

Description

The MIK2410/ MIK2411 is a bipolar integrated circuits for telephone tone ringer. These devices consists of an output amplifier, two oscillators, and power supply control circuit.

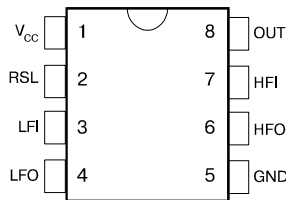
Features

- Low current drain
- Adjustable 2 tone frequency
- Hysteresis circuit prevent false triggering and rotary dial «Chirps»
- 8 pin DIP plastic package
- External triggering or ringer disable (MIK2410)
- Adjustable for reduced supply initiation current (MIK2411)

Applications

- Telephone bell replacement
- Extension tone ringer modules
- Alarms or other alerting devices

Pin Configuration (TOP VIEW)



Pin Assignment

Pin	Name	Function
1	V _{CC}	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	Output

Absolute Maximum Ratings

Parameter	Symbol	Rating	Units
DC Supply voltage	V _{CC}	36	V
Power Dissipation	P _d	450	mW
Operating Ambient Temperature Range	T _A	-25...+75	°C
Storage Temperature Range	T _{STG}	-65...+150	

Note 1: Voltage values are with respect to the anode terminal unless otherwise noted

Electrical characteristics (V_{CC}=24V, T_a=25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Operating Voltage	V _{CC}				36	V
Supply Initiation Voltage	V _{SI}	(Note 1)	17	19	21	
Supply Initiation Current	I _{SI}	V _{CC} =V _{SI} , No load	1.4	2.5	4.2	mA
Sustaining Voltage	V _{SUS}	(Note 2)	9.7	10.5	12	V
Sustaining Current	I _{SUS}	V _{CC} =V _{SUS} , No load	0.2	0.9	2.5	mA
Oscillator Freq. (Note 3)	f _L	R1=165kΩ, C1=0.47μF	9	10	11	Hz
Oscillator Freq. (Note 3)	f _{H1}	R2=191kΩ, C2=6800pF	461	512	563	Hz
Oscillator Freq. (Note 3)	f _{H2}	R2=191kΩ, C2=6800pF	576	640	703	Hz
Output High Voltage	V _{OH}	V _{CC} =21V, I _{OH} =15mA	17.7	19	21.5	V
Output Low Voltage	V _{OL}	I _{OL} =15mA			1.6	
Trigger Voltage (Note 4)	V _{TRG}	V _{CC} =15V	8.5		10.5	V
Trigger Current (Note 5)	I _{TRG}	MIK2410 Only (2 pin)		20	1000	μA
Disable Voltage	V _{DIS}			0.4	0.8	V
Disable Current (Note 6)	I _{DIS}	MIK2410 Only (2 pin)	-40	-20		μA

Note 1: Supply initiation voltage is the value of DC supply voltage required to start the tone ringer oscillating.

Note 2: Sustaining voltage is the value of DC supply voltage required to maintain the oscillation.

Note 3: Oscillator frequency is determined by the following equations:

$$f_L = 1 / (1.359 \times R1 \times C1) \text{ (Hz)}$$

$$f_{H1} = 1 / (1.518 \times R2 \times C2) \text{ (Hz)}$$

$$f_{H2} = 1.214 \times f_{H1} \text{ (Hz)}$$

Note 4: V_{tr} and I_{tr} the conditions applied to trigger input to start oscillation for V_{sus} ≤ V_{CC} ≤ V_{si}.

Note 5: Trigger current must be limited to this value externally.

Note 6: V_{dis} and I_{dis} are the conditions applied to trigger input to inhibit oscillation for V_{si} ≤ V_{CC}.

