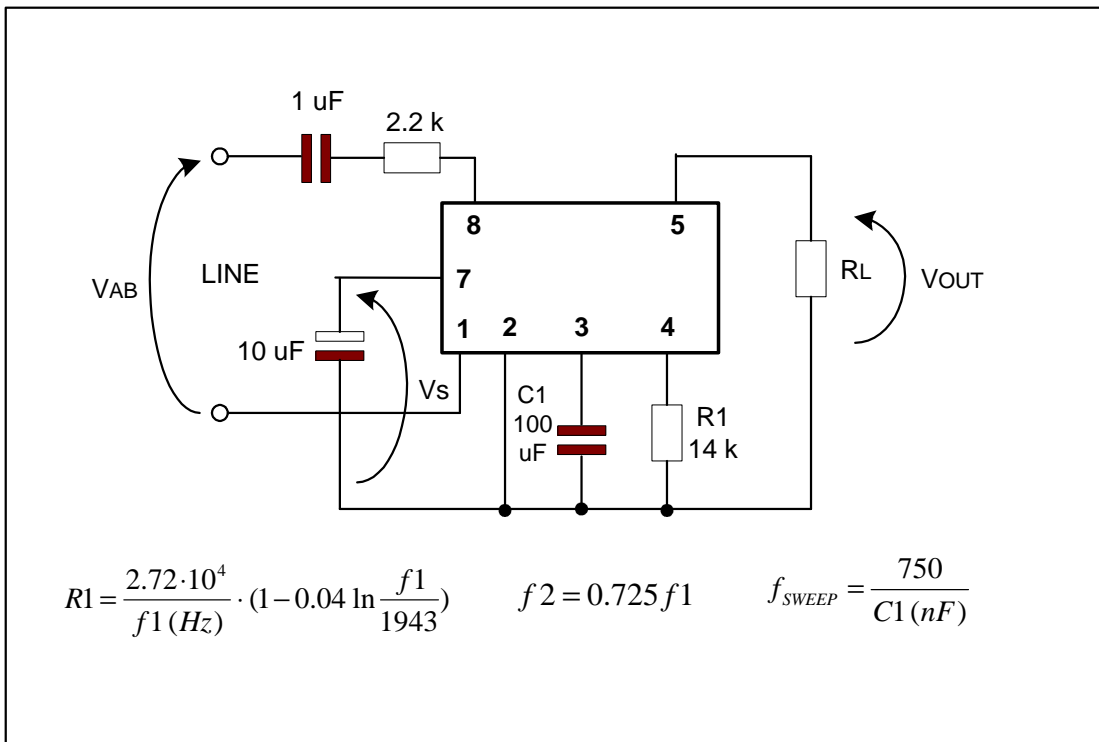
**Pin connection**


Pin	Symble	Function Description
1	LINE	Telephone line
2	GND	Ground
3	C <sub>sw</sub>	Sweep rate control capacitor
4	R <sub>A</sub>	Output frequency control resistor
5	OUT	Output frequency
6	NC	Not connected
7	C <sub>r</sub>	Rectifier capacitor
8	LINE	Telephone line

**BLOCK DIAGRAM**



**Figure 1 : Test Circuit**



**ABSOLUTE MAXIMUM RATING**

Parameter	Symbol	Value	Unit
Calling Voltage (f = 50 Hz) Continuous	VAB(ON)	120	Vrms
Calling Voltage (f = 50 Hz) 5s ON/10s OFF	VAB(ON/OFF)	200	Vrms
DC Supply Current	IDC	30	mA
Operating Temperature	Tamb	-20 to +70	°C
Storage and Junction Temperature	Tstg	-65 to +150	°C

( Ta = 25 °C unless otherwise specified )

**RECOMMENDED OPERATING CONDITION**

( Ta = 25 °C unless otherwise specified )

Parameter	Symbol	Min.	Typ.	Max.	Unit
Calling Voltage (f = 50 Hz) Continuous	VAB (ON)		75	120	Vrms

