



## TDA8496

## LINEAR INTEGRATED CIRCUIT

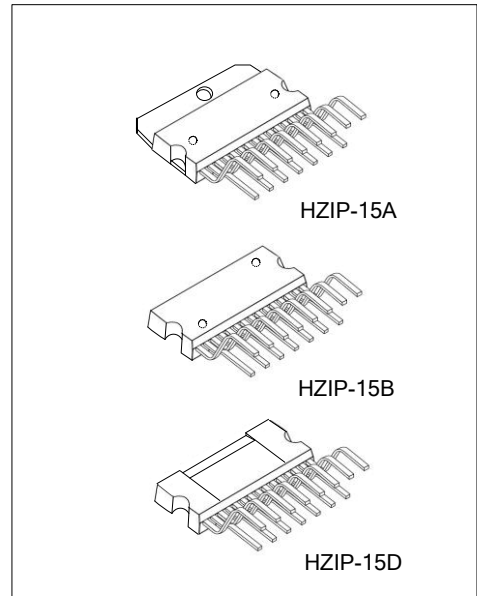
### 5W+5W AMPLIFIER WITH DC VOLUME CONTROL

#### DESCRIPTION

The UTC **TDA8496** is a stereo 5+5W class AB power amplifier with mute and dc volume control, assembled in the HZIP-15A/B/D package. It is designed for high quality sound, LCD TV or LCD Monitor applications.

#### FEATURES

- \* 5+5w output power @  $V_{CC}= 22V$ ;  $R_L = 8\Omega$
- \* Low turn-on turn-off pop noise
- \* Low external components
- \* Short circuit & thermal overload protection
- \* Linear volume control by DC voltage
- \* Soft clipping
- \* Internally fixed gain
- \* St-by and mute functions

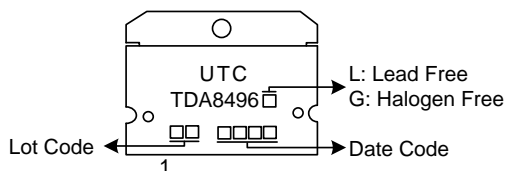


#### ORDERING INFORMATION

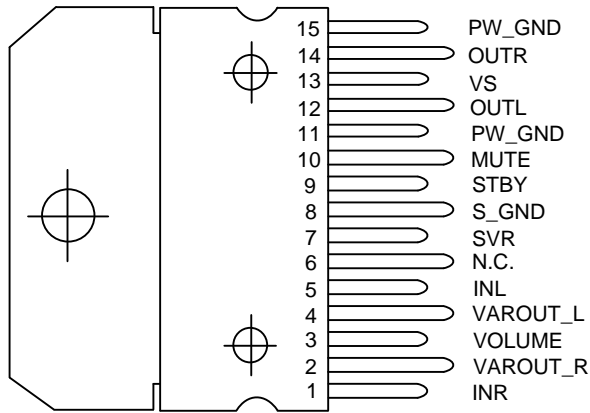
Ordering Number		Package	Packing
Lead Free	Halogen Free		
TDA8496L-J15-A-T	TDA8496G-J15-A-T	HZIP-15A	Tube
TDA8496L-J15-B-T	TDA8496G-J15-B-T	HZIP-15B	Tube
TDA8496L-J15-D-T	TDA8496G-J15-D-T	HZIP-15D	Tube

<p>TDA8496G-J15-A-T</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) T: Tube (2) J15-A: HZIP-15A, J15-B: HZIP-15B J15-D: HZIP-15D (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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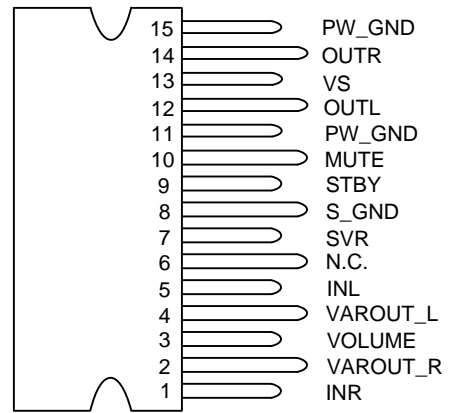
#### MARKING



