

Features

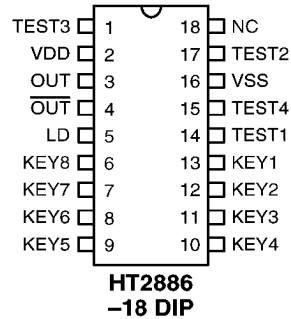
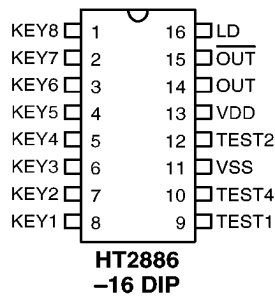
- Single power supply: 2.2V~5.0V
- Low standby current: 1μA (Typ.) at V_{DD}=3V
- Auto power-off function
- Eight different sound sections
- KEY1 to KEY8 independently direct input
- Speaker or piezo application
- Minimal external components
- Built-in oscillator

General Description

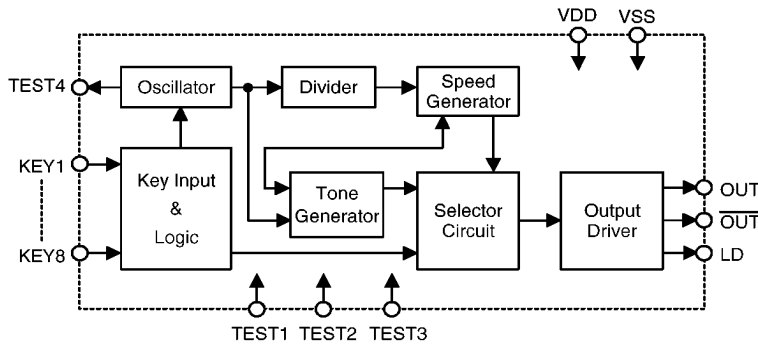
The HT2886 is a CMOS fabricated LSI designed for use in sound effect products. It is equipped with eight sound sections, tone circuit, and other control circuitry to generate various sounds. The features of the customer's sound

sample — on audio cassettes, CDs, etc. — can be programmed into an internal ROM by changing a mask layer during device fabrication. The HT2886 is suitable for various toy applications.

Pin Assignment

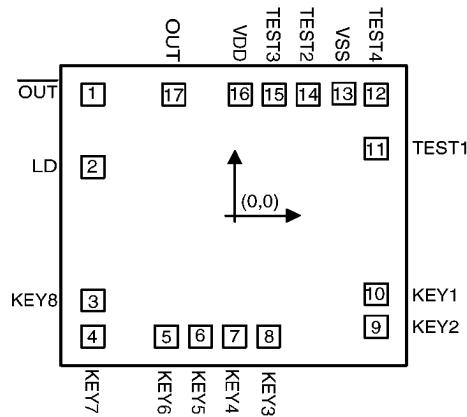


Block Diagram



Pad Coordinates

Unit: mil



Pad No.	X	Y	Pad No.	X	Y
1	-37.5	33.58	10	37.5	-21.88
2	-37.5	13.48	11	37.5	18.53
3	-37.5	-23.58	12	37.5	33.53
4	-37.5	-33.58	13	28.5	33.53
5	-18	-33.58	14	19.5	33.53
6	-9	-33.58	15	10.5	33.53
7	0	-33.58	16	1.5	33.53
8	9	-33.58	17	-16.1	33.53
9	37.5	-30.88			

Chip size: 75 × 69 (mil)²

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

Pin Description (for 18-pin package)

Pin No.	Pin Name	I/O	Description
1	TEST3	I/O	For IC test only
2	VDD	I	Power supply (positive)
3,4	OUT, $\overline{\text{OUT}}$	O	Sound output pin The phase of $\overline{\text{OUT}}$ is opposite to the phase of OUT. OUT is active high whereas $\overline{\text{OUT}}$ is active low.
5	LD	O	For IC test only
6~13	KEY8~KEY1	I	Direct input keys Pressing one of the 8 keys (KEY8~KEY1) plays a section of the sounds.
14	TEST1	I/O	For IC test only
15	TEST4	O	For IC test only The system frequency is output for testing
16	VSS	I	Power supply (ground)
17	TEST2	I/O	For IC test only
18	NC	—	No connection

Absolute Maximum Ratings*

Supply Voltage -0.3V to 5V Storage Temperature..... -50°C to 125°C
 Input Voltage..... $V_{SS}-0.3V$ to $V_{DD}+0.3V$ Operating Temperature..... 0°C to 70°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.

