FORWARD INTERNATIONAL ELECTRONICS LTD.

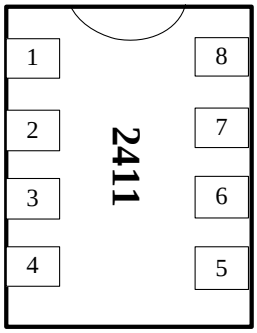
SEMICONDUCTOR
TECHNICAL DATA

K2411
TELEPHONE TONE RINGER

The 2411 is a bipolar integrated circuit designed for telephone tone ringer.

Features
* Designed for telephone bell replacement
* Adjustable 2-tone frequency
* Hysteresis circuit prevents false triggering and rotary dial “Chirps”
* Adjustable for reduced supply initiation current

Package: DIP-8



Pin No	Name	Function
1	VCC	Power supply (+)
2	RSL	Resistor select
3	LFI	Low freq osc input
4	LFO	Low freq osc output
5	GND	Ground (-)
6	HFO	High freq osc output
7	HFI	High freq osc input
8	OUT	Signal output

ABSOLUTE MAXIMUM RATING

Parameter	Symbol	Rating	Unit
DC Supply Voltage	Vcc	36	V
Power Dissipation	Pd	450	mW
Operating Temperature	Topr	-25~+75	℃
Storage Temperature	Tstg	-55~+125	℃

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

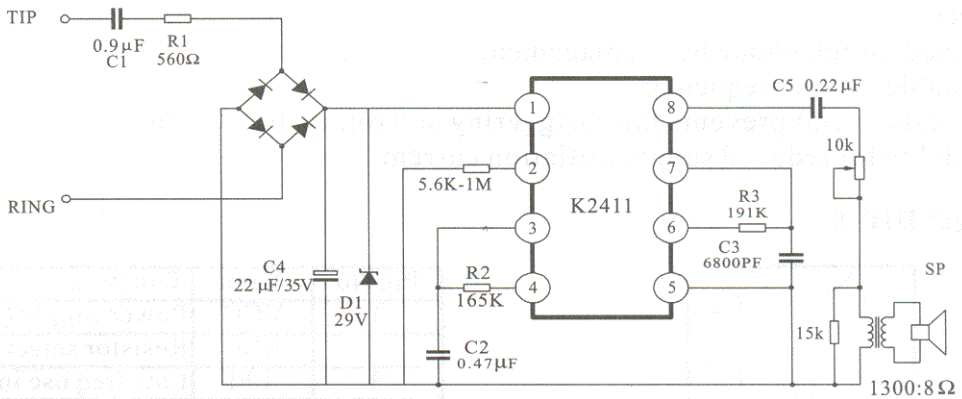
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Operating Supply Voltage	Vcc				36	V
Initiation Supply Voltage (note 1)	Vsi		17	19	21	V
Initiation Supply Current	Isi	Vcc=Vsi,No Load,Rsl=6.8k	1.4	3.5	4.2	mA
Sustaining Voltage (note 2)	Vsus		9.7	11	13	V
Sustaining Current	Isus	Vcc=Vsus,No Load	0.2	1.4	2.5	mA
Output High Voltage	V_{OH}	Vcc=21V,I_{OH}=15mA	17	19	21	V
Output Low Voltage	V_{OL}	Vcc=21V,I_{OL}=15mA			1.6	V
High Frequency 1	F_{H1}	R3=191K, C3=6800pF	461	512	563	Hz
High Frequency 2	F_{H2}	R3=191K, C3=6800pF	576	640	703	Hz
Low Frequency	F_L	R2=165K, C2=0.47uF	9	10	11	Hz

Note:

1.initiation supply voltage (Vsi) is the supply voltage repuired to start the tone ringer oscillating.

2.sustaining voltage (Vsus) is the supply voltage repuired to maintain oscillation.

APPLICATION CIRCUIT



$F_L=1/1.289R2C2$

$F_{H1}=1/1.504R3C3$

$F_{H2}=1/1.203R3C3$