

Features

- Single power supply
- Output Power: 1.5W at 5V and 8Ω load
- Less than 1μA quiescent current
- Wide range input level at 5V
- Bridge-Tied-Load output
- Package types: 8-pin SOP

Applications

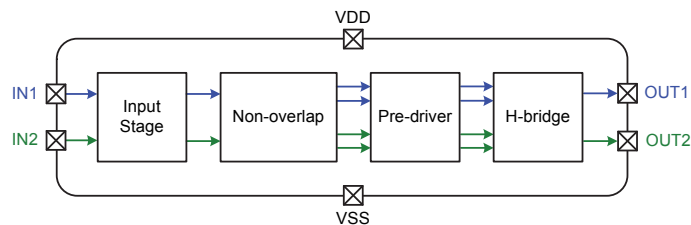
- Wide range of audio applications

General Description

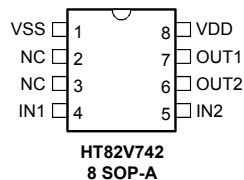
The HT82V742 is an audio PWM driver IC which can directly drive speakers. The device can deliver up to 1.5 watts into an 8Ω load with a 5V operating voltage. The advantage of using an audio PWM driver is that any general purpose MCU, for example the HT32F series, in being able to generate PWM outputs can therefore have voice functions.

One special feature of the device is its ability to operate on a single power supply 5V with wide range input level. The superior efficiency of this Holtek audio PWM driver together with its wide operating voltage and ability to directly driver speakers make it excellent for use in a wide range of voice applications.

Block Diagram



Pin Assignment



Pin Descriptions

Pin Name	Type	Description
IN1	DI	PWM data input 1
IN2	DI	PWM data input 2
OUT1	AO	Output 1 for driving a speaker
OUT2	AO	Output 2 for driving a speaker
VDD	PWR	Positive power supply
VSS	PWR	Negative power supply, ground.
NC	—	Not connected

Absolute Maximum Ratings

Supply Voltage $V_{SS}-0.3V$ to $V_{SS}+06.0V$

Input Voltage $V_{SS}-0.3V$ to $V_{DD}+0.3V$

Storage Temperature $-50^{\circ}C$ to $125^{\circ}C$

Operating Temperature $-40^{\circ}C$ to $85^{\circ}C$

Note: These are stress ratings only. Stresses exceeding the range specified under “Absolute Maximum Ratings” may cause substantial damage to this device. Functional operation of these devices at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

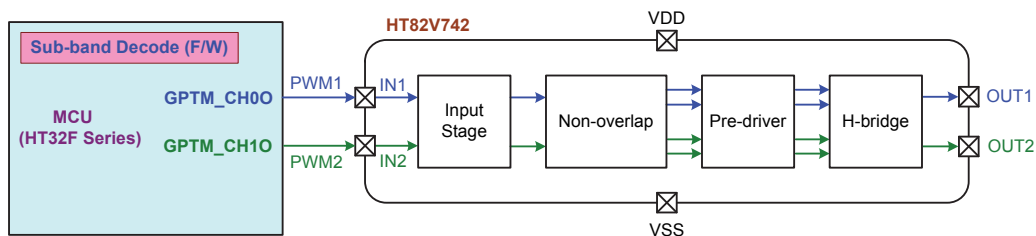
Electrical Characteristics

$T_a=25^{\circ}C$

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		V_{DD}	Conditions				
V_{DD}	Operating Voltage	—	—	2.0	—	5.5	V
I_{STB}	Standby Current	—	$IN1=IN2=0$ or $IN1=IN2=V_{DD}$	—	—	1.0	μA
I_{OL}	OUT1/OUT2 Sink Current	3V	$V_{OL}=0.1V_{DD}$	90	130	—	mA
		5V		160	220	—	
I_{OH}	OUT1/OUT2 Source Current	3V	$V_{OH}=0.9V_{DD}$	-90	-130	—	mA
		5V		-160	-220	—	
$R_{DS(ON)}$	Static Drain-source On-state Resistance (RDSN or RDSP)	5V	$V_{DD}=5V, R_L=8\Omega$	—	1	—	Ω
V_{IL}	IN1/IN2 Input Low Voltage	5V	—	0.0	—	0.8	V
V_{IH}	IN1/IN2 Input High Voltage	5V	—	2.0	—	V_{DD}	V

Functional Description

The HT82V742 is an audio PWM driver. The device has two input pins and two output pins. The output pins are capable of directly driving a speaker. An application block diagram is shown below.

