



TA31002

LINEAR INTEGRATED CIRCUIT

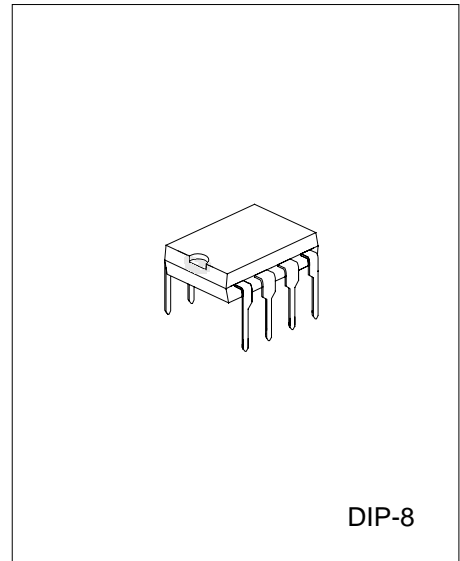
TELEPHONE TONE RINGER

■ DESCRIPTION

The UTC **TA31002** is a bipolar integrated circuit designed for telephone bell replacement. It can also be used as alarms or other alerting devices.

■ FEATURES

- *Current consumption is small. (at no-load)
- *Package is compaction. (DIP-8 pin)
- *Oscillation frequency is variable.
- *Built-in threshold circuits prevent false triggering due to power noise as well as "chirps" due to rotary dial.
- *Few external components.



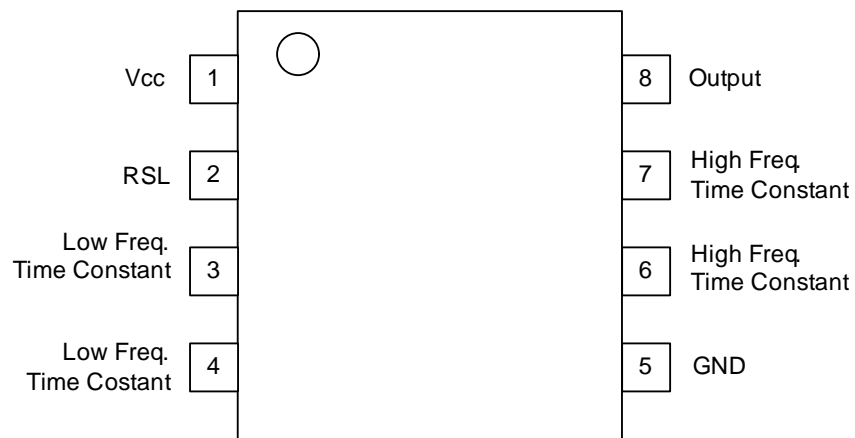
*Pb-free plating product number: TA31002L

■ ORDERING INFORMATION

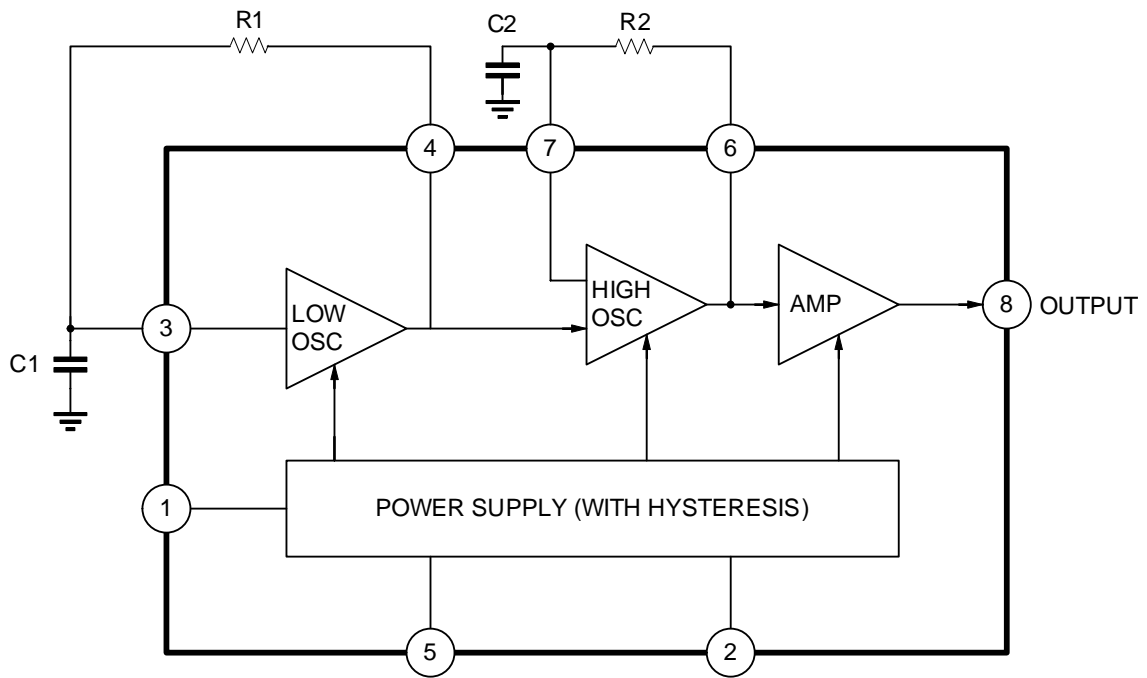
Ordering Number		Package	Packing
Normal	Lead Free Plating		
TA31002-D08-T	TA31002L-D08-T	DIP-8	Tube

