

TONE RINGER ICs

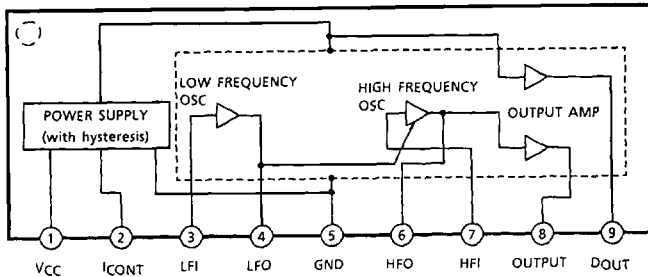
TONE RINGER FOR TELEPHONE SET

FEATURES

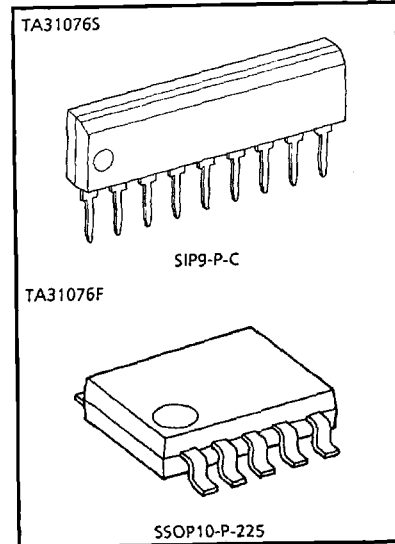
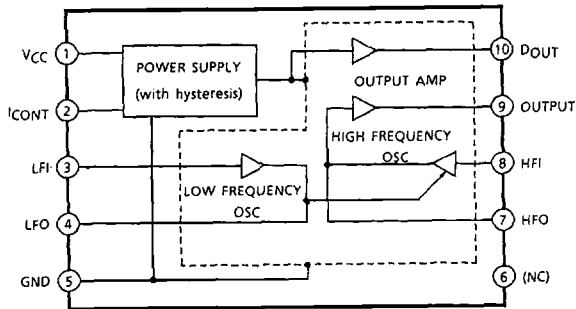
- The Tone Ringer with a built-in Ring Detector. It supplies about 5V DC voltage while tone ring outputs so it is convenient to count the call.
- Since operating voltage is high, output sound pressure level can be made high.
- Initiation supply voltage is low. (12.4V)
- Initiation current consumption can be varied with external resistance.
- Very few external parts

BLOCK DIAGRAM

TA31076S



TA31076F



Weight SIP9-P-C : 0.72g (Typ.)
SSOP10-P-225 : 0.09g (Typ.)

TA31076S/F-1

TONE RINGER ICs

OPERATING INSTRUCTION

1. Initiation supply voltage (V_{Si}), sustaining supply voltage (V_{SUS}), and current consumption (I_{CC})

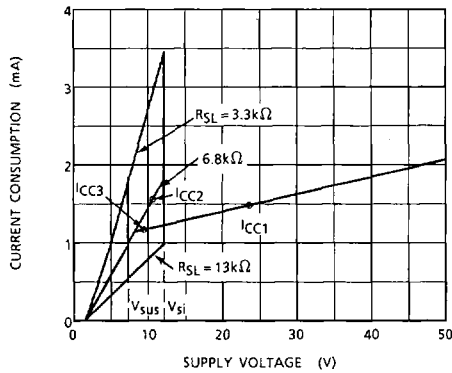


Fig.1

2. Method of using I_{cont} terminal [pin 2 (2)]

In TA31076S, TA31076F, the initiation current consumption can be changed by using the I_{cont} terminal. The resistor R_{SL} is connected to GND terminal [pin 5 (5)] from I_{cont} terminal as shown in Fig.2.

Further, the initiation current consumption can be changed by changing the value of R_{SL} .

$$R_{SL} \geq 2k\Omega$$

(Refer to Fig.1)

3. Oscillation frequency

In TA31076S, TA31076F, two kinds of oscillation frequencies f_{H1} and f_{H2} of high frequency oscillating circuit are alternately oscillated and output through oscillation frequency f_L of low frequency oscillating circuit.

