

Features

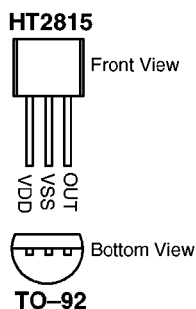
- Single power supply: 2.4V~3.3V
- Low standby current: 1 μ A (Typ.) at V_{DD}=3V
- Auto power-off function
- Miniature package
- Speaker or direct piezo application
- Minimal external components

General Description

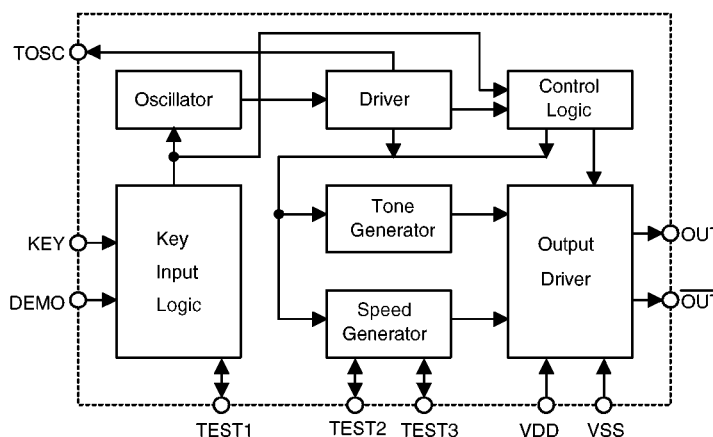
The HT2815 is a CMOS fabricated LSI chip designed for use in sound effect products. It can generate a section of programmable sounds. The LSI is equipped with a sound section, tone circuit and control logic to generate various sounds including bird songs, ghost sounds, alarm sounds, etc. Customers are required to supply their sound samples which are analyzed

and programed into the LSI by changing a mask layer during device fabrication. The HT2815 provides the following bonding options: (1) power-on playing, (2) key trigger playing, (3) power-on playing 8 times and then auto-off. The output can directly drive a piezo or a speaker via an external transistor. The HT2815 is offered in a chip form TO-92 package.

Pin Assignment

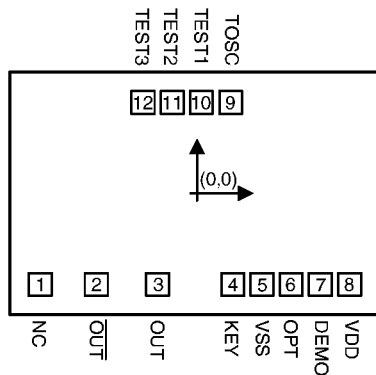


Block Diagram



Pad Coordinates

Unit: mil



Pad No.	X	Y	Pad No.	X	Y
1	-41.23	-23.91	7	32.26	-23.91
2	-26.52	-23.91	8	39.91	-23.91
3	-10.46	-23.91	9	8.76	23.91
4	9.31	-23.91	10	1.06	23.91
5	16.96	-23.91	11	-6.59	23.91
6	24.61	-23.91	12	-14.24	23.91

 Chip size: 99×59 (mil)²

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

Pad Description

Pad No.	Pad Name	I/O	Description
1	NC	—	No connection
2	$\overline{\text{OUT}}$	O	Sound output pad, out of phase to pad 3 $\overline{\text{OUT}}$ can also be used as an LED flash driver
3	OUT	O	Sound output pad
4	KEY	I	Key input pad, internal pull-high, low active
5	VSS		Negative power supply, GND
6	OPT	I	Bonding this pad will shorten pad 5 & pad 7 and provide a demo-playing function. In this function, the LSI will automatically play 8 times when power is on. After 8 times playing, the LSI will turn off automatically.
7	DEMO	I	Demo-play function (refer to the OPT description), selection pad, internal pull-high, low active
8	VDD	I	Positive power supply
9	TOSC	O	For IC test only
10	TEST1	I/O	For IC test only
11	TEST2	I/O	For IC test only
12	TEST3	I/O	For IC test only

Absolute Maximum Ratings*

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

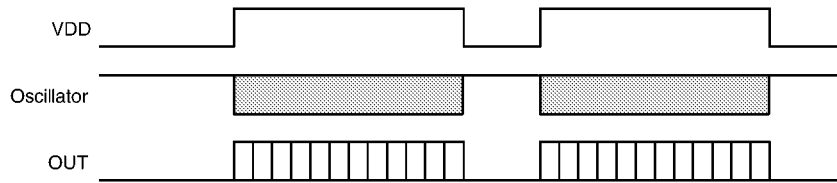
Electrical Characteristics

(Ta=25°C)