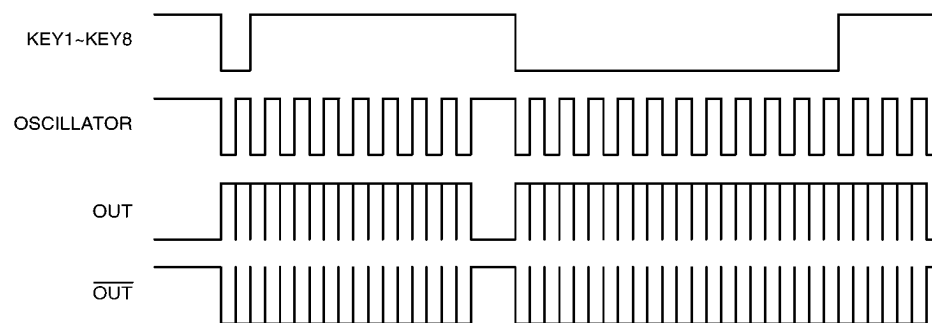
Electrical Characteristics

($T_a=25^\circ C$)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		V_{DD}	Conditions				
V_{DD}	Operating Voltage	—	—	2.2	3.0	5.0	V
I_{STB}	Standby Current	3V	—	—	1.0	5.0	μA
I_{DD}	Operating Current	3V	No load	—	200	400	μA
I_{OH}	OUT, \overline{OUT} Source Current	3V	$V_{OH}=2.5V$	-1	-2.0	—	mA
I_{OL}	OUT, \overline{OUT} Sink Current	3V	$V_{OL}=0.5V$	0.7	2.0	—	mA
V_{IH}	“H” Input Voltage	3V	—	2.4	—	—	V
V_{IL}	“L” Input Voltage	3V	—	—	—	0.6	V

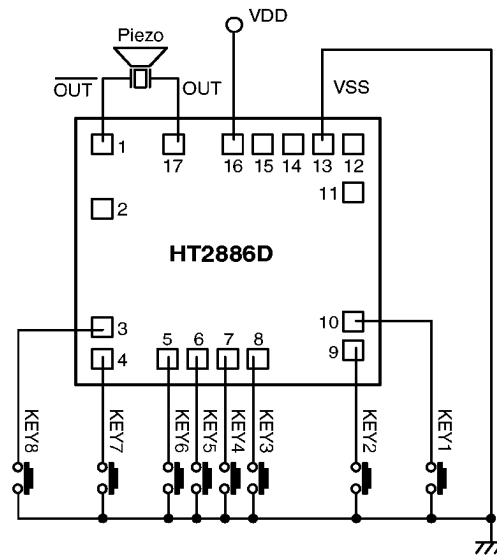
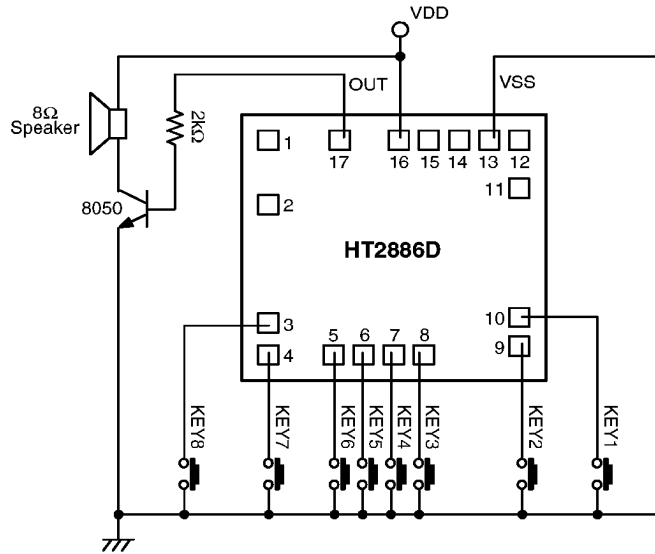
Timing Diagram

KEY1~KEY8 trigger



Application Circuits (HT2886D — eight Toy phone sounds)