Oscillation frequencies f_L , f_{H1} and f_{H2} can be set by C_1 , C_2 , R_1 and R_2 of external circuit.

The standard of each oscillation frequency is as follows.

Set R_1 and R_2 at $140k\Omega$ or over.

- (1) $f_L \approx 1 / 1.25 \cdot R_1 \cdot C_1$
- (2) $f_{H1} \approx 1 / 1.36 \cdot R_2 \cdot C_2$
- (3) $f_{H2} \approx 1.29 \cdot f_{H1}$

4. Ring detect output

When the IC becomes oscillating start condition, about 5V voltage is output at the D_{OUT} terminal. It is pulled down about $200k\Omega$.

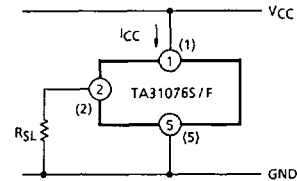


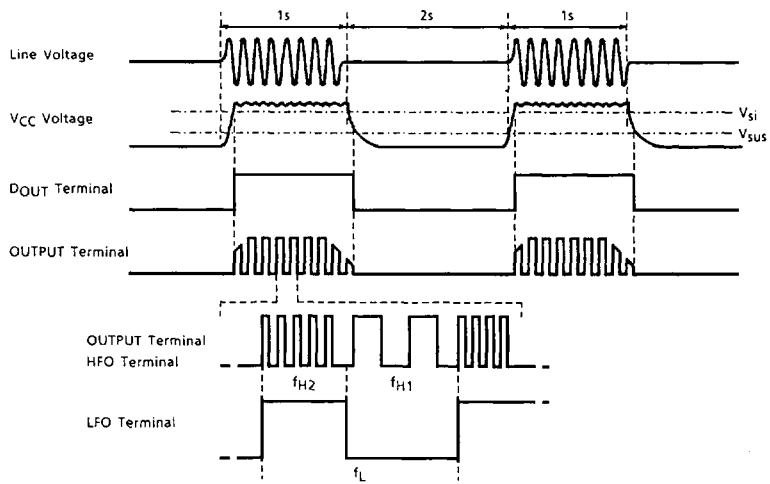
Fig.2

Terminal No. in () is that of TA31076F

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5. Timing chart



TA31076S/F-3

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MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Power Supply Voltage	V _{CC}	50	V
Power Dissipation	S type	890	mW
	F type	590	
Operating Temperature	T _{opr}	-20~70	°C
Storage Temperature	T _{stg}	-55~150	°C

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Operating Voltage	V _{opr}	1	—	—	—	50	V	
Initiation Supply Voltage	V _{si}	1	—	11.5	12.4	13.5	V	
Sustaining Supply Voltage	V _{sus}	1	—	6.2	7.2	8.2	V	
Current Consumption	I _{CC1}	1	No-Load R _{SL} = 6.8kΩ	V _{CC} = 24V	1.0	1.52	2.4	mA
	I _{CC2}	1		V _{CC} = 11V	1.4	1.6	1.85	
	I _{CC3}	1		V _{CC} = 9V*	0.75	1.2	1.85	
Oscillation Frequency	f _L	2	C ₁ = 0.47μF, R ₁ = 160kΩ	8.5	11	13	Hz	
	f _{H1}	3	C ₂ = 6800pF, R ₂ = 200kΩ	450	550	650		
	f _{H2}	4		600	700	800		
Output Voltage	"H" Level	V _{OH}	5	V _{CC} = 24V, I _{source} = -10mA	20	22	—	V
	"L" Level	V _{OL}	6	V _{CC} = 24V, I _{sink} = 10mA	—	1.6	2.6	
Ring Detect Output Voltage	V _D	7	V _{CC} = 24V, I _{det} = -6mA	4	5	6	V	

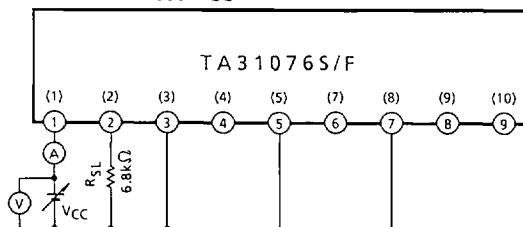
*After V_{CC} = 13.5V is impressed.

