

# AN6170, AN6170S

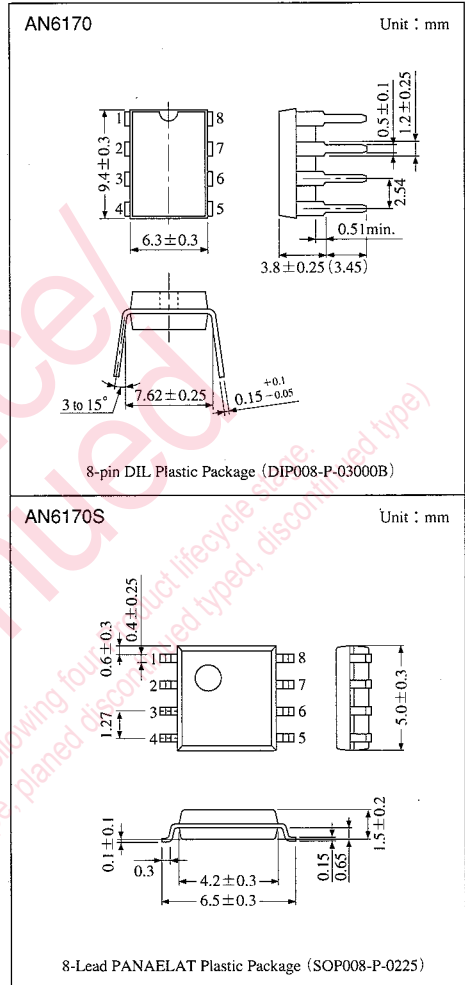
## Tone Ringers

### Overview

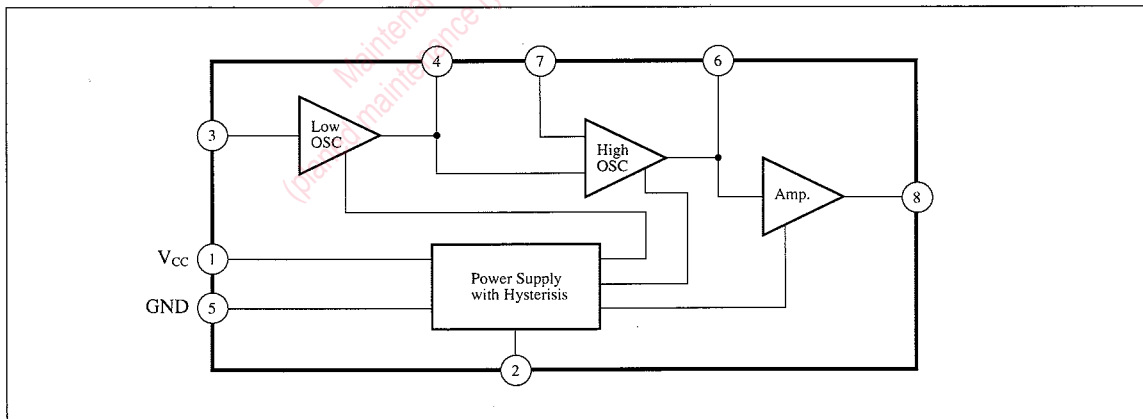
The AN6170 and the AN6170S are integrated circuits designed for telephone set and generates a call tone for telephone set.

### Features

- Low current operation
- Adjustable, three-frequency tone
- Since the threshold circuit is incorporated, it is free from resonance.
- Resistance of pin 2 allows the resonance start current to be variable.



### Block Diagram



### ■ Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	Rating	Unit
Supply voltage		V <sub>CC</sub>	30	V
Supply current		I <sub>CC</sub>	— *1	mA
Power dissipation	AN6170	P <sub>D</sub>	500	mW
	AN6170S		170	
Operating ambient temperature		T <sub>opr</sub>	-30 to +75	°C
Storage temperature	AN6170	T <sub>stg</sub>	-55 to +150	°C
	AN6170S		-55 to +125	

\*1 P<sub>D</sub> > V<sub>CC</sub> × I<sub>CC</sub>

### ■ Recommended Operating Range (Ta=25°C)

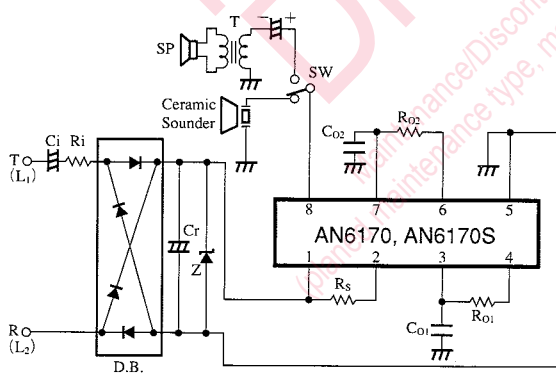
Parameter	Symbol	Range
Operating supply voltage range	V <sub>CC</sub>	8 to 30V

