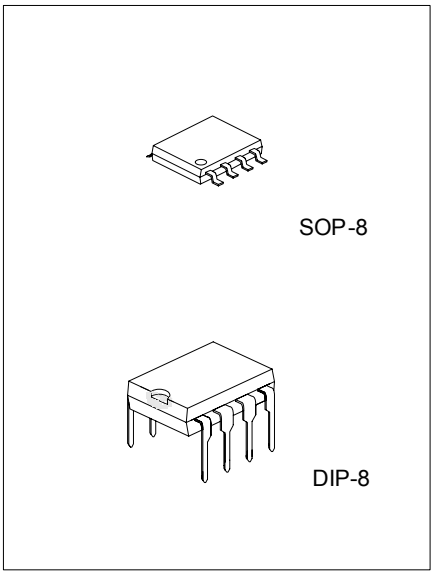
LS1240A

LINEAR INTEGRATED CIRCUIT

ELECTRONIC TONE RINGER WITH BUILT-IN BRIDGE RECTIFIER



*Pb-free plating product number: LS1240AL

■ DESCRIPTION

The UTC **LS1240A** is monolithic integrated circuits and designed to be as a telephone ringer. It can drive a piezo-ceramic converter(buzzer) directly. The output current capacity of UTC **LS1240A** is higher than standard ringer. For driving a dynamic loudspeaker, UTC **LS1240A** needs only a decoupling capacitor to replace the usual transformer in use.

■ FEATURES

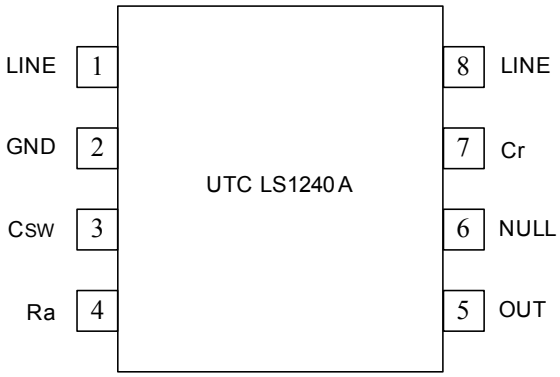
* Low current consumption.
* Integrated rectifier bridge with zener diodes to overvoltage Protection.
* Minimum external circuitry.
* Both frequencies of tone and switching are adjustable by external components.
* Integrated voltage and current hysteresis.

■ ORDERING INFORMATION

Ordering Number		Package	Packing
Normal	Lead Free Plating		
LS1240A-D08-T	LS1240AL-D08-T	DIP-8	Tube
LS1240A-S08-R	LS1240AL-S08-R	SOP-8	Tape Reel
LS1240A-S08-T	LS1240AL-S08-T	SOP-8	Tube

LS1240AL-D08-T (1)Packing Type (2)Package Type (3)Lead Plating	(1) R: Tape Reel, T: Tube (2) D08: DIP-8, S08: SOP-8 (3) Lead Free Plating, Blank: Pb/Sn