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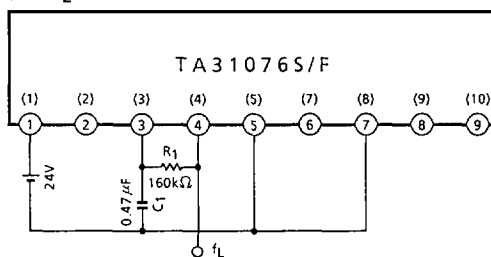
TEST CIRCUIT

Terminal No. in () is that of TA31076F.

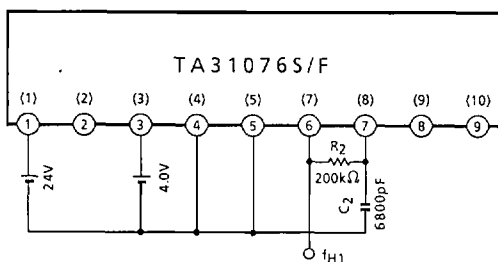
(1) V_{Si} , V_{Sus} , I_{CC}



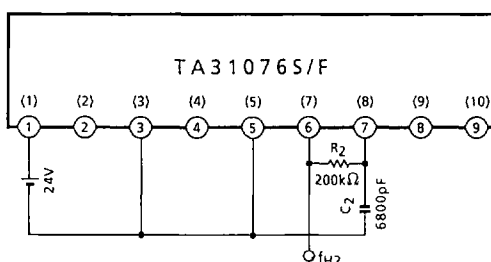
(2) f_L



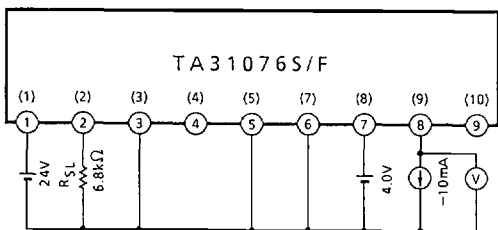
(3) f_{H1}



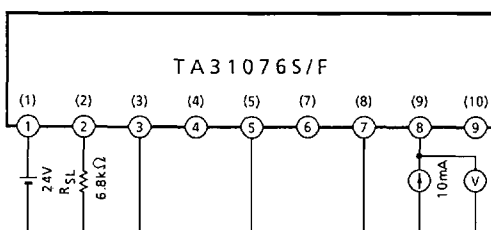
(4) f_{H2}



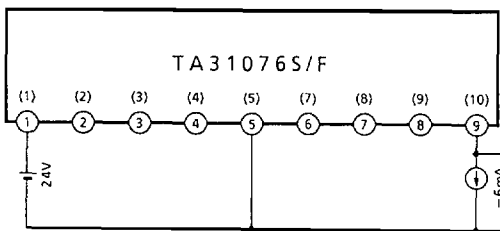
(5) V_{OH}



