

HA16805PS/F

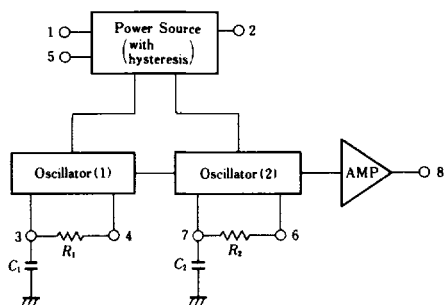
DESCRIPTION

The HA16805 is a tone ringer monolithic IC for telephone. This IC have a built-in reuglator power supply and occur electronic sound by directly driving external magnetic speaker or piezoelectric buzzer when call signal is detected.

FEATURES

- Output frequency is variable.
- Low power dissipation.
- As it has a regulator power source with hysteresis, it can prevent a resonance which occurs in case of parallel connection (branch) of telephone.
- Supply initiation current is variable.

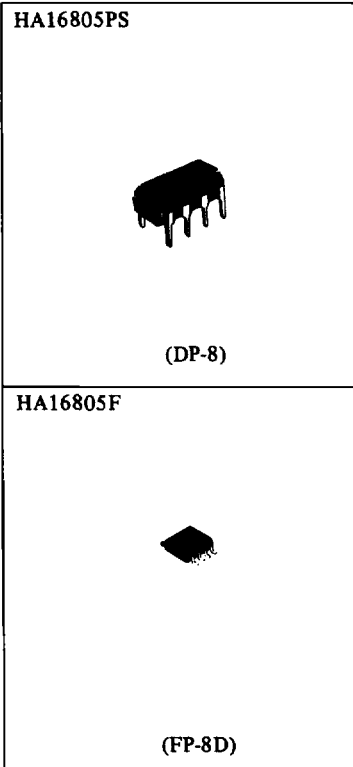
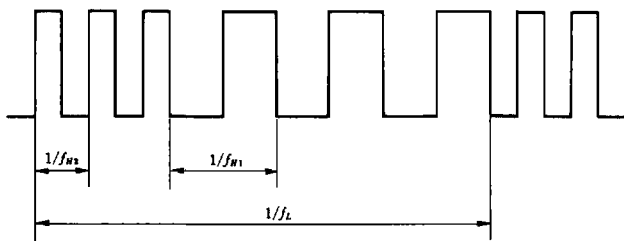
BLOCK DIAGRAM



Note: R_1 , R_2 , C_1 , C_2 are external parts

- Oscillator (1) operated at about 10 Hz (f_L) and modulates the frequency of Oscillator (2) at this cycle.
- Oscillator (2) operated at a high frequency and has two oscillation frequency; f_{H1} , f_{H2} by Oscillator (1).

$$f_L = 1/1.25 R_1 C_1 \quad f_{H1} = 1/1.35 R_2 C_2 \quad f_{H2} = 1.24 f_{H1} \text{ [Hz]}$$



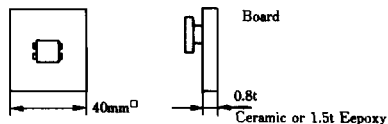
HA16805PS/F

■ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

Item	Symbol	Rating	Unit
Supply Voltage	V_s	40	V
Output Current	I_o	12	mA
Power Dissipation	P_T	625 (390)	mW*
Operating Temperature Range	T_{opr}	-20 to +70	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to +125	$^\circ\text{C}$

* P_T for HA16805F is 390 mW, for HA16805PS is 625 mW.

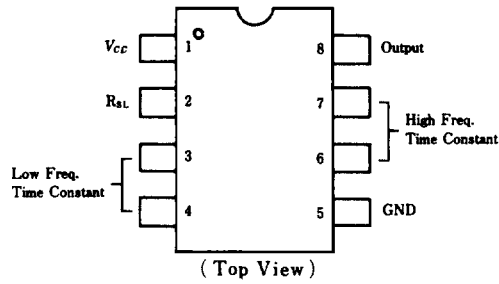
For HA16805F value at $T_a \leq 70^\circ\text{C}$, when T_a is more than 70°C , 7.14 mW/ $^\circ\text{C}$ derating shall be performed. (Condition glass epoxy with 30% metallization density)



■ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

Item	Symbol	Condition	min.	typ.	max.	Unit
Supply Initiation Voltage	V_{si}	Connect with $R_{SL} = 20\text{k}\Omega$	26	28	30	V
Supply Initiation Current	I_{si}		0.7	1.5	3.0	mA
Sustaining Voltage	V_{sus}		9	11	—	V
Sustaining Current	I_{sus}	$V_s = 15\text{V}$, Connect with $R_{SL} = 20\text{k}\Omega$	0.5	1.0	2.0	mA
Output "H" Voltage	V_{OH}	$V_s = 36\text{V}$, $I_{OH} = -10\text{mA}$	32	—	36	V
Output "L" Voltage	V_{OL}	$V_s = 36\text{V}$, $I_{OL} = 10\text{mA}$	0	1.0	2.0	V
Output Frequency	f_L	$C_1 = 0.47\ \mu\text{F}$, $R_1 = 160\text{k}\Omega$	9.3	10.4	11.5	Hz
	f_{H1}	$C_2 = 6800\text{pF}$	495	—	606	Hz
	f_{H2}	$R_2 = 200\text{k}\Omega$	610	—	752	Hz

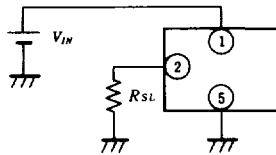
■PIN ARRANGEMENT



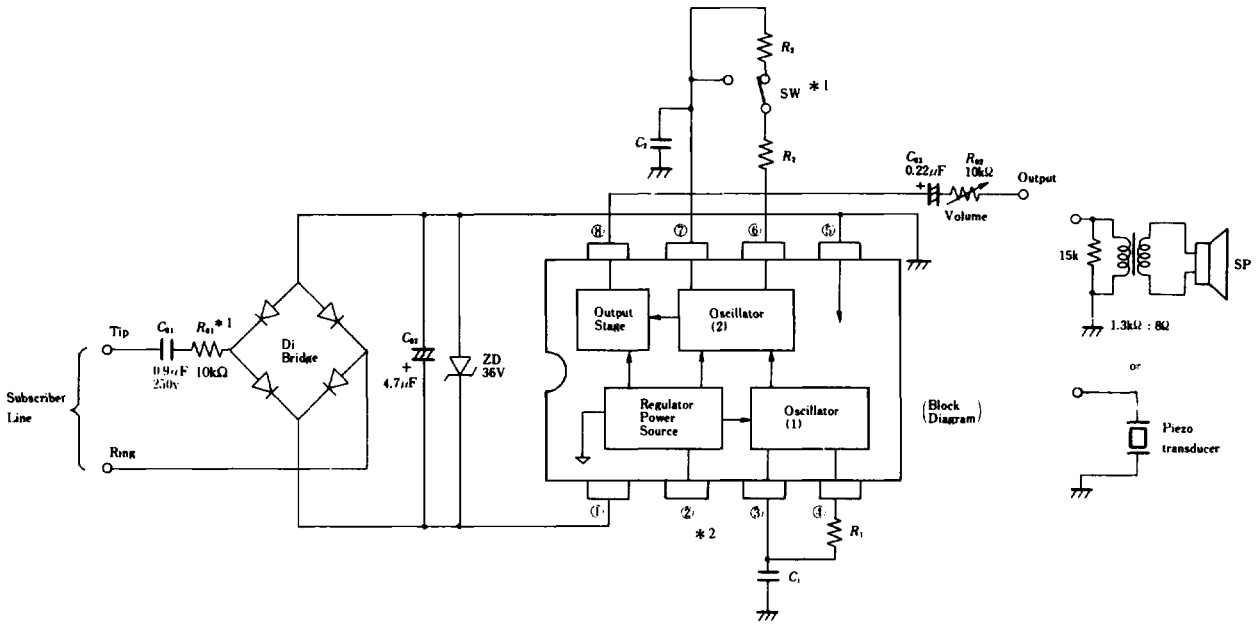
■PIN FUNCTION

Pin No.	Pin Name	Function
1	Vcc	Positive Power Supply
2	Rsl	Shown below
3	LOW FREQ. TIME CONSTANT	Low Frequency Time Constant Setting
4	CONSTANT	
5	GND	Negative Power Supply
6	HIGH FREQ. TIME CONSTANT	High Frequency Time Constant Setting
7	CONSTANT	
8	OUTPUT	Tone Output

