

UTC 1812A/1812B/1813

CMOS IC

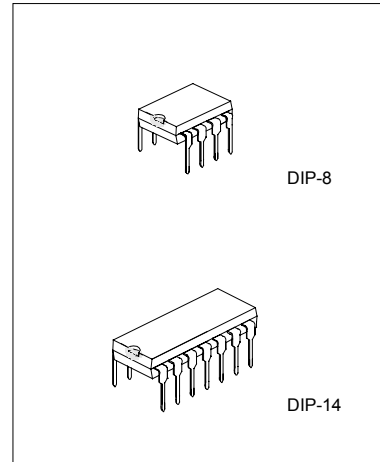
SINGLE SOUND GENERATOR

DESCRIPTION

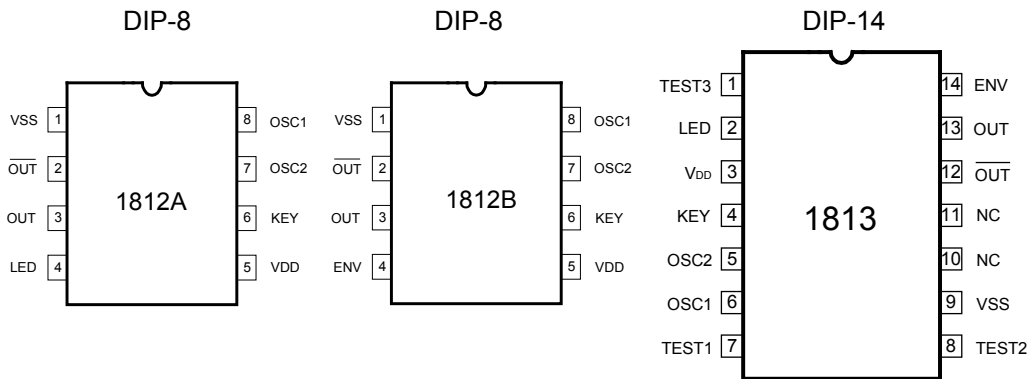
The UTC 1812A/1812B/1813 is a CMOS LSI chip designed for use in sound effect products. It is equipped with tone circuit, noise circuit and other control logic to generate different sounds including rifle gun, machine gun, booming sound, door bell, alarm etc. The customer supplied sound source can be analyzed and programmed into an internal ROM by changing a mask layer during device fabrication. The UTC 1812A/1812B/1813 is suitable for various toy applications.

FEATURES

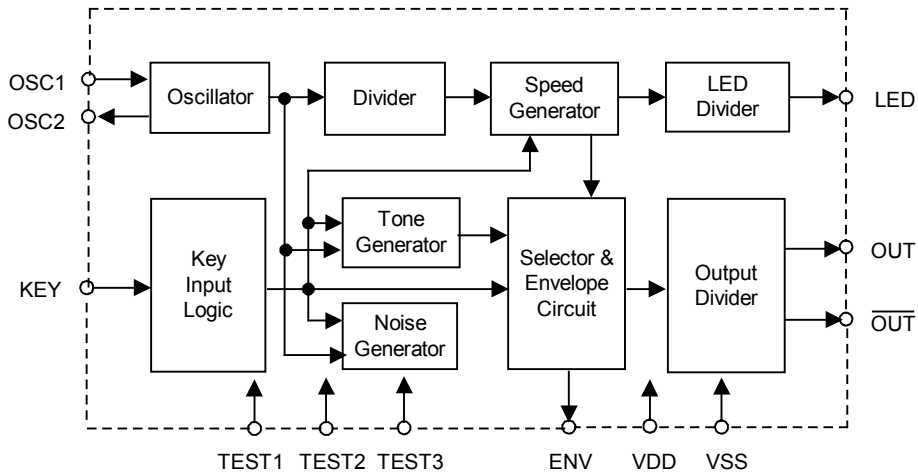
- *Single power supply :2.4~3.3V
- *Low standby current at 3V,1 μ A typ
- *Auto power-off function
- *Speaker or direct piezo application
- *Built-in envelope control circuit
- *1Hz-8Hz programmable LED flash output
- *Minimum external components
- *Low operating current
- *Strong driving capability



