

Features

- Operating voltage: 2.2V to 5.5V
- High signal-to-noise ratio
- Low distortion
- Large output voltage swing
- Low power consumption
- Output power 1500mW at 10% THD+N into 8 Ω (V_{DD}=5V)
- Wide temperature operating range
- · Low power-on and chip enable or disable POP noise
- · Low standby current
- Power off control
- Can directly drive speakers
- 8-pin SOP-EP package

Block Diagram

Applications

• Wide range of audio applications

General Description

The HT82V73A is an integrated class AB mono speaker driver contained in an 8-pin SOP-EP package. The device is capable of delivering 1500mW of output power into an 8Ω load with less than 10% (THD+N) distortion from a 5V power supply. When in the shutdown mode the very low standby current is an important feature for a wide range of battery powered audio applications.



Pin Assignment





Pin Description

Pin No.	Pin Name	I/O	Description	
1	OUTN	0	Negative output	
2	Aud In	Ι	Audio input	
3	VREF	0	Speaker non-inverting input voltage reference	
4	VSS	—	egative power supply, ground	
5	CE	Ι	hip enable, low active	
6	NC	—	lot connected	
7	OUTP	0	Positive output	
8	VDD	—	Positive power supply	

PCB Layout Consideration

It is desirable to maximize the PCB cooper area connecting to GND/EPAD pin to achieve the best thermal performance, if the board space allowed, a ground plane is highly desirable.

Absolute Maximum Ratings

Supply Voltage $V_{SS}0.3V$ to $V_{SS}\mbox{+-}6.0V$	Input Voltage V_{SS} -0.3V to V_{DD} +0.3V
Storage Temperature50°C to 125°C	Operating Temperature40°C to 85°C

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



D.C. Characteristics

Ta=25°C, V_{DD}=5V, V_{SS}=0V (unless otherwise noted)

Sympol	Devemeter		Test Conditions	Min	Turn	May	l lmit	
Symbol	Parameter	VDD	Conditions		win.	тур.	wax.	Unit
V _{DD}	Supply Voltage		_		2.2	5.0	5.5	V
1	Quiescent Rower Supply Current	3V	V _{IN} =0V, No load		1	3	7	mA
IDD	Quiescent Power Supply Current	5V			2	4	8	mA
Isd	Shut-down Power Supply Current	5V	$V_{IN}=0V, \overline{CE}=V_{DD}, No$	load	—	—	1	μA
VIH	Input High Voltage for CE	—	_		$0.7V_{DD}$		V _{DD}	V
VIL	Input Low Voltage for \overline{CE}	—			0		$0.3V_{\text{DD}}$	V
	Output Power	3V	(THD+N)/S<1%, V _{IN} =1kHz sinewave	R∟=4Ω	_	600		mW mW
				R∟=8Ω	—	400	_	
				$R_L=16\Omega$	—	250	_	
			(THD+N)/S<10%, V _{IN} =1kHz sinewave	R∟=4Ω	—	780	_	
				R∟=8Ω	—	550	—	
				R∟=16Ω	—	300	_	
FO		5V	(THD+N)/S<1%, V _{IN} =1kHz sinewave	R∟=4Ω	—	1850	_	
				R∟=8Ω	—	1200	—	
				R∟=16Ω	—	700	_	
			(THD+N)/S<10%,	R∟=4Ω	—	2350	—	
				R _L =8Ω	_	1500	_	
				R _L =16Ω	—	850		

A.C. Characteristics

Ta=25°C, V_{DD} =5V, V_{SS} =0V (unless otherwise noted)

Symbol	Parameter		Test Conditions	Min.	Turn	Max	l lmit	
Symbol			V _{DD} Conditions		тур.	wax.	Unit	
				C∟=0.1µF		100		ms
t _{Wake}	Wake-up Time	5V	R _L =8Ω	C∟=1µF	—	150	—	ms
				C∟=10µF	—	175	—	ms
	Total Harmonic Distortion plus. Noise-to-signal Ratio	5V	Output power = 500mW, V _{IN} =1kHz sinewave	R∟=4Ω	—	0.5	—	%
(THD+N)/S				R∟=8Ω	_	0.2	—	%
				R∟=16Ω	_	0.17	_	%
				RL=4Ω	_	71	_	dB
S/N	Signal to Noise Ratio	5V	Vo=1Vrms 1kHz sinewave	R∟=8Ω	_	72.5	_	dB
				R _L =16Ω		73.5		dB



Functional Description

OUTP Rising Time (t_R)

When CE is active low, the device requires a certain time before it can output its full power on the OUTP pin. This time is dependent upon the value of C1. (*see the application circuits)



For battery based applications, power consumption is a key issue, therefore the amplifier should be turned off when in the standby state. In order to eliminate any speaker sound bursts while turning the amplifier on, the application circuit, which will incorporate a capacitance value of C1, should be adjusted in accordance with the speaker's audio frequency response. A greater value of C1 will improve the noise burst while turning on the amplifier. The recommended operation sequence is:

Turn On: "Aud In" signal standby $(1/2V_{DD}) \rightarrow enable amplifier \rightarrow wait t_R$ for amplifier ready \rightarrow "Aud In" signal start

Turn Off: "Aud In" signal finish \rightarrow disable amplifier \rightarrow wait t_R for amplifier off \rightarrow "Aud In" signal off



If the application is not powered by batteries and there is no problem with amplifier On/Off issue, a capacitor value of $0.1\mu F$ for C1 is recommended.

THD+N vs. Output Power @ VDD=3V & 5V







R_{LOAD} =8 Ω , V_{IN} =1kHz sinewave









Application Circuits





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 <u>Holtek website</u> for the latest version of the <u>Package/Carton Information</u>.

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-EP (150mil) Outline Dimensions







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ΑA



Symbol	Dimensions in inch						
Symbol	Min.	Nom.	Max.				
A		0.236 BSC					
В	—	0.154 BSC					
С	0.012	—	0.020				
C'	—	0.193 BSC	_				
D	—	—	0.069				
D1	0.059	—	_				
E	—	0.050 BSC	—				
E2	0.039	—	_				
F	0.000	_	0.006				
G	0.016		0.050				
Н	0.004	—	0.010				
α	0°	_	8°				

Symbol	Dimensions in mm						
Symbol	Min.	Nom.	Max.				
A	_	6.00 BSC	—				
В	—	3.90 BSC	—				
С	0.31	—	0.51				
C'	—	4.90 BSC	—				
D	—	—	1.75				
D1	1.50	—	—				
E	—	1.27 BSC	—				
E2	1.00	—	—				
F	0.00	—	0.15				
G	0.40	—	1.27				
Н	0.10	—	0.25				
α	0°	_	8°				

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