RSL ② Pin Function Description

Function	Description								
Supply Initiation Current Variable (Isi)	 <table border="1" data-bbox="816 1168 1159 1304"> <thead> <tr> <th>RSL</th> <th>Isi</th> </tr> </thead> <tbody> <tr> <td>6.3k</td> <td>3.2mA typ.</td> </tr> <tr> <td>13k</td> <td>2mA typ.</td> </tr> <tr> <td>20k</td> <td>1.2mA typ.</td> </tr> </tbody> </table>	RSL	Isi	6.3k	3.2mA typ.	13k	2mA typ.	20k	1.2mA typ.
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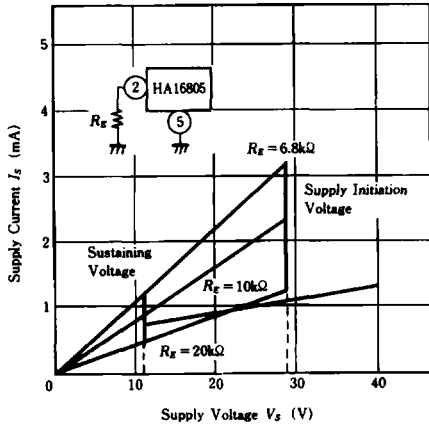
APPLICATION



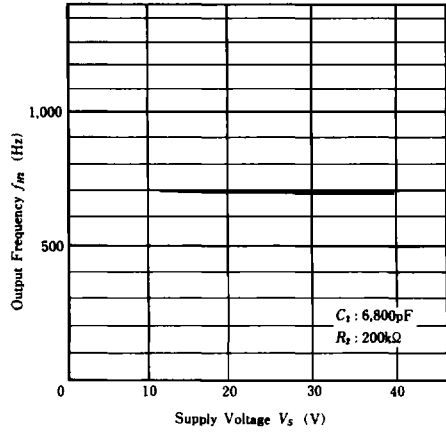
Note *1 Possible timbre adjustment by changing the resistance value of R_2
 *2 Additional function control terminal

Tone Ringer Application Circuit Example

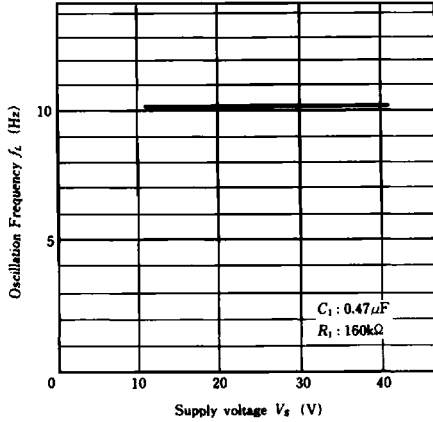
Supply Current Characteristic vs. Supply Voltage



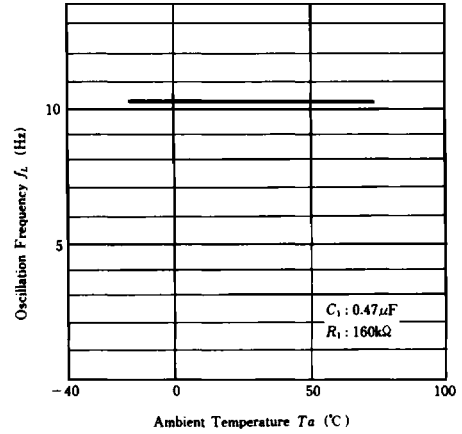
Output Frequency vs. Supply Voltage Characteristic



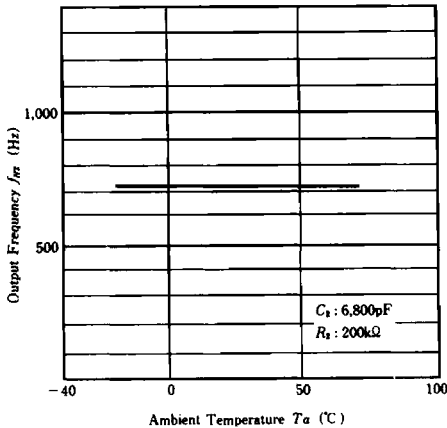
Oscillation Frequency vs. Supply Voltage Characteristic



Oscillation Frequency vs. Ambient Temperature Characteristic



Output Frequency vs. Ambient Temperature Characteristic



Supply Initiation Voltage vs. Ambient Temperature Characteristic