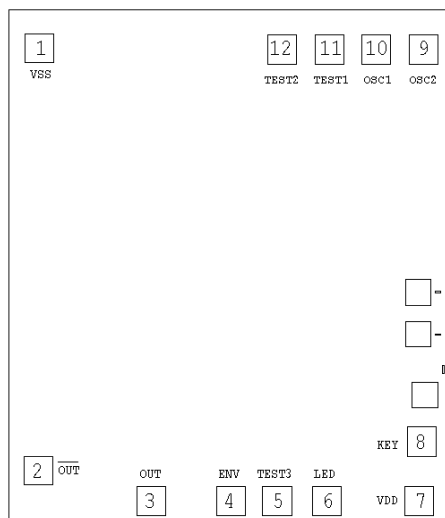
PIN CONFIGURATIONS



BLOCK DIAGRAM



PAD COORDINATES



(0.0)

CHIP SIZE: 1.34 x1.56mm

SUBSTRATE: VDD

PAD No.	X	Y
1	90	1467
2	87	178
3	428	87
4	669	87
5	810	87
6	959	87
7	1241	87
8	1246	266
9	1251	1462
10	1109	1462
11	967	1462
12	823	1462

PAD DESCRIPTION

PAD No.	SYMBOL	DESCRIPTION
1	VSS	Negative power supply, GND
2	$\overline{\text{OUT}}$	Sound output pad, out of phase to pad 3
3	OUT	Sound output pad
4	ENV	Sound envelope control pad
5	TEST3	For IC test only
6	LED	LED flash output pad
7	VDD	Positive power supply
8	KEY	Key input pad, low active
9	OSC2	Oscillator output pad
10	OSC1	Oscillator input pad
11	TEST1	For IC test only
12	TEST2	For IC test only

ABSOLUTE MAXIMUM RATINGS *

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	V _{CC}	-0.3~5	V
Input Voltage	V _{IN}	V _{SS} -0.3 ~ V _{DD} +0.3	V
Operating Temperature	T _{opr}	0~70	°C
Storage Temperature	T _{stg}	-50~125	°C

*Note: Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only. Functional operation of this device at these or any other conditions above those indicated in the operational sections of this specification is not implied and exposure to absolute maximum rating conditions for extended periods may affect device reliability.

ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Operating Voltage	V _{DD}	V _{DD} = 3V	2.4	3	3.3	V
Standby Current	I _{STB}	V _{DD} = 3V		1	5	μA
Operating Current	I _{DD}	V _{DD} = 3V, NO LOAD		300	600	μA
Output Source Current	I _{OH}	V _{DD} = 3V, V _{OH} = 2.5V	-1	-2		mA
Output Sink Current	I _{OL}	V _{DD} = 3V, V _{OL} = 0.5V	1	2		mA
ENV Source Current	I _{ENV}	V _{DD} = 3V, V _{OH} = 2.5V	-1	-2		mA
LED Source Current	I _{LED}	V _{DD} = 3V, V _{OH} = 2.5V	-1	-2		mA
Oscillator Frequency	F _{OSC}	R = 330kΩ		64		kHz

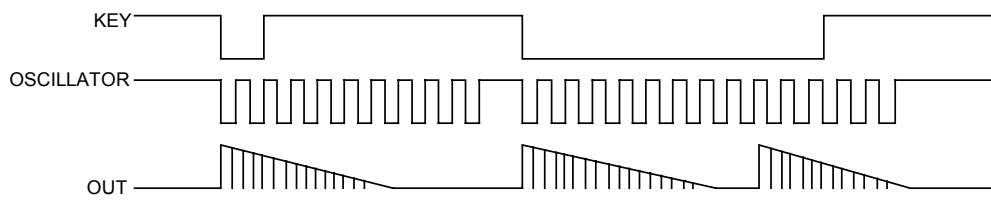
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CMOS IC

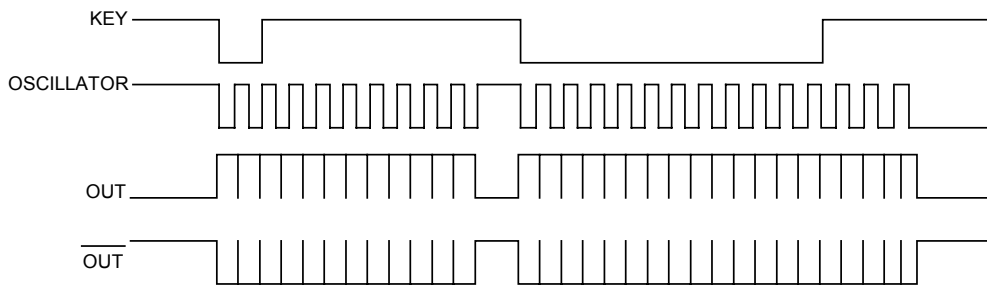
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
"H" Input Voltage	V_{IH}	$V_{DD} = 3V$	2.4			V
"L" Input Voltage	V_{IL}	$V_{DD} = 3V$			0.6	V

