# HT82V733
240mA Audio Power Amp

Features

- High signal-to-noise ratio
- High slew rate
- Low distortion
- Large output voltage swing
- Excellent power supply ripple rejection
- Low power consumption
- Short-circuit elimination
- Wide temperature operating range
- No switch ON/OFF clicks
- Low standby current
- Power off control
- Direct drive speaker
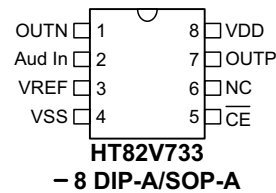- 8-pin DIP/SOP package

General Description

HT82V733 is an integrated class AB mono speaker driver contained in an SOP-8 package. The device is fabricated in a CMOS process and has been primarily developed for portable digital audio applications.

Block Diagram

Pin Assignment

HT82V733
− 8 DIP-A/SOP-A
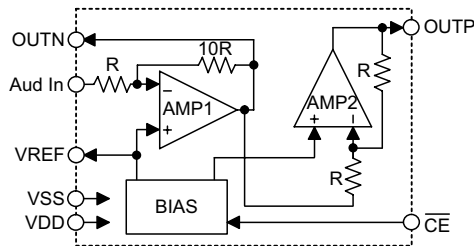
Pin Description

Pin No.	Pin Name	I/O	Description
1	OUTN	O	Negative output
2	Aud In	I	Audio input
3	VREF	O	Speaker non-inverting input voltage reference
4	VSS	—	Negative power supply, ground
5	$\overline{CE}$	I	Chip enable, low active
6	NC	—	Not connected
7	OUTP	O	Positive output
8	VDD	—	Positive power supply

Absolute Maximum Ratings

Supply Voltage ....V_{SS}−0.3V to V_{SS}+5.5V

Input Voltage..............................V_{SS}−0.3V to V_{DD}+0.3V

Storage Temperature ....−50°C to 125°C

Operating Temperature............................−20°C to 70°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.

Electrical Characteristics

V_{SS}=0V, Ta=25°C

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		V_{DD}	Conditions				
Supplies							
V_{DD}	Supply Voltage	—	—	2.4	5.0	5.5	V
V_{SS}	Negative Supply Voltage	5V	—	—	0	—	V
I_{STB}	Standby Current	—	—	—	—	1	μA
I_{DD}	Operating Current	—	V_i=0, No load	2	4	10	mA
			V_{P-P}=500mV, f_i=1kHz No load	4.8	12.3	23.5	
P_{tot}	Total Power Dissipation	—	V_{P-P}=500mV, f_i=1kHz No load	15	60	140	mW
DC Characteristics							
$V_{I(OS)}$	Input Offset Voltage	5V	—	—	12	—	mV
		3V		—	2.5	—	
I_O	Maximum Output Current (THD+N)/S<1%	5V	Current	—	240	—	mA
		3V	Current	—	160	—	
V_O	Output Voltage Swing (THD+N)/S<1%	5V	R_L=16Ω	1.2	—	4	V
			R_L=8Ω	1.8	—	3.4	
			R_L=4Ω	2.1	—	3	
		3V	R_L=16Ω	0.6	—	2.3	V
			R_L=8Ω	0.9	—	1.9	
			R_L=4Ω	1.1	—	1.7	
PSRR	Power Supply Rejection Ratio	5V	f_i=100Hz; $V_{ripple(p-p)}$=100mV	—	71	—	dB
		3V		—	62	—	
AC Characteristics							
(THD+N)/S	Total Harmonic Distortion Plus Noise-to-signal Ratio	5V	$V_{O(p-p)}$=3.5V R_L=8Ω	—	−48	—	dB
				—	3	—	%
		3V	$V_{O(p-p)}$=1.5V R_L=8Ω	—	−30	—	dB
				—	3	—	%
S/N	Signal-to-noise Ratio	5V	—	—	60	—	dB
		3V		—	58	—	

