WS2418

TELEPHONE TONE RINGER WITH BRIDGE DIODE

The WS2418 is a monolithic integrated circuit telephone tone ringer with bridge diode, when coupled with an appropriate transducer, it replaces the electromechanical bell. This device is designed for use with either a piezo transducer or an inexpensive transformer coupled speaker to produce a pleasing tone composed of a high frequency (f_R) alternating with a low frequency (f_L) resulting in a warble frequency. The supply voltage is obtained from the AC ring signal and the circuit is designed so that noise on the line or variation of the ringing signal cannot affect correct operating of the device.

8 DIP

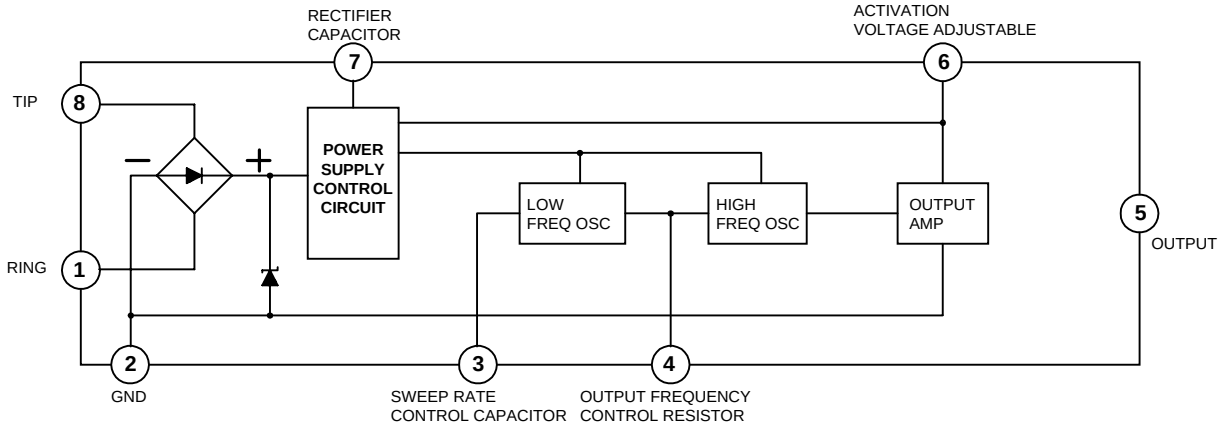


WS2418

FEATURES

- On chip high voltage full wave diode bridge rectifier
- Low current consumption, in order to allow the parallel operation of the 4device
- Low external component count
- Tone and switching frequencies adjustable by external components
- High noise immunity due to built-in voltage current hysteresis
- Activation voltage adjustable
- Internal zener diodes to protect against over voltages
- Ringer impedance adjustable with external components
- Electronic telephone ringers
- Extension ringers

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS (T_A=25℃)

SYMBOL	CHARACTERISTIC	VALUE	UNIT
V_C	Calling Voltage (f=50H_Z) Continuous	120	V_{RMS}
$V_{C(ON-OFF)}$	Calling Voltage (f=50H_Z) 5 sec On/10 Sec Off	200	V_{RMS}
I_{CC}	Supply Current	22	mA
T_{OPR}	Operating Temperature	-20~+70	℃
T_{STG}	Storage and Junction Temperature	-65~+150	℃

Absolute maximum rating are those values beyond which permanent damage to the device may occur. These are stress rating only and functional operation of the device at or beyond them is not implied. Long exposure to these conditions may affect device reliability.

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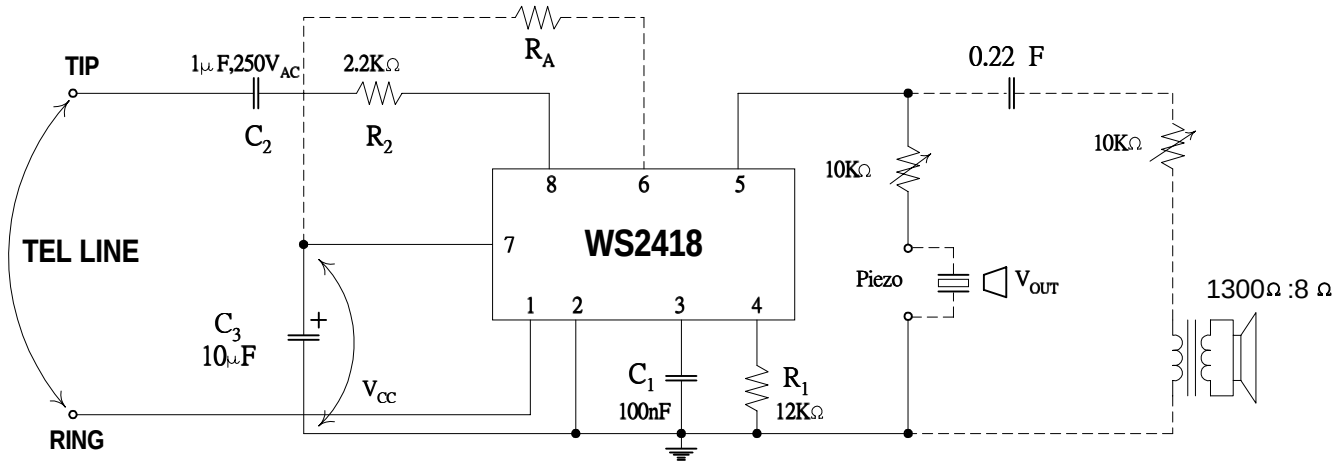
DC ELECTRICAL CHARATERISTICS (T_A=25℃)