### ■ Electrical Characteristics (Ta=25°C)

Parameter	Symbol	Condition	min	typ	max	Unit
Rumbling starting supply voltage *1	V <sub>st</sub>	R <sub>S</sub> = 7.5k Ω	14.5	16.5	18.5	V
Rumbling continuous supply voltage *1	V <sub>con</sub>	R <sub>S</sub> = 7.5k Ω	7.5	9.5	11.5	V
Rumbling starting current consumption *1	I <sub>st</sub>	R <sub>S</sub> = 7.5k Ω	1.5	2.4	3.5	mA
Rumbling continuous current consumption *1	I <sub>con</sub>	R <sub>S</sub> = 7.5k Ω	0.4	0.75	1.15	mA
Output frequency (1) *2	f <sub>w</sub>		13	14	15	Hz
Output frequency (2) *3	f <sub>1</sub>		967	1040	1113	Hz
Output frequency (3) *4	f <sub>2</sub>		1204	1295	1386	Hz
Output voltage H level	V <sub>OH</sub>	I <sub>S</sub> = -10mA	20	—	—	V
Output voltage L level	V <sub>OL</sub>	I <sub>S</sub> = +10mA	—	—	2	V

\*1 Refer to the characteristic. \*2 f<sub>w</sub> = 0.697 / (C<sub>O1</sub> · R<sub>O1</sub>). \*3 f<sub>1</sub> = 0.634 / (C<sub>O2</sub> · R<sub>O2</sub>). \*4 f<sub>2</sub> = 1.24 · f<sub>1</sub>

### ■ Application Circuit



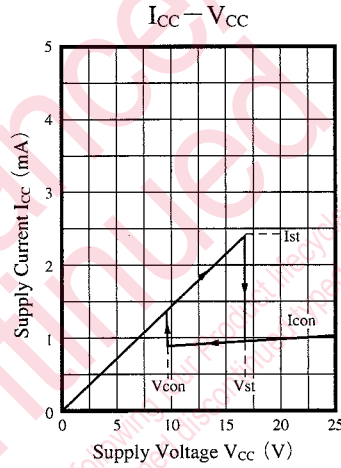
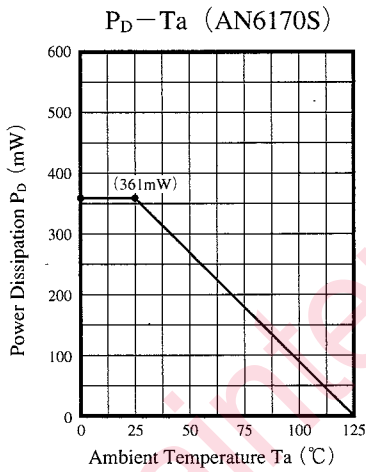
Parts name	Symbol	Recommended parts
Input capacitance	C <sub>i</sub>	Matsushita 0.9-250 (0.9 μF), 474K-250
Input resistance	R <sub>i</sub>	2.2k Ω
Diode bridge	D.B.	—
Capacitance	C <sub>r</sub>	15 μF/35V
Zener diode	Z	Matsushita MA1300L (27V)
Short-circuit resistance	R <sub>S</sub>	7.5k Ω
Oscillation resistance	R <sub>O1</sub>	110k Ω
Oscillation resistance	R <sub>O2</sub>	130k Ω
Oscillation capacitance	C <sub>O1</sub>	0.47 μF
Oscillation capacitance	C <sub>O2</sub>	Poluester 4700pF
Ceramic sounder	—	Matsushita EFB-RR
		Matsushita EFB-RW
Speaker	SP	Matsushita EAS-6P32S (8 Ω)
Transformer	T	8 Ω : 2k Ω

ICs for Telephone

**Pin Descriptions**

Pin No.	Pin name
1	V <sub>CC</sub>
2	R <sub>s</sub>
3	OSC
4	OSC
5	GND
6	OSC
7	OSC
8	V <sub>O</sub>

**Characteristics Curve**



Maintenance/Discontinued includes for planned maintenance type, maintenance type, planned maintenance type, discontinued type.  
 (planned maintenance type, maintenance type, maintenance type, planned maintenance type, discontinued type)

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