**ELECTRICAL CHARACTERISTICS ( Ta = 25 °C )**

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
DC Power Supply Voltage	VDC				26	V
Current Consumption without Load (pins 8-1)	IDCO	VDC = 9.3 to 2.5 V		1.5	1.8	mA
Activation Voltage	VON		12.2		13.2	V
Sustaining Voltage	VOFF		8		9	V
Differential Resistance in OFF Condition (pins 8-1)	RD		6.4			k $\Omega$
Output Voltage Swing	VOUT		VDC - 5			V
Short Circuit Current (pins 5-2)	IOUT	VDC = 20 V, RL = 250 $\Omega$		70		mA

**AC OPERATION**

Output Frequency	f1	VDC = 26 V, RA = 14 k $\Omega$ , V3 = 0V	1.74		2.14	kHz
Output Frequency	f2	VDC = 26 V, RA = 14 k $\Omega$ , V3 = 6V	1.22		1.6	kHz
	f1 / f2		1.33		1.43	
Sweep Frequency	f sw	VDC = 26 V, RA = 14 k $\Omega$ , Csw = 0.1 $\mu$ F		7.5		Hz

Figure 2 : Typical Application with BUZZER

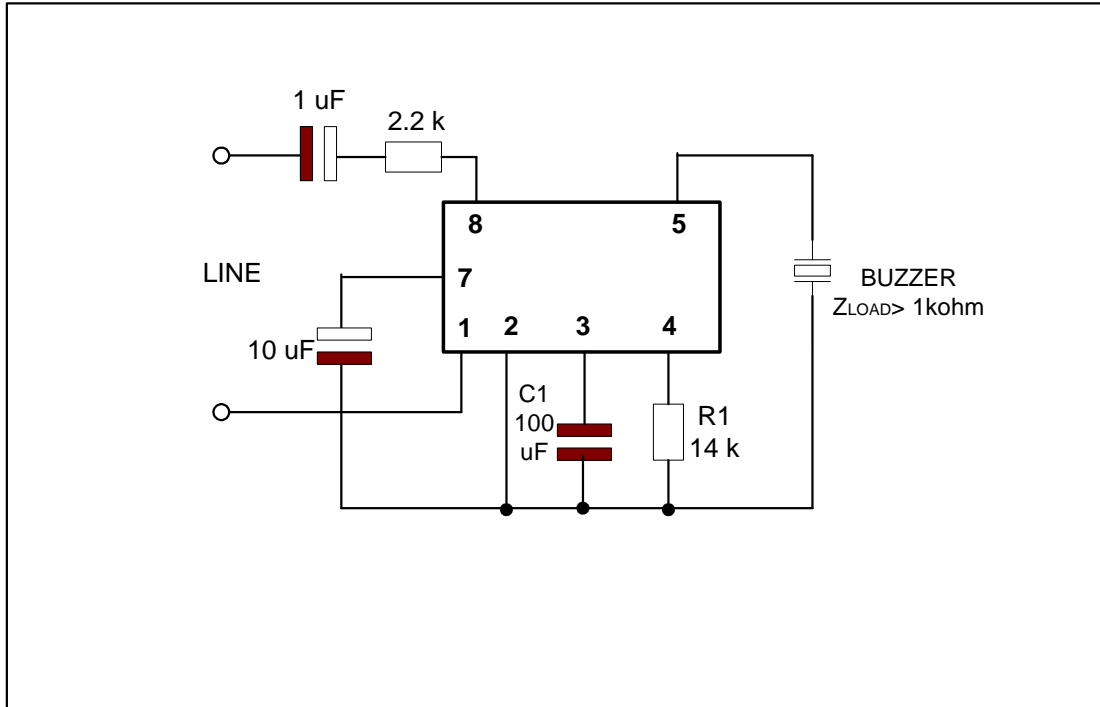


Figure 3: Typical Application with Loudspeaker (no transformer needed)