Functional Description

OUTP Rising Time (t_R)

When $\overline{CE}$ active low, the HT82V733 need rising time to output fully on OUTP pin. However, the rising time depends on C1. (*see the application circuits)
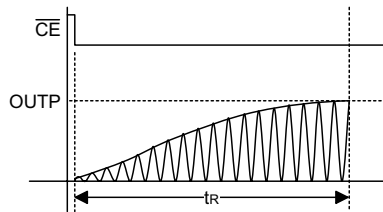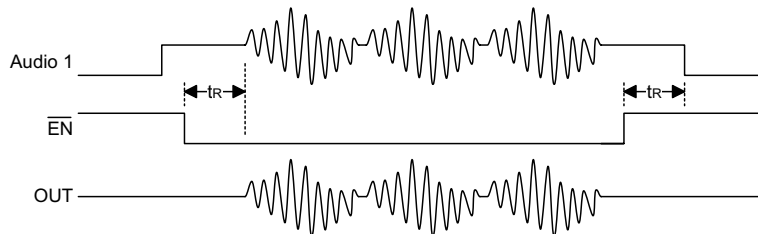

	Capacitor			
t_R Voltage	0.1µF	1µF	4.7µF	10µF
2.2V	15ms	30ms	90ms	185ms
3V	15ms	30ms	90ms	185ms
4V	15ms	30ms	90ms	185ms

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:
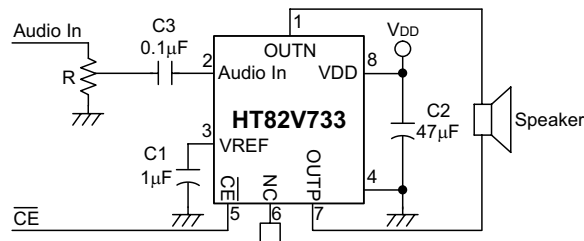
Turn On: audio1 signal standby (1/2 VDD) $\rightarrow$ enable amplifier $\rightarrow$ wait t_R for amplifier ready $\rightarrow$ audio1 output

Turn Off: audio1 signal finished $\rightarrow$ disable amplifier $\rightarrow$ wait t_R for amplifier off $\rightarrow$ audio1 signal off
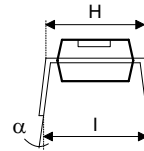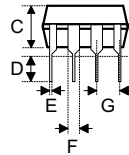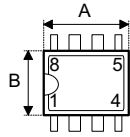

 If the application is not powered by batteries and there is no problem with amplifier On/Off issue, a capacitor value of 0.1uF for C1 is recommended.
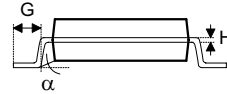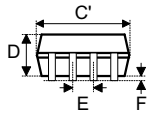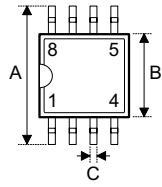
Application Circuits

Package Information

8-pin DIP (300mil) Outline Dimensions

Symbol	Dimensions in mil		
	Min.	**Nom.**	**Max.**
A	355	—	375
B	240	—	260
C	125	—	135
D	125	—	145
E	16	—	20
F	50	—	70
G	—	100	—
H	295	—	315
I	335	—	375
α	0°	—	15°

8-pin SOP (150mil) Outline Dimensions

Symbol	Dimensions in mil		
	Min.	**Nom.**	**Max.**
A	228	—	244
B	149	—	157
C	14	—	20
C′	189	—	197
D	53	—	69
E	—	50	—
F	4	—	10
G	22	—	28
H	4	—	12
α	0°	—	10°