Symbol	Characteristics	Min.	Typ.	Max.	Units	Test Conditions
V_{CC}	Supply Voltage			26	V	
I_{CC}	Current Consumption Without load		1.5	1.8	mA	V_{CC}=8.8 to 26V
V_{ON}	Activation Voltage	12.2		13	V	
V_{ONR}	Activation Voltage Range	8		10	V	R_A=1KΩ
V_{SUS}	Sustaining Voltage	8		8.8	V	
$R_{D(OFF)}$	Different Resistance in OFF Condition	6.4			KΩ	
$V_{O(P-P)}$	Output Voltage Swing		V_{CC}-3		V	
I_{SC}	Short Circuit Current		35		mA	V_{CC}=26V

AC ELECTRICAL CHARACTERISTICS

Symbol	Characteristic	Min.	Typ.	Max.	Units	Test Conditions
F_{H1}	Output Frequency		2300+300		H_Z	V_{CC}=26V, R1=14KΩ V_C=0V(PIN3)
F_{H2}			1700+300			V_C=6V(PIN3)
f_{H1R}	f_{H1} Range	0.1		15	KHz	R_1=27KΩ To 1.7KΩ
f_S	Sweep Frequency		8		H_Z	R_1=14KΩ,C_1=100nF

TEST AND APPLICATION CIRCUIT



$f_1=\frac{3.22X10^4}{R_1(K\Omega)}$, $f_2=\frac{5}{7}f_1$, $f_S=\frac{1000}{C_1(nF)}$

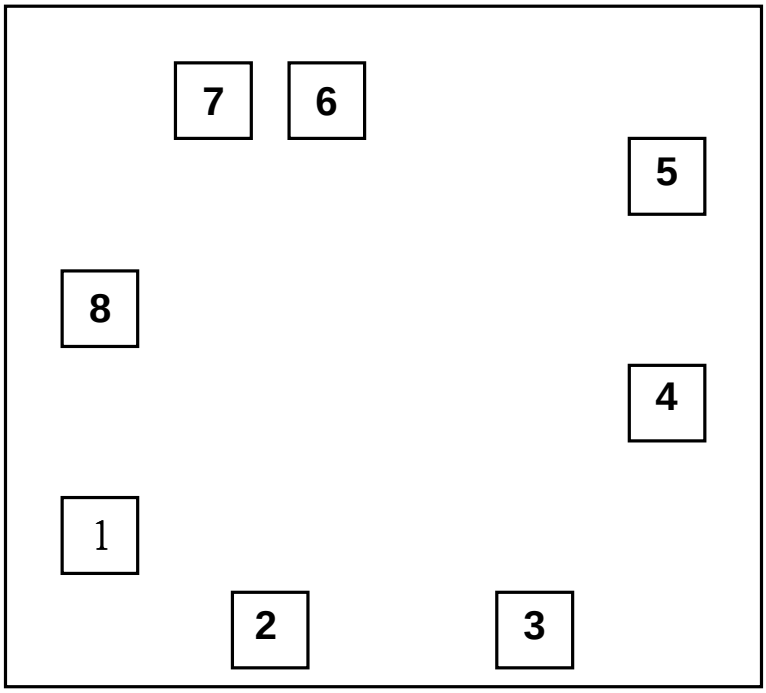
DESCRIPTION

The WS2418 tone ringer device its power supply by rectifying the AS ringing signal. It uses this power to activate two tone generators. The two tone frequencies generators are switched by an internal oscillator in a fast sequence and made audible across an output amplifier in the loudspeaker, both tone frequencies and the switch frequency can be externally adjusted

The devices can driver either directly a piezo ceramic converter (buzzer) or small loudspeaker. In case of using a loudspeaker, a transformer is need.4

An internal shunt voltage regulator provides DC voltage to the output stage, low frequency oscillator, and high frequency oscillator. To protect the IC telephone line transients, a zener diode is include.

PAD LOCATION



Chip size 2.4mm X 2.2mm

Pad N	X (μm)	Y (μm)
1	315	630
2	660	195
3	1550	205
4	2065	825
5	2100	1710
6	790	1875
7	595	1875
8	285	1265