TIMING DIAGRAM

With an envelope

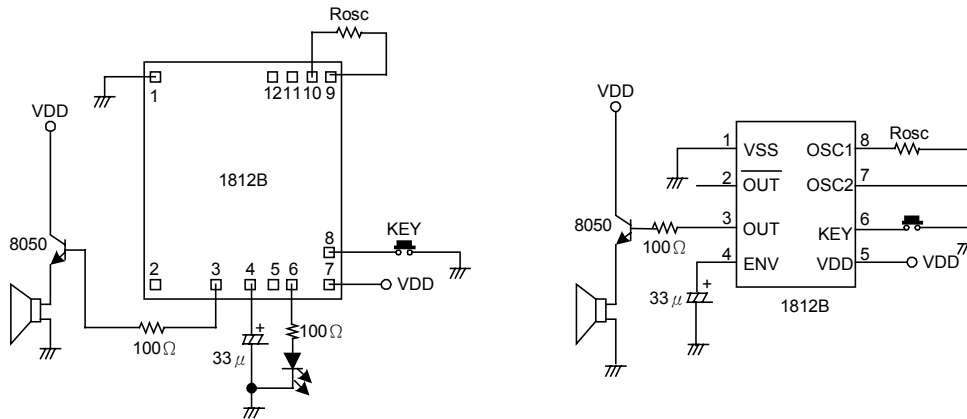


No envelope



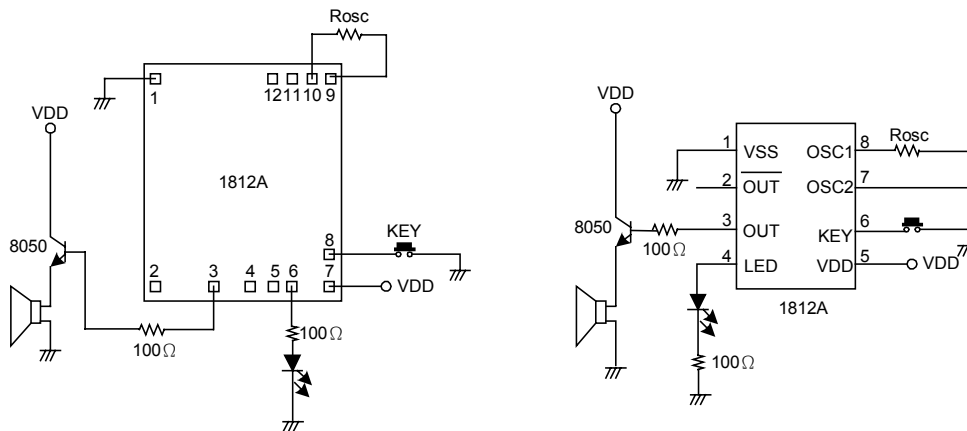
APPLICATION CIRCUITS

Speaker output with an envelope



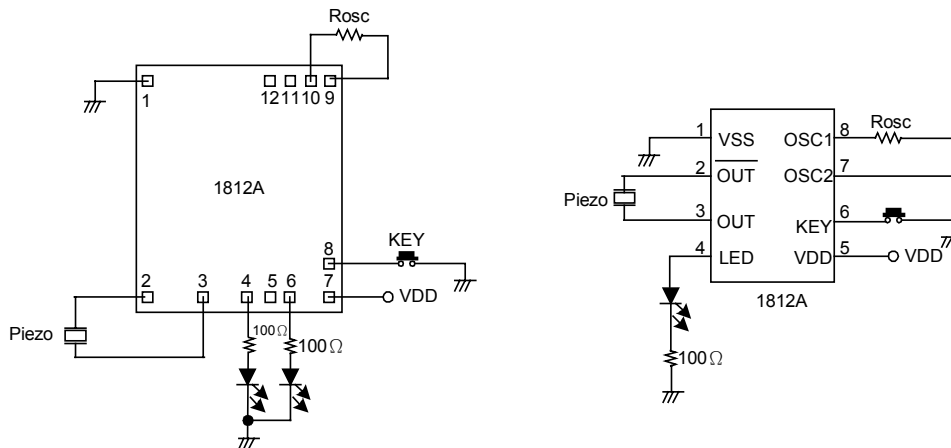
*The IC substrate should be connected to VDD in the PCB layout artwork.