<p>TA31002L-D08-T</p> <p>(1)Packing Type (2)Package Type (3)Lead Plating</p>	<p>(1) T: Tube (2) D08: DIP-8 (3) Lead Free Plating Blank: Pb/Sn</p>
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■ PIN CONFIGURATIONS



■ BLOCK DIAGRAM



Note: R1, R2, C1 and C2 are parts externally mounted

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Power Supply Voltage	V _{CC}	30	V
Power Dissipation	P _D	800	mW
Operating Temperature	T _{OPR}	-40 ~ +85	°C
Storage Temperature	T _{STG}	-55 ~ +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°C)

(All voltage referenced to GND unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Operating Voltage	V _{OPR}				29	V
Initiation Supply Voltage	V _{SI}	(note 1)	17	19	21	V
Sustaining Supply Voltage	V _{SUS}	(note 2)	10.5	12	-	V
Initiation Current Consumption	I _{SI}	No-Load	1.4	3.3	4.2	mA
Sustaining Current Consumption	I _{SUS}	No-Load	0.7	1.4	2.5	mA
Oscillation Frequency (not3)	f _L	C1=0.47μF, R1=165kΩ	9	10	11	Hz
	f _{H1}	C2=6800pF, R2=191kΩ	461	512	563	Hz
	f _{H2}		576	640	703	Hz
Output Voltage "H" Level	V _{OH}	V _{CC} =24V, V _{OH} =-10mA PIN7=GND	20.0	21.5	22.5	V
Output Voltage "L" Level	V _{OL}	V _{CC} =24V, V _{OL} =10mA PIN7=7V	0.7	1.0	2.0	V

*Note : 1. Initiation supply voltage (V_{SI}) is a supply voltage required to start oscillation of the tone ringer.

2. Sustaining supply voltage (V_{SUS}) is a supply voltage required to maintain oscillation of the tone ringer.

3. Oscillation frequency is determined by the following equations 1, 2, and 3.

$$(1) f_L = 1/1.234 \cdot R1 \cdot C1 \text{ (Hz)} ; (2) f_{H1} = 1/1.515 \cdot R2 \cdot C2 \text{ (Hz)} ; (3) f_{H2} = 1.24 f_{H1} \text{ (Hz)}$$

APPLICATION NOTE

In the UTC **TA31002** the initiation current consumption (I_{si}) can be changed by using the RSL terminal. The resistor RSL is connected to GND from PIN2 as shown in fig.1. Further, the initiation current consumption (I_{si}) can be changed by changing the value of RSL.

Fig.2 show the graph of V_s - I_s characteristic at the time when RSL has been changed to three values. The V_s - I_s characteristic in UTC **TA31002** at the time when $R_{SL}=6.8k\Omega$ coincides with that at the time when PIN2 of the TA31001 has been used at an open state.

