



LS1240A

LINEAR INTEGRATED CIRCUIT

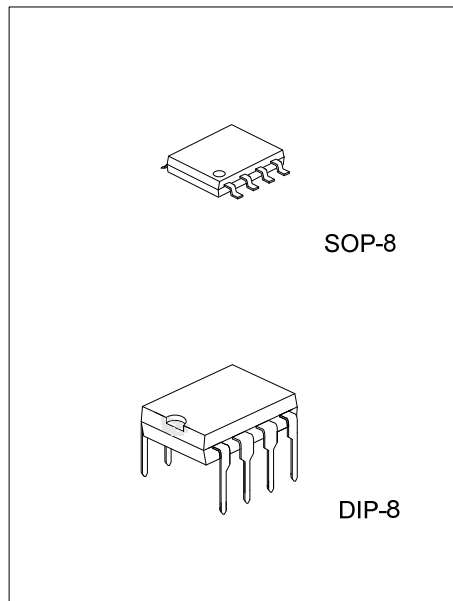
ELECTRONIC TONE RINGER WITH BUILT-IN BRIDGE RECTIFIER

■ 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
Lead Free	Halogen Free		
LS1240AL-D08-T	LS1240AG-D08-T	DIP-8	Tube
-	LS1240AG-S08-R	SOP-8	Tape Reel

LS1240AL-D08-T

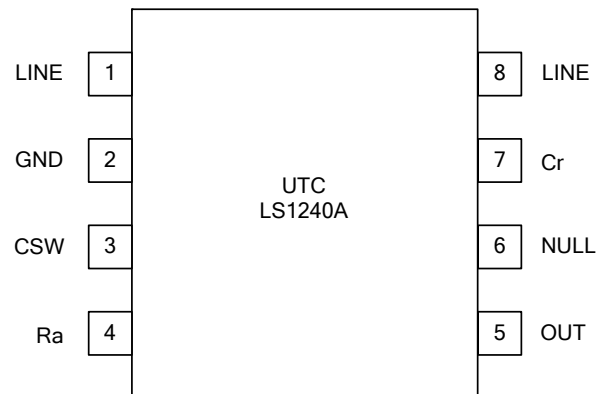
- (1) Packing Type
- (2) Package Type
- (3) Green Package

- (1) T: Tube, R: Tape Reel
- (2) D08: DIP-8, S08: SOP-8
- (3) L: Lead Free, G: Halogen Free and Lead Free

■ MARKING

DIP-8	SOP-8
UTC □□□□ → Date Code L: Lead Free G: Halogen Free □□ → Lot Code	UTC □□□□ → Date Code ● □□ → Lot Code