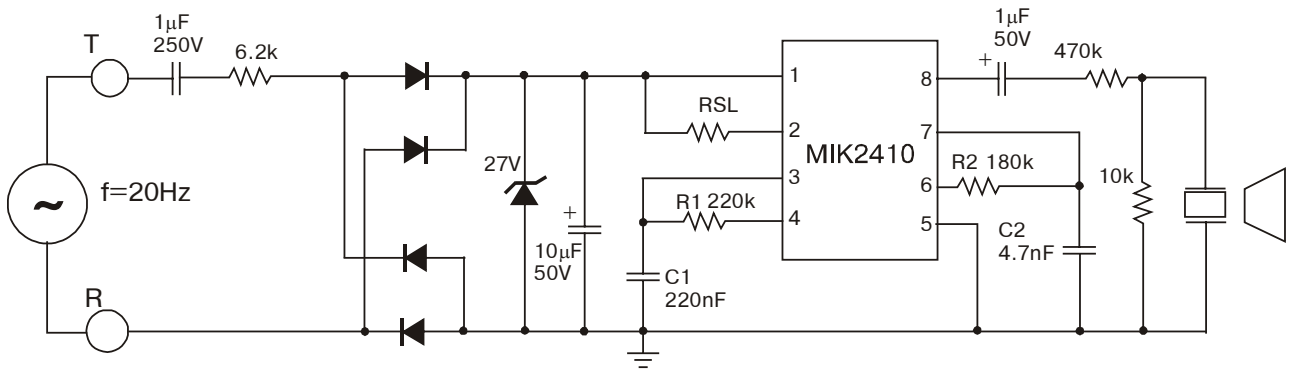


Figure 1. Application Circuit for MIK2410

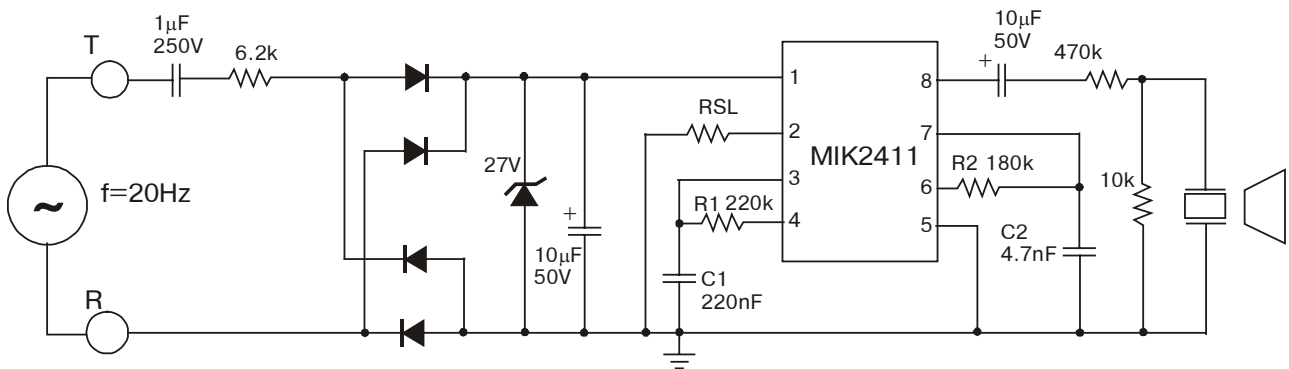


Figure 2. Application Circuit for MIK2411

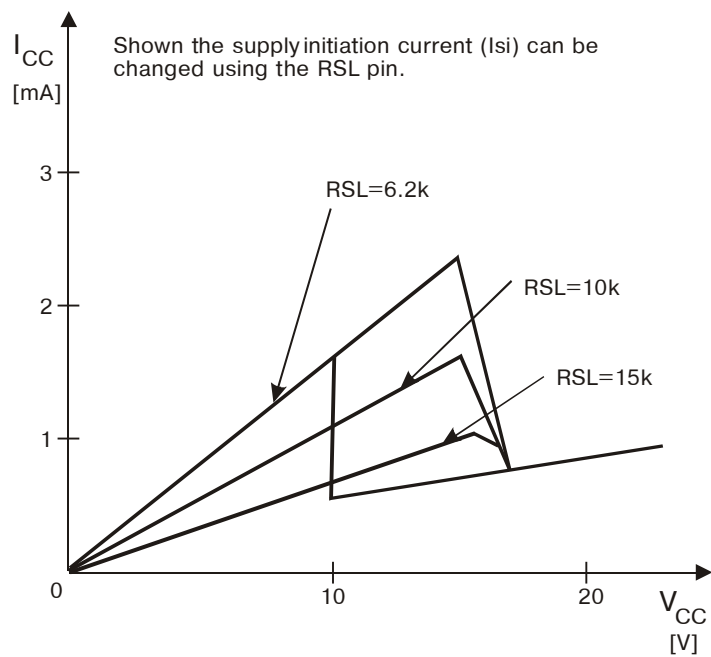
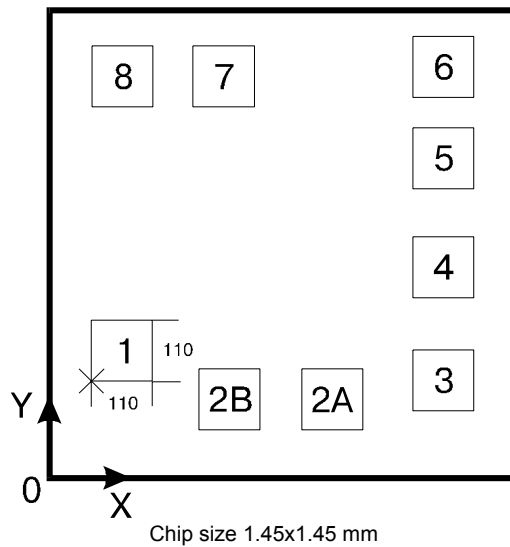


Figure 3. Use of RSL pin (for MIK2411 only)

Pad Location MIK2410/MIK2411
(See Note 1)

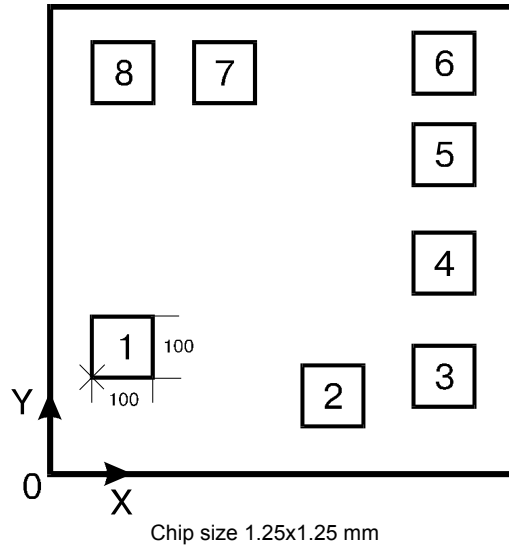


Pad Location Coordinates

Pad N	Pad Name	Coordinates	
		X (μm)	Y (μm)
1	VCC	95	270
2A	RSL	925	90
2B		690	90
3	LFI	1245	90
4	LFO	1245	490
5	GND	1245	765
6	HFO	1245	1185
7	HFI	460	1185
8	OUT	95	1185

Note 1: For MIK2410 2A pad to be used, 2B pad not connected; for MIK2411 2B pad to be used, 2A pad not connected.

Pad Location MIK2410 / MIK2411(new design)



Pad N	Pad Name	Coordinates	
		X (μm)	Y (μm)
1	VCC	75	250
2	RSL	640	81
3	LFI	1095	81
4	LFO	1095	469
5	GND	1095	731
6	HFO	1095	1037
7	HFI	447	1037
8	OUT	75	1037