Product Tape and Reel Specifications

Reel Dimensions
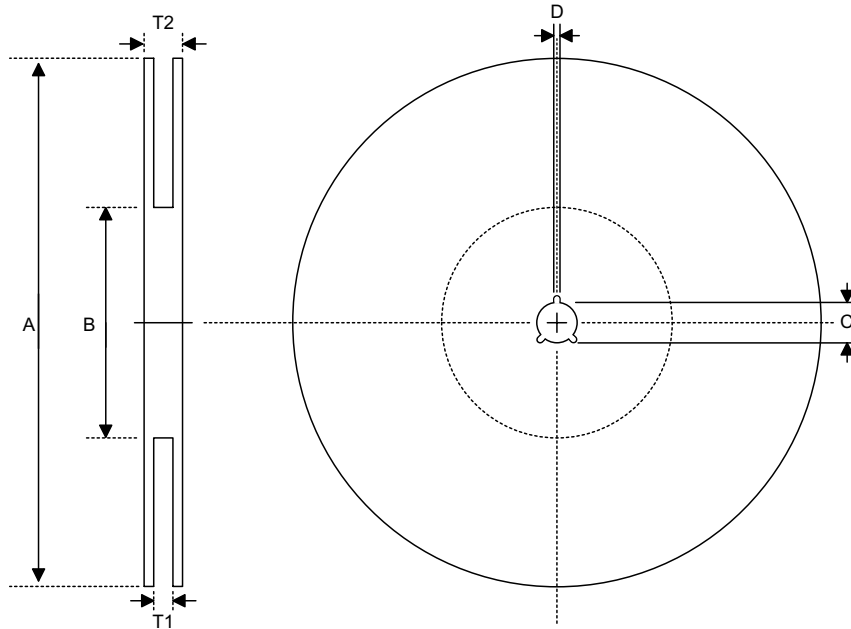
SOP 8N

Symbol	Description	Dimensions in mm
A	Reel Outer Diameter	330±1.0
B	Reel Inner Diameter	62±1.5
C	Spindle Hole Diameter	13.0+0.5 −0.2
D	Key Slit Width	2.0±0.15
T1	Space Between Flange	12.8+0.3 −0.2
T2	Reel Thickness	18.2±0.2

Carrier Tape Dimensions
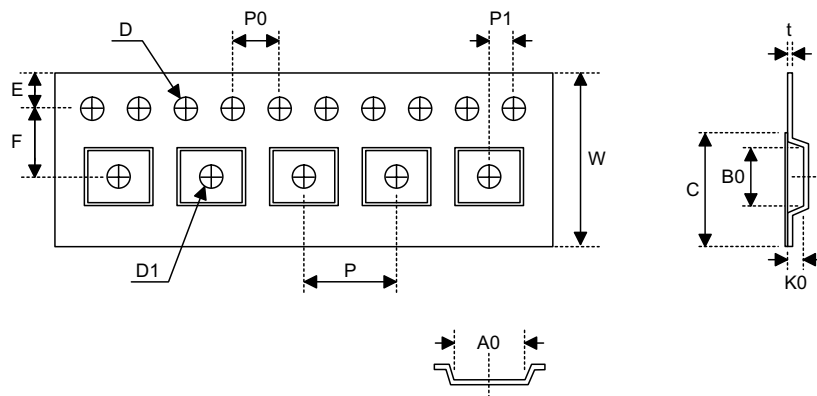
SOP 8N

Symbol	Description	Dimensions in mm
W	Carrier Tape Width	12.0+0.3 −0.1
P	Cavity Pitch	8.0±0.1
E	Perforation Position	1.75±0.1
F	Cavity to Perforation (Width Direction)	5.5±0.1
D	Perforation Diameter	1.55±0.1
D1	Cavity Hole Diameter	1.5+0.25
P0	Perforation Pitch	4.0±0.1
P1	Cavity to Perforation (Length Direction)	2.0±0.1
A0	Cavity Length	6.4±0.1
B0	Cavity Width	5.20±0.1
K0	Cavity Depth	2.1±0.1
t	Carrier Tape Thickness	0.3±0.05
C	Cover Tape Width	9.3

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