PJ31002

Tone Ringer For Telephone Set

The PJ31002 is a bipolar integrated circuit designed for telephone bell replacement.

DIP-8 SOP-8

Pin: 1. Vcc 5. Gnd
2. Rsl 6. Hfo
3. Lfi 7. Hfi
4. Lfo 8. Out

FEATURES

- Current consumption is small
- Oscillation frequency is variable
- Few external components
- Sustaining power is low
- Package is compact (DIP-8)

ELECTRICAL CHARACTERISTICS (Unless otherwise specified, Ta=25℃, Vcc=24V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions	Test Circuit
Operating Voltage	Vopr	--	--	38	V		FIG.4
Supply Initiation Voltage	Vsi	15	17	19.5	V	(NOTE 1)	FIG.4
Sustaining Voltage	Vsus	10.5	12.0	13.0	V	(NOTE 2)	FIG.4
Supply Initiation Current	Isi	1.4	3.3	4.2	mA	Vcc=Vsi, No LOAD	FIG.4
Sustaining Current	lsus	0.35	0.9	1.5	mA	Vcc=Vsus, No LOAD	FIG.4
Oscillator Frequence (NOTE3)	fL	9	10	11	Hz		FIG.5
Oscillator Frequence (NOTE3)	fH1	461	512	563	Hz		FIG.5
Oscillator Frequence (NOTE3)	fH2	576	640	703	Hz		FIG.5
Output Voltage *Hi*	Voh	19.7	22.0	23.5	V	loh=10mA 7 Pin=GND	FIG.4
Output Voltage *Lo*	Vol	0.5	0.9	1.4	V	Iol=10mA 7 Pin=5.5V	FIG.4
Ringing Start Voltage	Vtr	--	--	36.0	V	(NOTE 4)	FIG.3

ABSOLUTE MAXIMUM RATING (Ta=25℃)

Parameter	Symbol	Rating	Unit
Supply Voltage	Vcc	38	V
Power Dissipation	Pd	500	mW
Operating Temperature Range	Topr	-25 ~ +75	℃
Storage Temperature Range	Tstg	-55 ~ +125	℃

(NOTE 1) Supply initiation voltage is the value of DC supply voltage required to start the tone ringer oscillation.

(NOTE 2) Sustaining voltage is the value of DC supply voltage required to maintain oscillation.

(NOTE 3) Oscillator frequency is determined by the following equations :

$fL = 1 / (1.234 * R1 * C1)$ Hz

$fH1 = 1 / (1.515 * R2 * C2)$ Hz

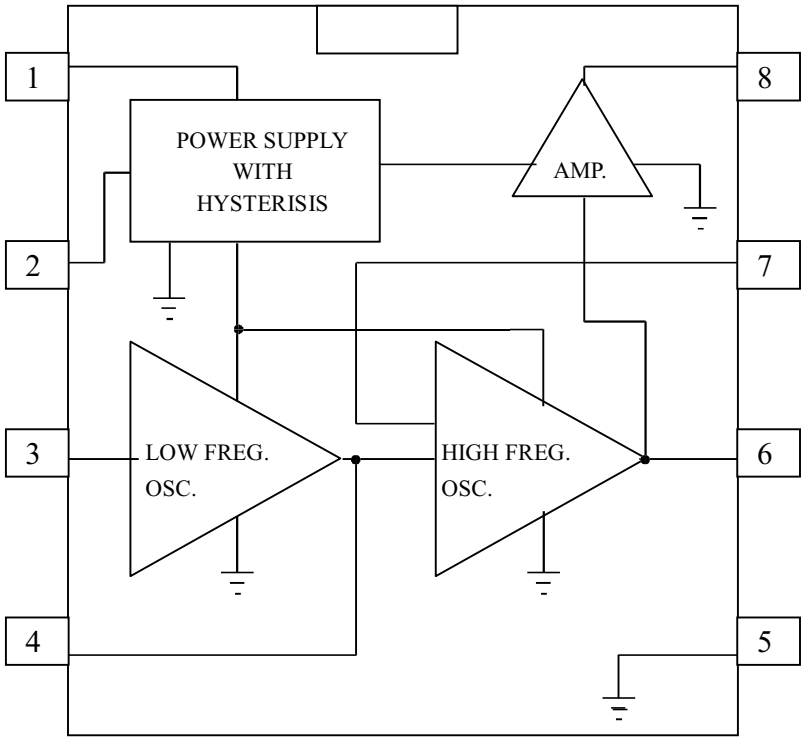
$fH2 = 1.24 * fH1$ Hz

(NOTE 4) Ringing start voltage is the value of AC supply voltage required to start the tone ringer ringing in FIG.3

(NOTE 5) This product is not designed for protection against radioactive rays.