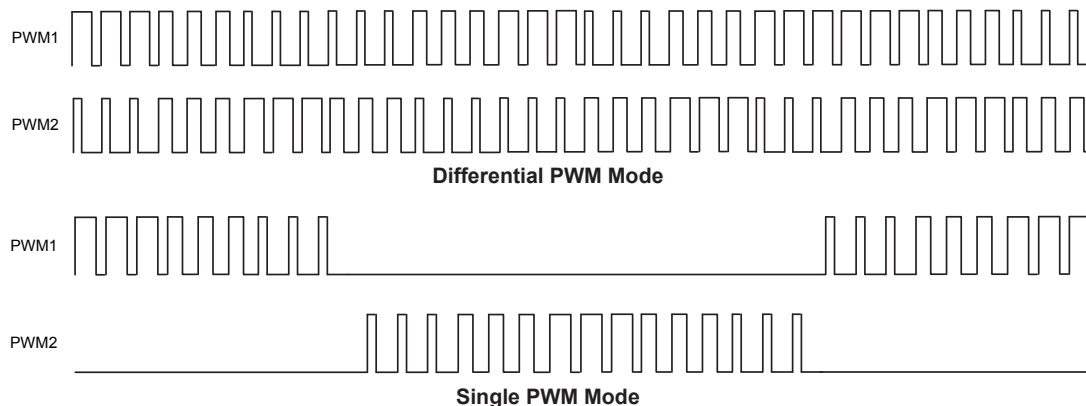


MCU with Voice Functions using

The MCU includes a range of Timer Modules, for example the HT32F series GPTM, PWM or MCTM, all of which are capable of generating Audio PWM Modulation signals on their PWM1/PWM2 pins. When combined with Sub-band-Coding compression/decompression and along with the HT82V742, it is able to directly drive speakers. This allows the MCU to have voice functions.

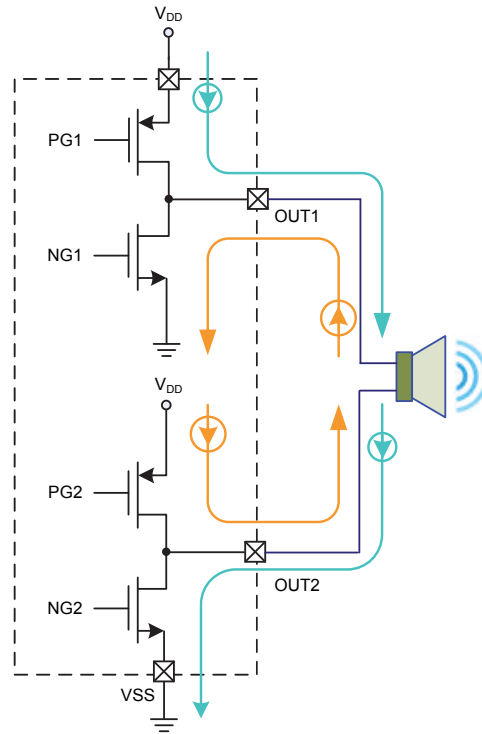
IN1/IN2 and OUT1/OUT2 have a logical in-phase relationship. Therefore if IN1 or IN2 input is high, then output OUT1 or OUT2 will also be high. If IN1 or IN2 input is low, then output OUT1 or OUT2 will also be low.

The input pins can receive two kinds of Audio PWM waveforms, one type is Differential mode and the other is Single mode. These are illustrated in the following diagram.