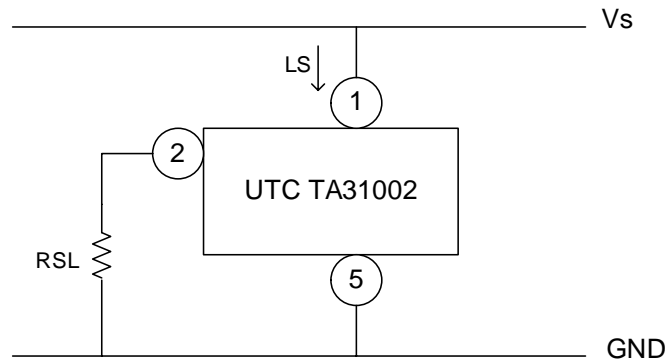


FIG.1

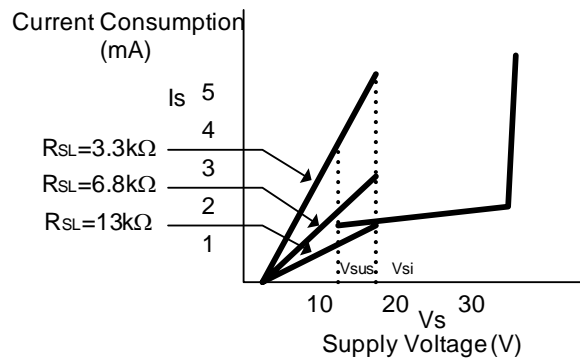
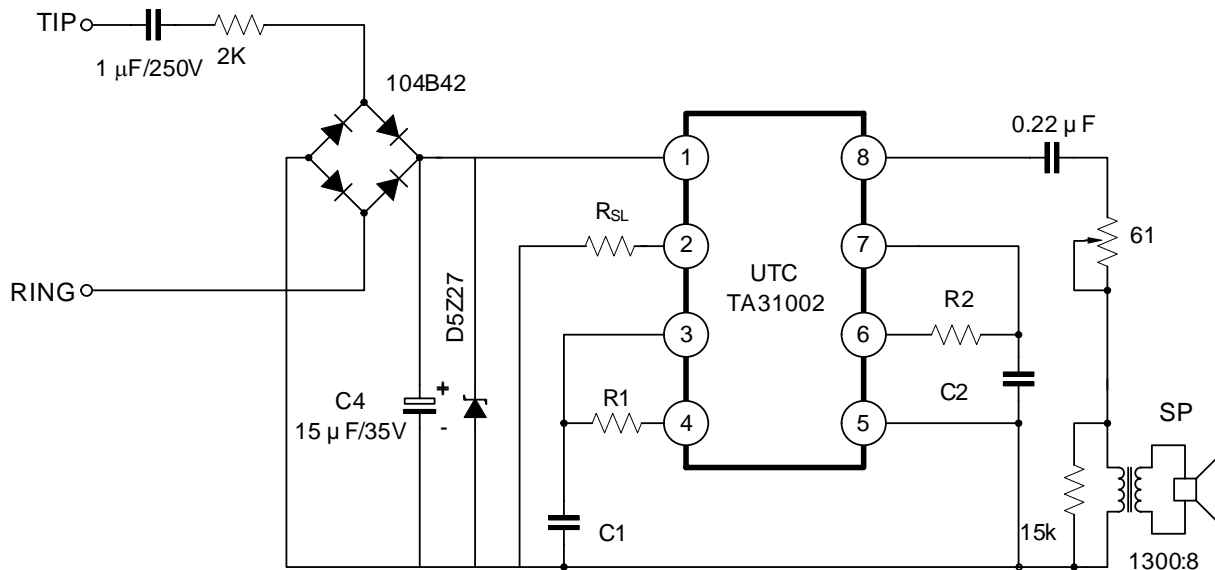


FIG.2

APPLICATION CIRCUIT



$$f_L = 1/1.234R_1 \cdot C_1$$

$$f_{H1} = 1/1.515R_2 \cdot C_2$$

$$f_{H2} = 1.24f_{H1}$$

when:

$$R_1 = 165K\Omega \quad R_2 = 191K\Omega$$

$$C_1 = 0.47\mu F/16V \quad C_2 = 0.0068\mu F/16V$$

$$f_L \cong 10Hz \quad f_{H1} \cong 500Hz \quad f_{H2} \cong 630Hz$$

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