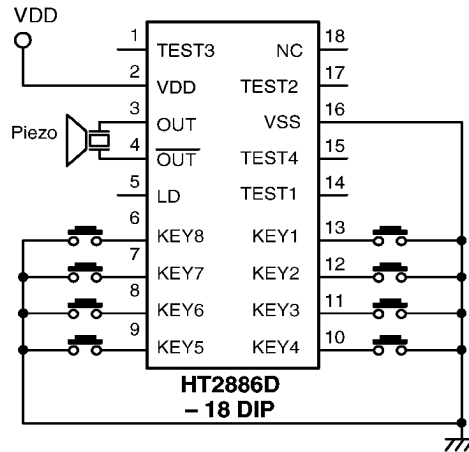
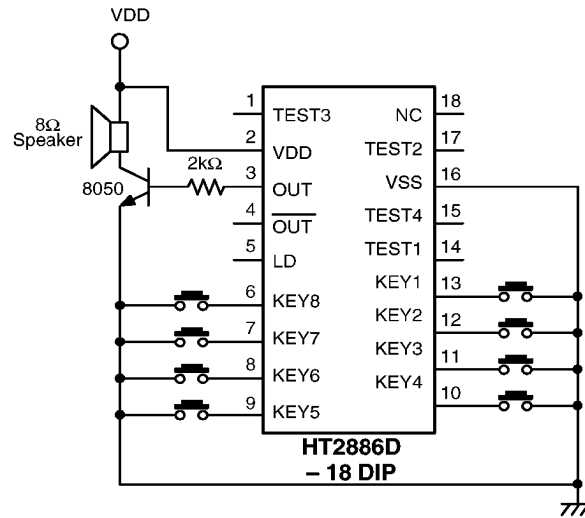
- Chip form (speaker or piezo)



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

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|--------------------|---|
| KEY1: Dialing Tone | KEY5: Redialing Tone |
| KEY2: Key Tone 1 | KEY6: Ringing Tone |
| KEY3: Key Tone 2 | KEY7: Busy Tone |
| KEY4: Key Tone 3 | KEY8: Melody: London bridge is falling down |

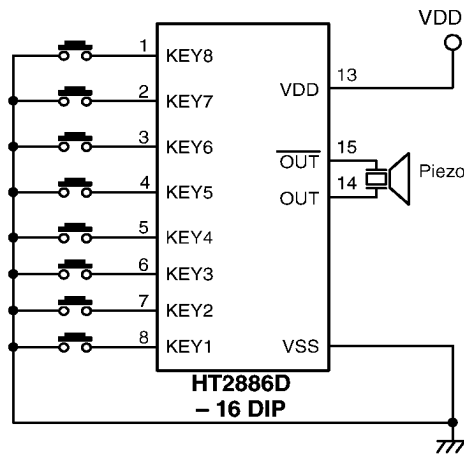
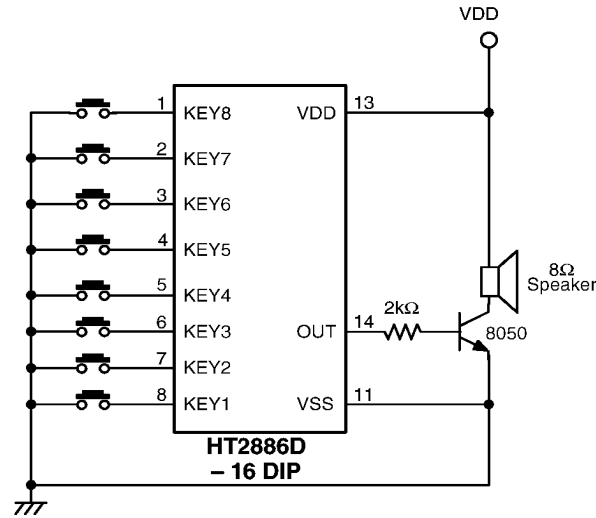
- Package form (speaker or piezo application for 18 DIP)



KEY1: Dialing Tone
 KEY2: Key Tone 1
 KEY3: Key Tone 2
 KEY4: Key Tone 3

KEY5: Redialing Tone
 KEY6: Ringing Tone
 KEY7: Busy Tone
 KEY8: Melody: London bridge is falling down

- Package form (speaker or piezo application for 16 DIP)



- | | |
|--------------------|---|
| KEY1: Dialing Tone | KEY5: Redialing Tone |
| KEY2: Key Tone 1 | KEY6: Ringing Tone |
| KEY3: Key Tone 2 | KEY7: Busy Tone |
| KEY4: Key Tone 3 | KEY8: Melody: London bridge is falling down |