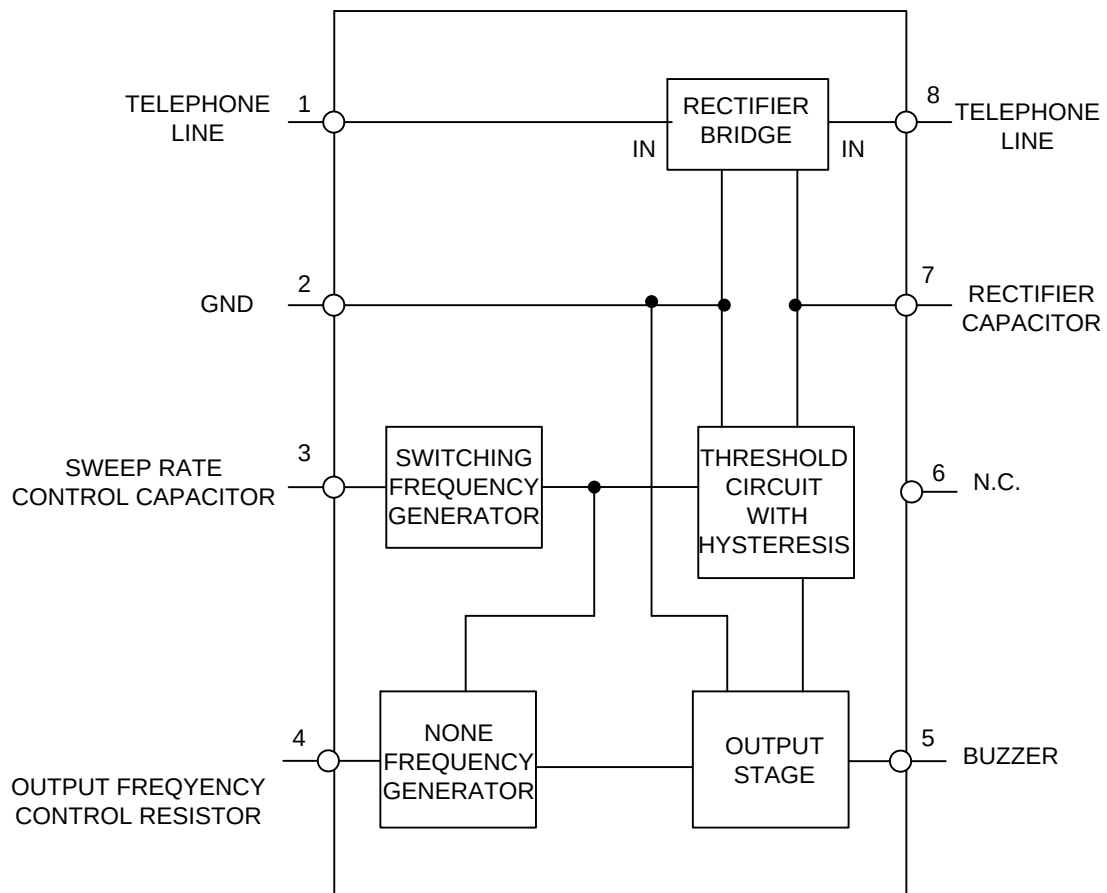
■ PIN CONFIGURATION



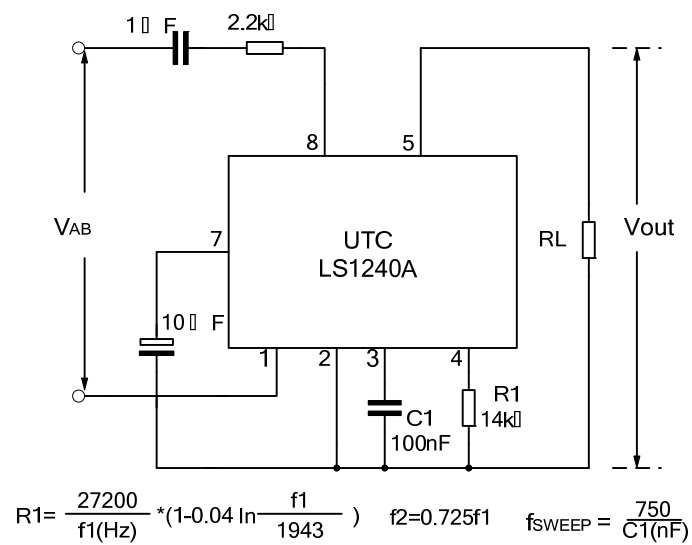
■ PIN DESCRIPTION

PIN NO.	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



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Calling Voltage (f=50Hz) Continuous	V_{AB0}	120	V_{RMS}
Calling Voltage (f=50Hz) (5s ON/10s OFF)	V_{AB}	200	V_{RMS}
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.

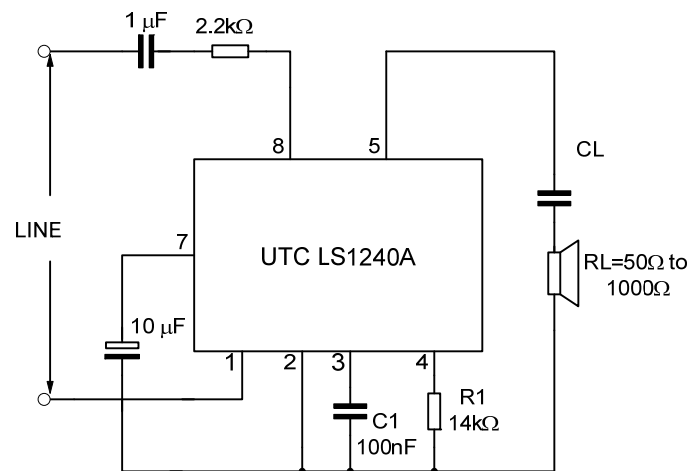
■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	SOP-8	150	°C/W
	DIP-8	100	

■ ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_S				26	V
Current Consumption without load	I_B	$V_S = 9.3 \text{ to } 25\text{V}$		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			k Ω
Output Voltage Swing	V_{OUT}			$V_S - 5$		V
Short Circuit Current	I_{OUT}	$V_S = 20\text{V}, R_L = 250\Omega$		70		mA
AC OPERATION						
Output Frequencies ($V_S = 26\text{V}, R_1 = 14\text{k}\Omega$)	f_{OUT1}	$V_3 = 0\text{V}$	1.55		2.53	kHz
	f_{OUT2}	$V_3 = 6\text{V}$	1.08		1.9	
F_{out1}/F_{out2}			1.33		1.43	
Programming Resistor Range			8		56	k Ω
Sweep Frequency		$C_1 = 100\text{nF}, R_1 = 14\text{k}\Omega$	5.25	7.5	9.75	Hz

■ 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.

UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.