Speaker output without an envelope



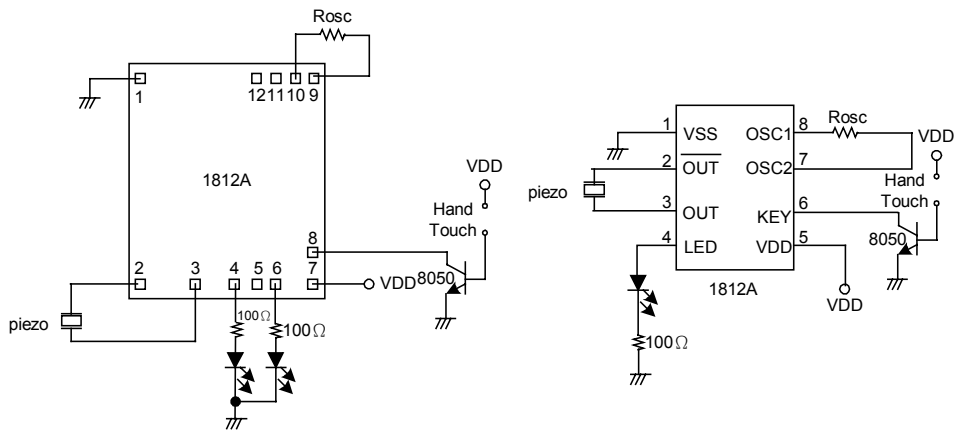
*The IC substrate should be connected to VDD in the PCB layout artwork.

Piezo output without an envelope

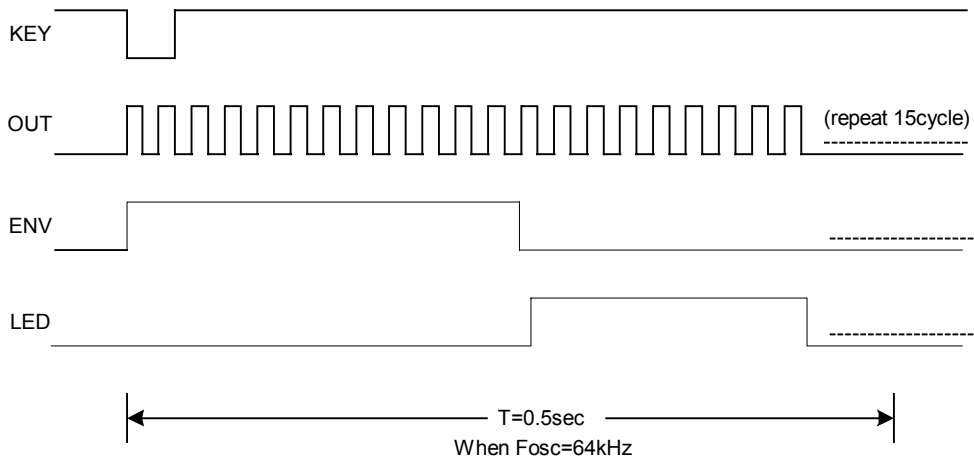
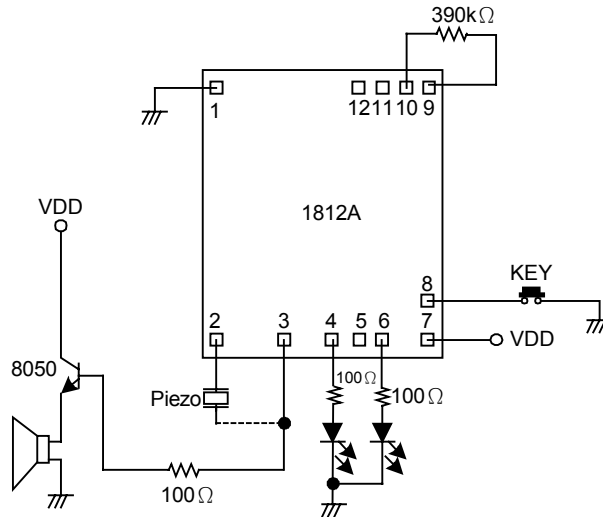


*The IC substrate should be connected to VDD in the PCB layout artwork.

Hand touch trigger



*The IC substrate should be connected to VDD in the PCB layout artwork.



*The IC substrate should be connected to VDD in the PCB layout artwork.