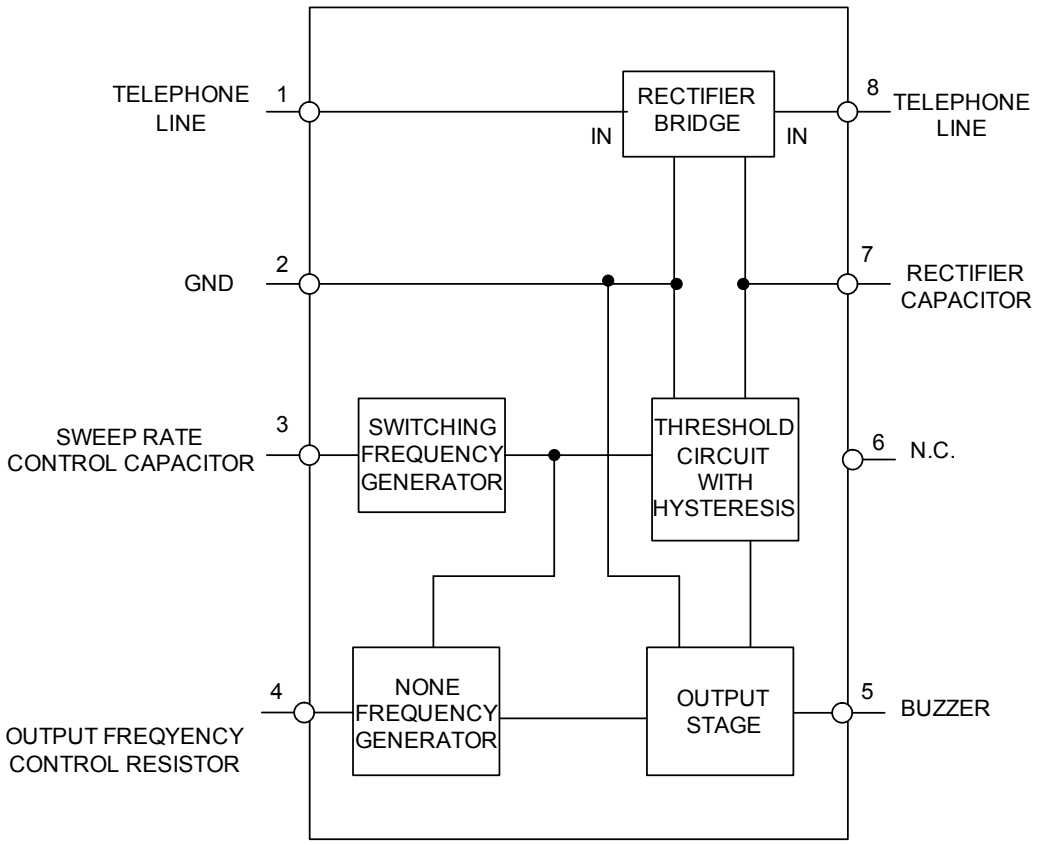
■ PIN CONFIGURATION



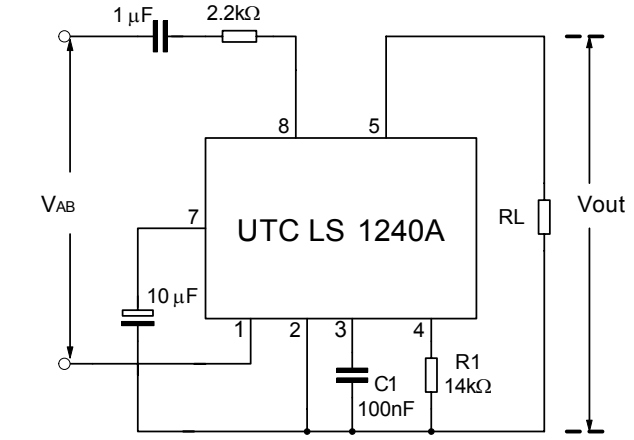
■ PIN DESCRIPTION

PIN	PIN NAME	DESCRIPTION
1	LINE	Connecting pin to B-wire
2	GND	Ground
3	Csw	Sweep rate control capacitor
4	Ra	Output frequency control resistor
5	OUT	Buzzer
6	NULL	Not connected
7	Cr	Rectifier capacitor
8	LINE	Connecting pin to A-wire

■ BLOCK DIAGRAM



■ TEST CIRCUIT



$$R1=\frac{27200}{f1(Hz)}*(1-0.04\ln\frac{f1}{1943}) \qquad f2=0.725f1 \qquad f_{SWEEP}=\frac{750}{C1(nF)}$$

■ ABSOLUTE MAXIUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Calling Voltage (f=50Hz) Continuous	V_{AB0}	120	Vrms
Calling Voltage (f=50Hz) (5s ON/10s OFF)	V_{AB}	200	Vrms
Supply Current	I_{DC}	30	mA
Operating Temperature	T_{OPR}	-40 ~ +70	°C
Storage Temperature	T_{STG}	-65 ~ +150	°C

Note Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

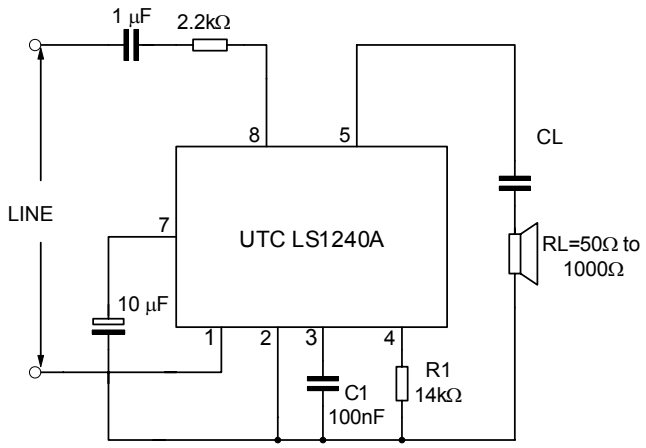
■ ELECTRICAL CHARACTERISTICS (Ta= 25℃, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_S				26	V
Current Consumption without load	I_B	V_S=9.3 to 25V		1.5	1.8	mA
Activation Voltage	V_{ON}		12		13.5	V
Sustaining Voltage	V_{OFF}		7.8		9.3	V
Differential Resistance in OFF Condition	R_D		6.4			kΩ
Output Voltage Swing	V_{OUT}			V_S-5		V
Short Circuit Current	I_{OUT}	V_S=20V, R_L=250Ω		70		mA
AC Operation						
Output Frequencies (Vs=26V,R1=14kΩ)	f_{OUT1}	V_3=0V	1.55		2.53	kHz
	f_{OUT2}	V_3=6V	1.08		1.9	
Fout1/Fout2			1.33		1.43	
Programming Resistor Range			8		56	kΩ
Sweep Frequency		C1=100nF,R1=14kΩ	5.25	7.5	9.75	Hz

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Thermal Resistance Junction to Ambient	SOP-8	θ_{JA}	150	℃/W
	DIP-8		100	

■ TYPICAL APPLICATION CIRCUIT



No current limitation is provided on the output stage of UTC LS1240A, so a minimum load DC of 50 ohms is advised.

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