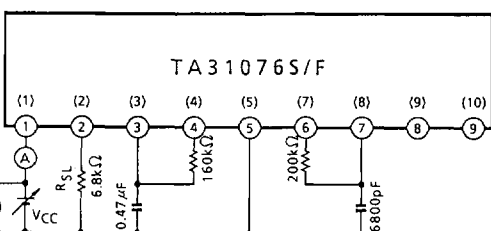
(6) V_{OL}



(7) V_D

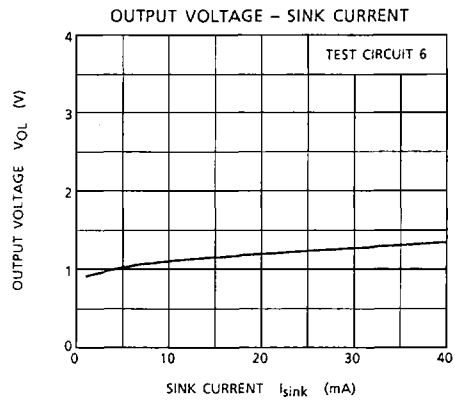
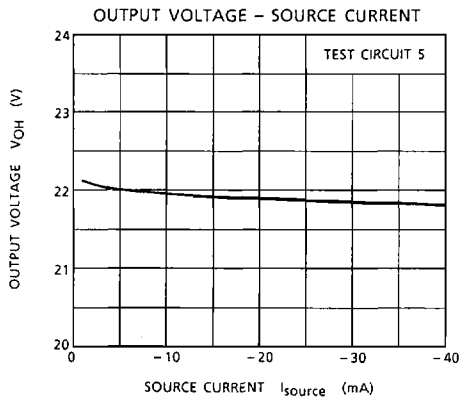
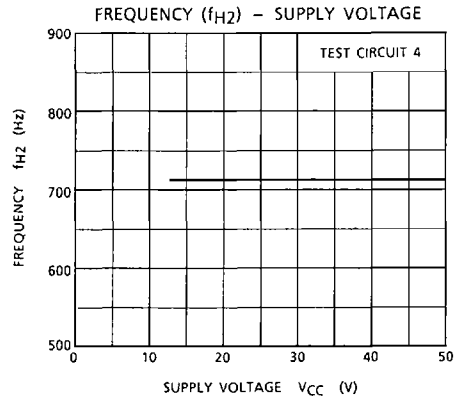
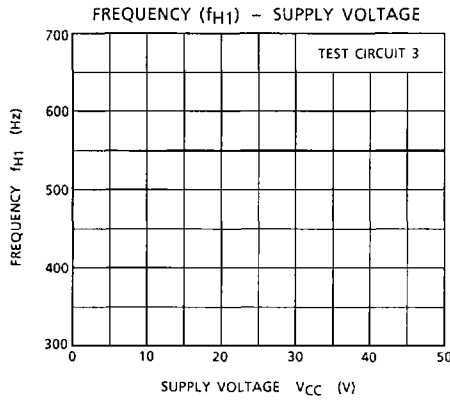
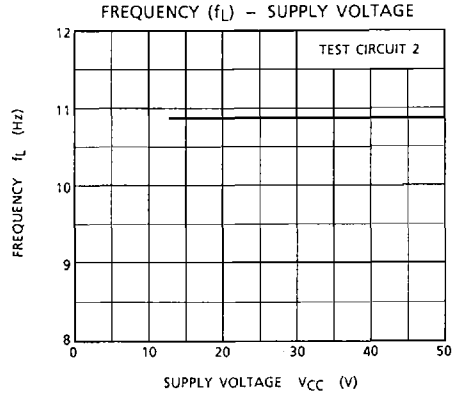
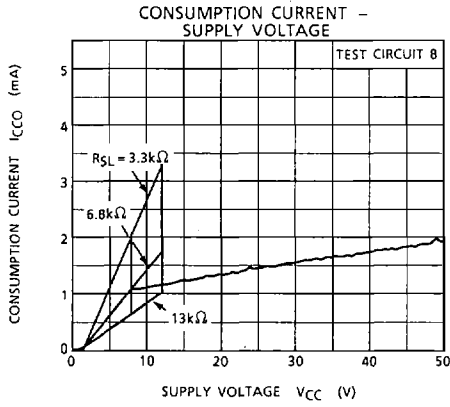


(8) I_{CCO}



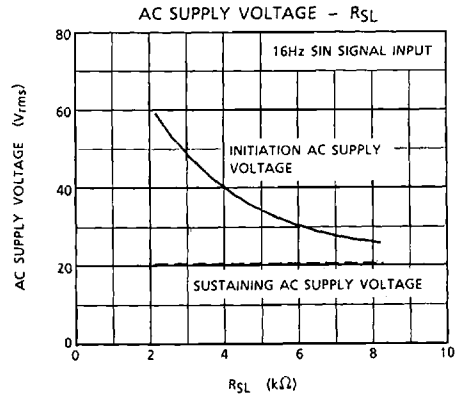
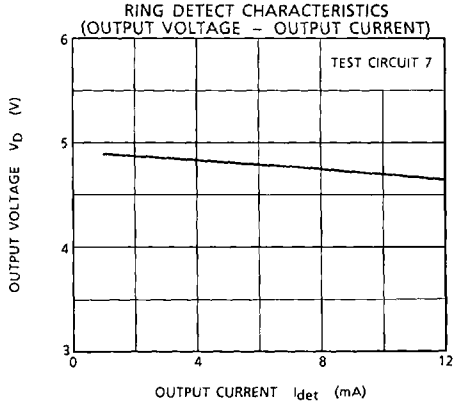
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TA31076S/F-6

