

# UTC TA31002 LINEAR INTEGRATED CIRCUIT

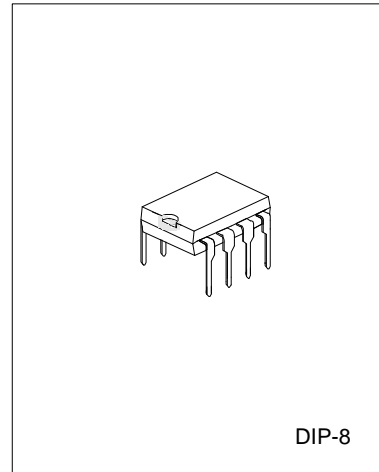
## TELEPHONE TONE RINGER

### DESCRIPTION

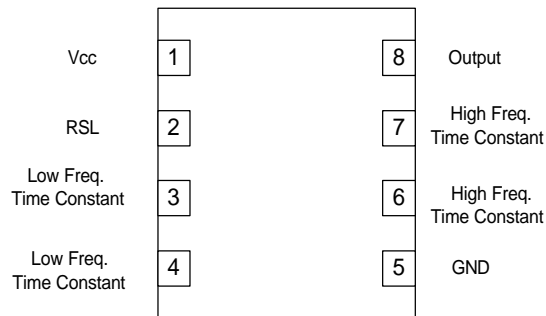
The UTC TA31002 is a bipolar integrated circuit designed for telephone bell replacement. It can also be used as alarms or other alerting devices.

### 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 componens.



### PIN CONFIGURATIONS

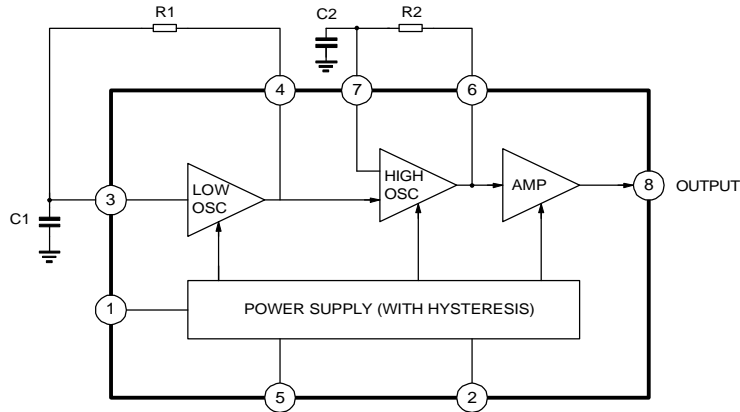


### ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	VALUE	UNIT
Power Supply Voltage	Vcc	30	V
Power Dissipation	Pd	800	mW
Operating Temperature	Topr	-40 to 85	°C
Storage Temperature	Tstg	-55 to 150	°C

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## BLOCK DIAGRAM



Note: R1, R2, C1 and C2 are partsexternally mounted

## ELECTRICAL CHARACTERISTICS (Ta=25°C)

(All voltage referenced to GND unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Operating Voltage	Vopr				29	V
Initiation Supply Voltage	Vsi	(note 1)	17	19	21	V
Sustaining Supply Voltage	Vsus	(note 2)	10.5	12	-	V
Initiation Current Consumption	Isi	No-Load	1.4	3.3	4.2	mA
Sustaining Current Consumption	Isus		0.7	1.4	2.5	mA
Oscillation Frequency (not3)	fL	C1=0.47μF, R1=165kΩ	9	10	11	Hz
	fH1	C2=6800pF, R2=191kΩ	461	512	563	Hz
	fH2		576	640	703	Hz
Output Voltage "H" Level	VOH	Vcc=24V, VOH=-10mA PIN7=GND	20.0	21.5	22.5	V
Output Voltage "L" Level	VOL	Vcc=24V, VOL=10mA PIN7=7V	0.7	1.0	2.0	V

- \*NOTE : 1. Initiation supply voltage (Vsi) is a supply voltage required to start oscillation of the tone ringer.  
 2. Sustaining supply voltage (Vsus) 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)  $f_L = 1/1.234 \cdot R1 \cdot C1$  (Hz) ; (2)  $f_{H1} = 1/1.515 \cdot R2 \cdot C2$  (Hz); (3)  $f_{H2} = 1.24 f_{H1}$  (Hz)

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## APPLICATION NOTE

In the 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 TA31002 at the time when RSL=6.8k $\Omega$  coincides with that at the time when PIN2 of the TA31001 has been used at an open state.

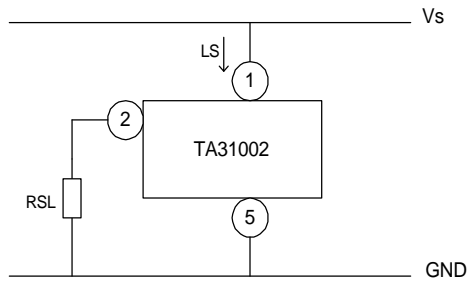


FIG.1

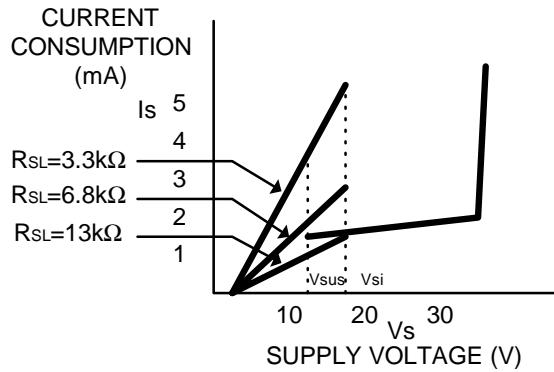
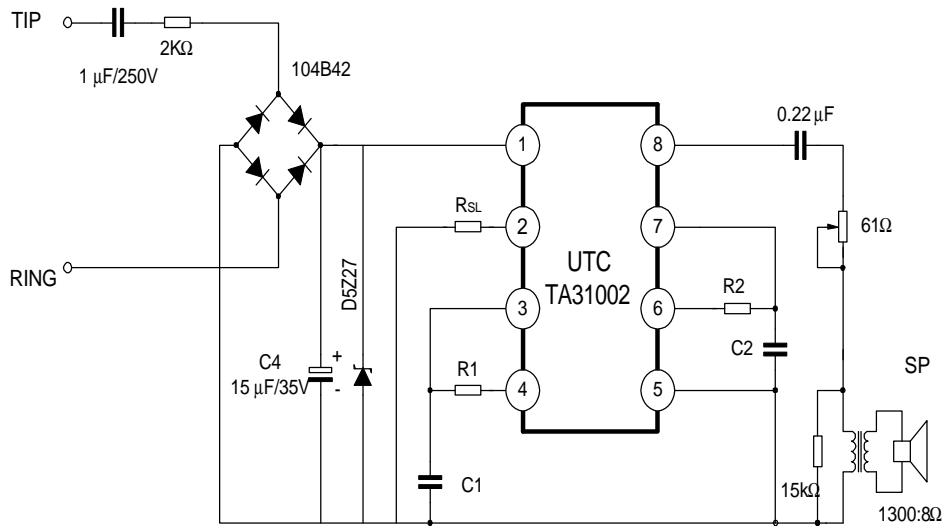


FIG.2

# UTC TA31002 LINEAR INTEGRATED CIRCUIT

## 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:

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

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

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