(NOTE 6) All data and specifications are subject to change without notice.

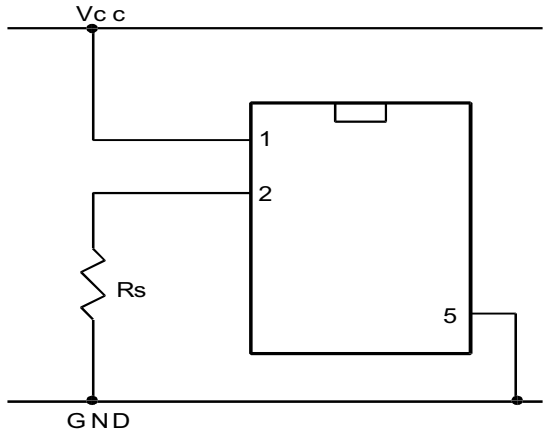
Figure 2. Block Diagram



HOW TO USE THE RSL PIN

In the IC, the supply initiation current (lsi) can be changed using the RSL Pin . As show is the diagram, the RSL (Pin 2) is grounded through resistor Rs. By changing the Rs value, supply initiation current can be changed.

Supply voltage (Vcc) vs. supply current (lcc) characteristics resulting from changes in the value of Rs are shown in the following diagram.



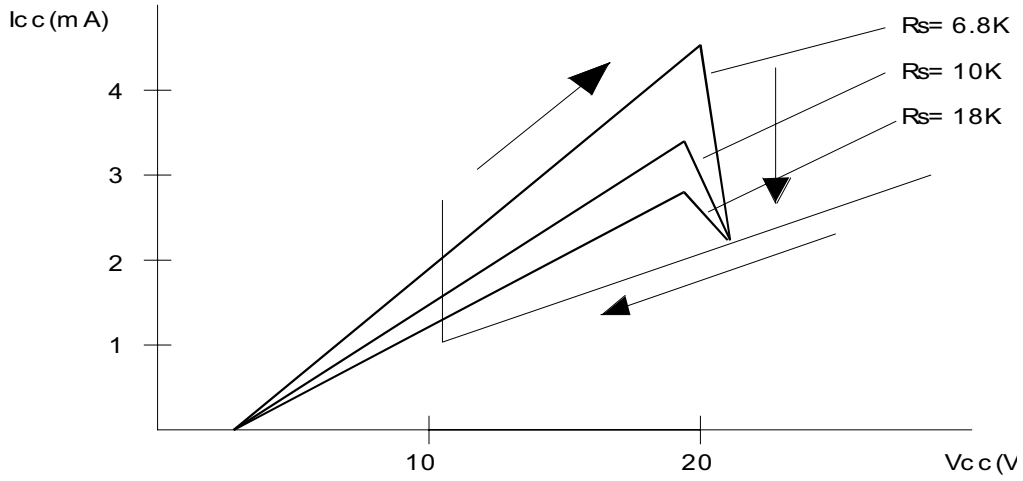