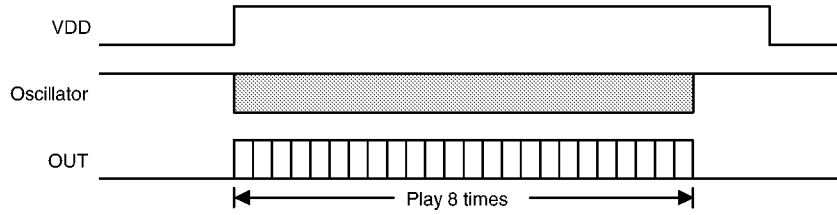
Symbol	Characteristics	Test Conditions		Min.	Typ.	Max.	Unit
		V _{DD}	Conditions				
V _{DD}	Operating Voltage		—	2.4	3	3.3	V
I _{STB}	Standby Current	3V		—	1	5	μA
I _{DD}	Operating Current	3V	No Load	—	100	300	μA
I _{OH}	OUT Source Current	3V	V _{OH} =2.5V	-1	-2	—	mA
I _{OL}	OUT Sink Current	3V	V _{OL} =0.5V	1	2	—	mA
F _{OSC}	Oscillator Frequency	3V		—	256	—	kHz
V _{IH}	“H” Input Voltage	3V		2.4	—	—	V
V _{IL}	“L” Input Voltage	3V		—	—	0.6	V

Timing Diagram

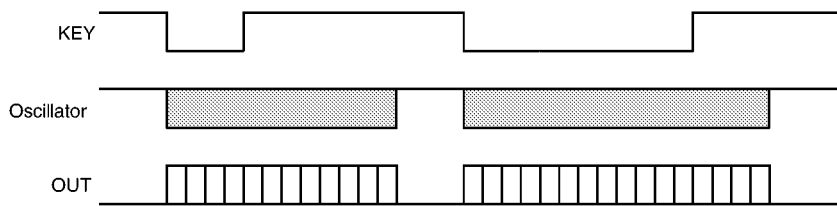
Power-on play (KEY & VSS bond together)



Power-on Demo-play (bond OPT as VSS)



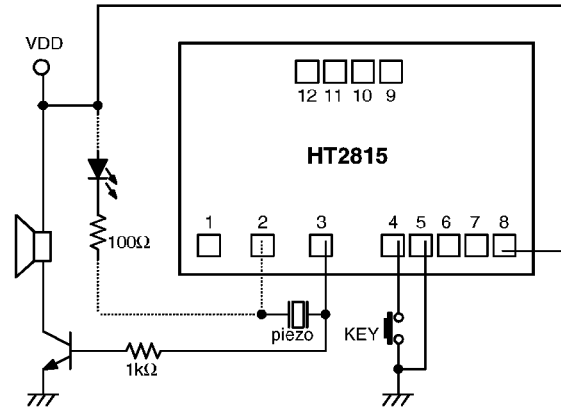
Key trigger play



Application Circuits

Key trigger application

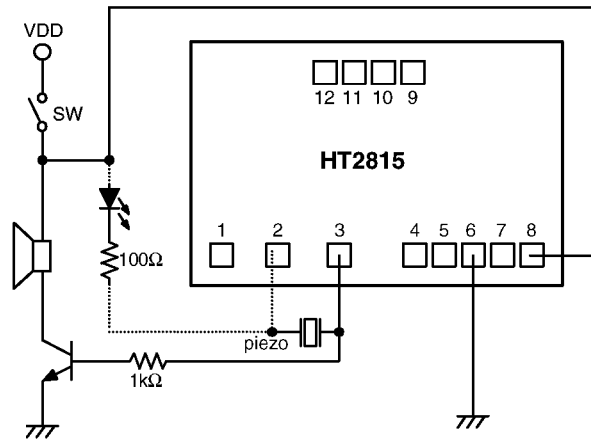
- Chip form



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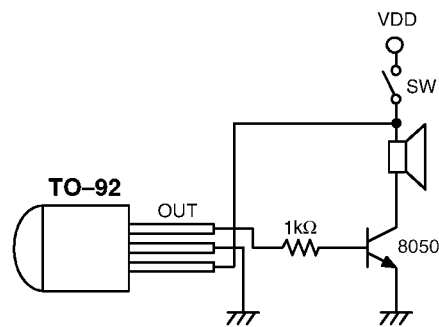
Power-on playing