TONE RINGER ICs



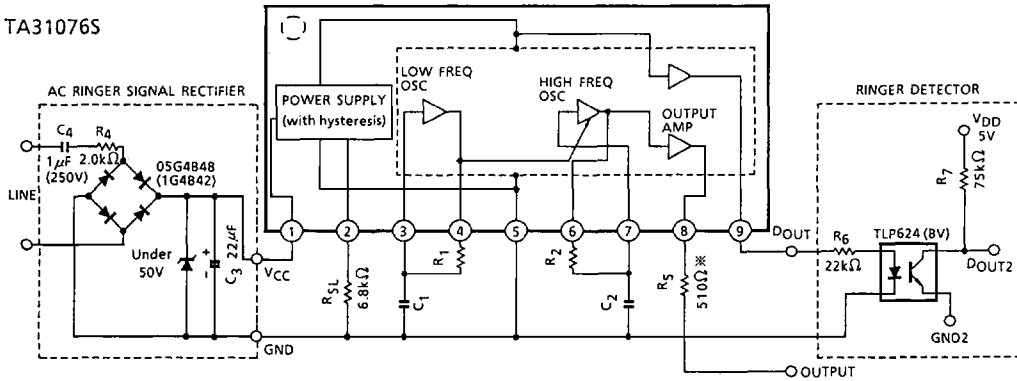
* Ceramic sounder RKM34EW-1201 load on application circuit.

TA31076S/F-7

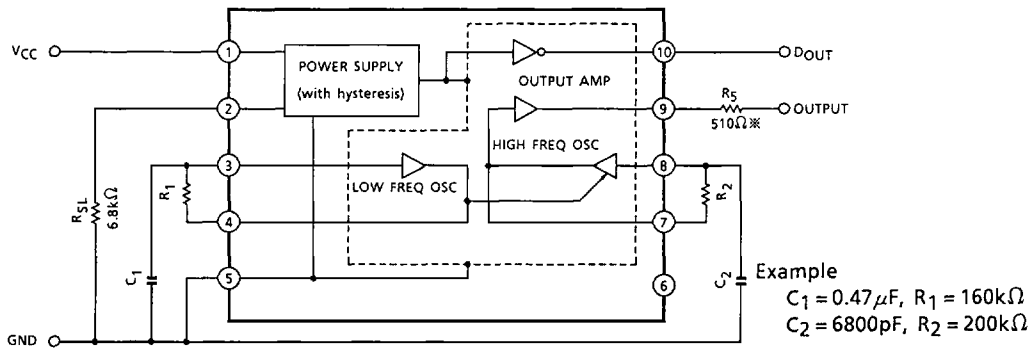
tone RINGER ICs

EXAMPLE OF APPLICATION CIRCUIT

TA31076S



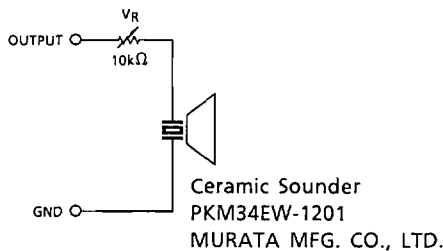
TA31076F



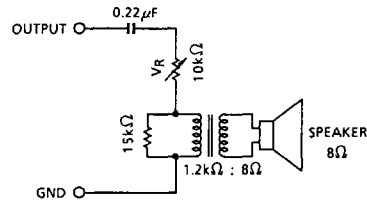
※ Please keep the resistor more than 500Ω connected between pin 8 (pin 9) and output because of avoiding the rush current.

EXAMPLE OF OUTPUT CIRCUIT

For Ceramic Sounder



For Speaker



TA31076S/F-8