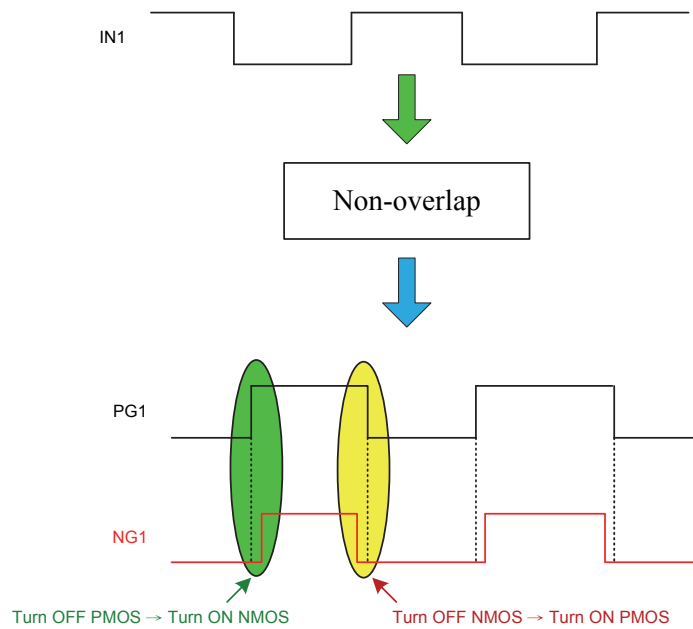


Non-overlap and BTL

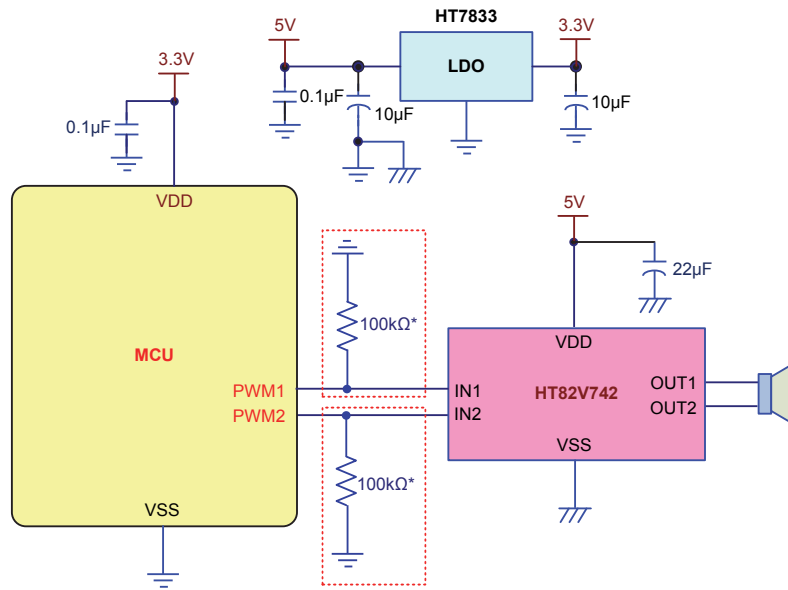
The final stage of the PWM Driver has a BTL arrangement composed of two CMOS structures. The control signals for these are PG1/NG1 and PG2/NG2 as shown in the following diagram.



In order to prevent the PMOS and NMOS transistors from turning on at the same time and affecting the sound quality, a non-overlap circuit is required. The following diagram shows how the Audio PWM signal, after passing through the non-overlap circuit, is prevented from simultaneously turning on both the PMOS1 and NMOS1.



Application Circuits



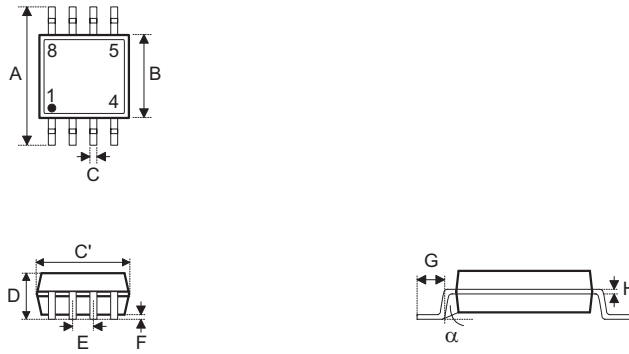
*: Pull-low resistor can prevent system power on/off pop noise if needed.

Package Information

Note that the package information provided here is for consultation purposes only. As this information may be updated at regular intervals users are reminded to consult the [Holtek website](#) for the latest version of the [Package/ Carton Information](#).

Additional supplementary information with regard to packaging is listed below. Click on the relevant section to be transferred to the relevant website page.

- Package Information (include Outline Dimensions, Product Tape and Reel Specifications)
- The Operation Instruction of Packing Materials
- Carton information

8-pin SOP (150mil) Outline Dimensions


Symbol	Dimensions in inch		
	Min.	Nom.	Max.
A	—	0.236 BSC	—
B	—	0.154 BSC	—
C	0.012	—	0.020
C'	—	0.193 BSC	—
D	—	—	0.069
E	—	0.050 BSC	—
F	0.004	—	0.010
G	0.016	—	0.050
H	0.004	—	0.010
α	0°	—	8°

Symbol	Dimensions in mm		
	Min.	Nom.	Max.
A	—	6.00 BSC	—
B	—	3.90 BSC	—
C	0.31	—	0.51
C'	—	4.90 BSC	—
D	—	—	1.75
E	—	1.27 BSC	—
F	0.10	—	0.25
G	0.40	—	1.27
H	0.10	—	0.25
α	0°	—	8°

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