- Chip form



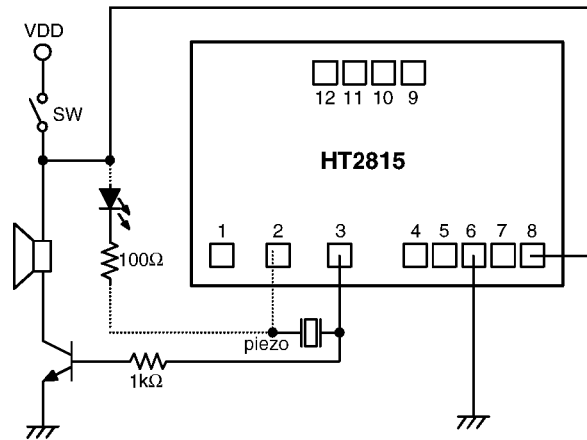
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- TO-92



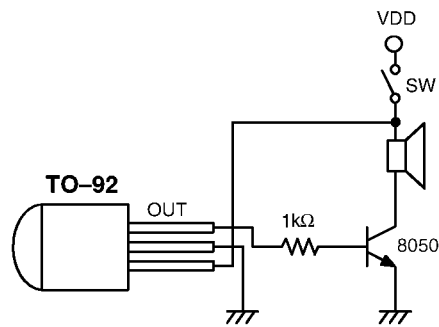
Power-on Demo-playing

- Chip form



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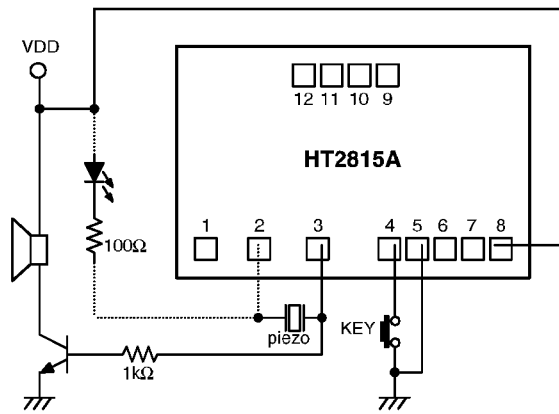
- TO-92



Application Circuits (HT2815A — Ghost Sound)

Key trigger application

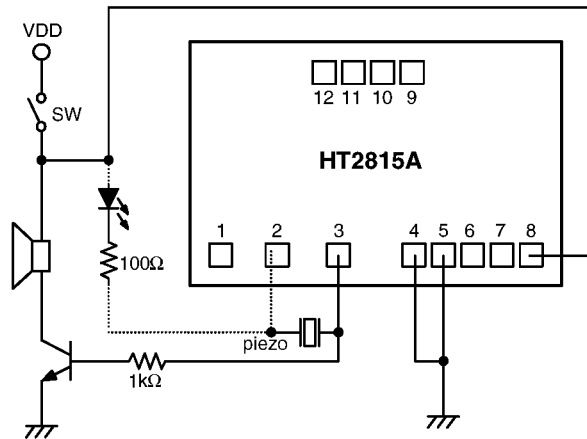
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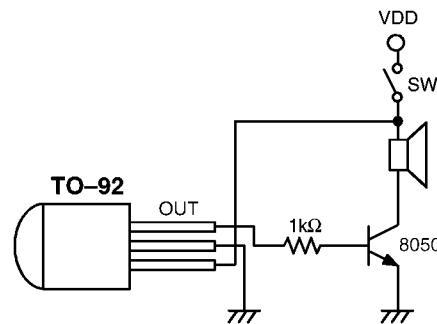
Power-on playing

- Chip form



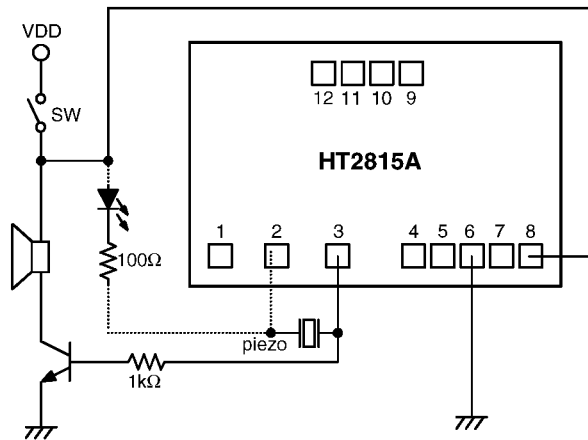
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- TO-92



Power-on Demo-playing

- Chip form



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

- TO-92