Figure 3.Ringing Start Voltage Test Circuit

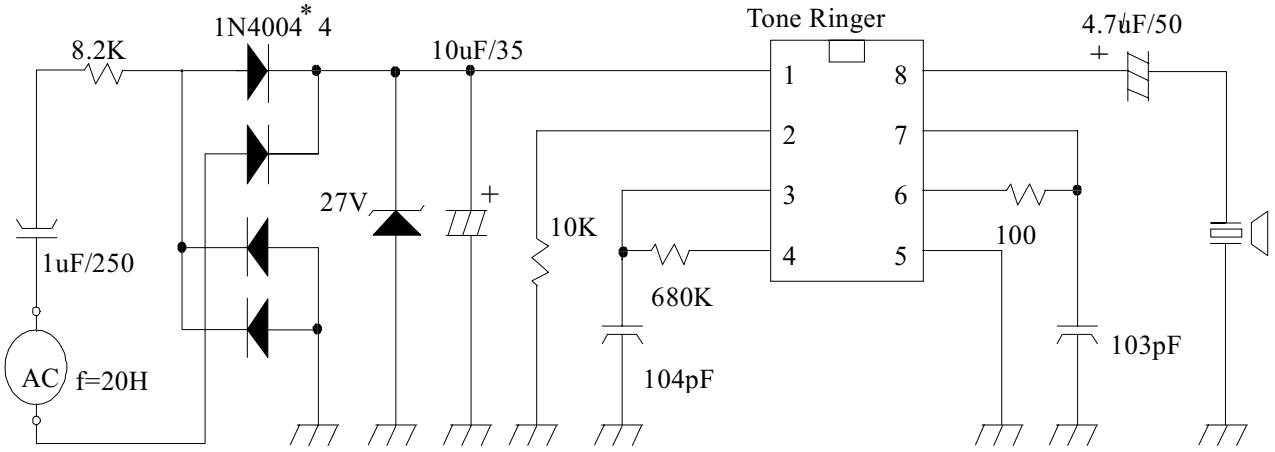
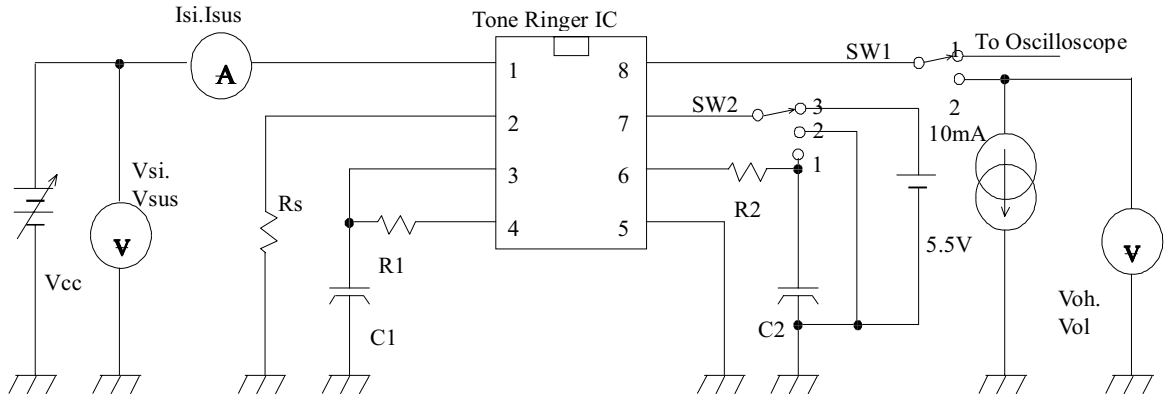


FIG. 4 Test Circuit (1)

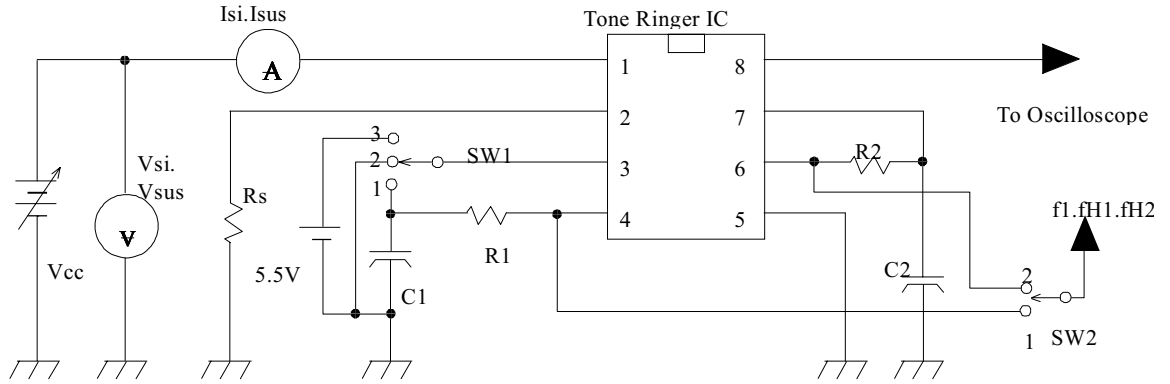


- **SWITCH POSITION IS THE FOLLOWING TABLE :**

PARAMETER	SW1	SW2
Vsi , Isi	1	1
Vsus , Isus	1	1
Voh	2	2
Vol	2	3

R1 = 165 K (+/-) 1%
R2 = 191 K (+/-) 1%
C1 = 0.47 µF (+/-) 5%
C2 = 0.0068 µF (+/-) 5%

FIG. 4 Test Circuit (2)



- **SWITCH POSITION IS THE FOLLOWING TABLE :**

PARAMETER	SW1	SW2
FL	1	1
fH1	1	1
fH2	2	2

R1 = 165 K (+/-) 1%
R2 = 191 K (+/-) 1%
C1 = 0.47 µF (+/-) 5%
C2 = 0.0068 µF (+/-) 5%