## PIN DESCRIPTION (TOP VIEW)

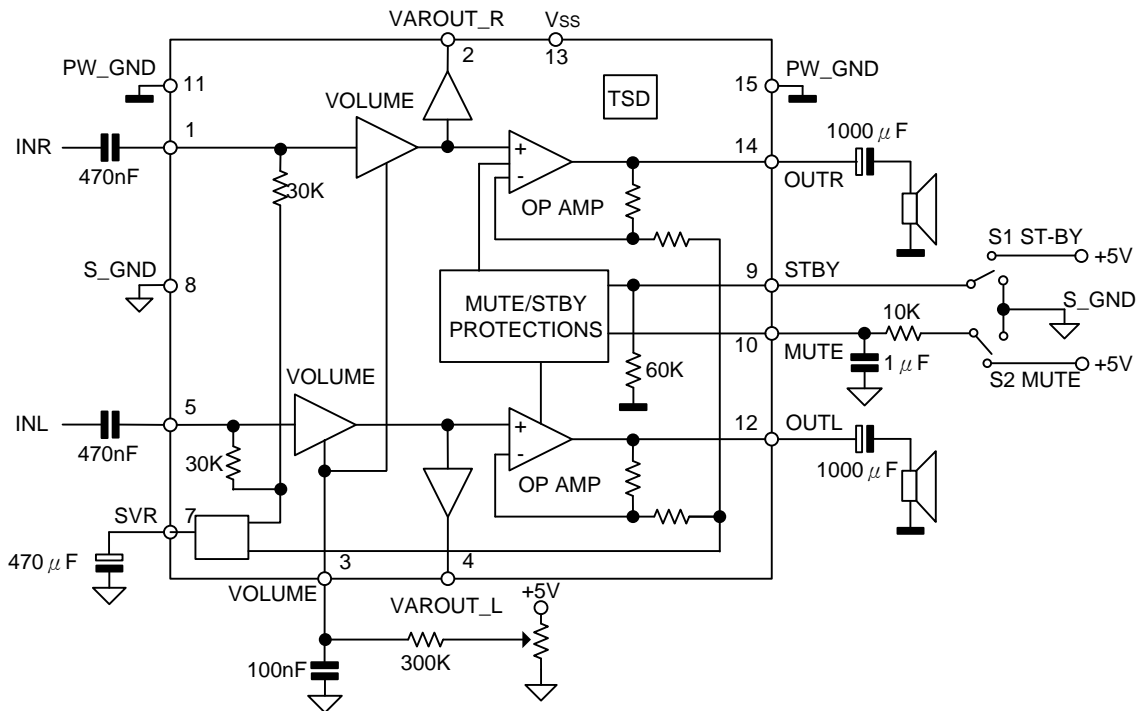


HZIP-15A



HZIP-15B/HZIP-15D

## BLOCK DIAGRAM



### ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
DC Supply voltage		$V_{SS}$	35	V
Maximum Input Voltage		$V_{IN(MAX)}$	8	$V_{PP}$
Volume Control DC Voltage		$V_3$	7	V
Power Dissipation ( $T_A=80^\circ\text{C}$ )	HZIP-15A/HZIP-15B	$P_D$	15	W
	HZIP-15D		12.5	
Junction Temperature		$T_J$	+150	$^\circ\text{C}$
Ambient Operating Temperature		$T_{OPR}$	0 ~ +70	$^\circ\text{C}$
Storage Temperature		$T_{STG}$	-40 ~ +150	$^\circ\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

### ■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	HZIP-15A/HZIP-15B	$\theta_{JA}$	35	$^\circ\text{C/W}$
	HZIP-15D		46	
Junction to Case	HZIP-15A/HZIP-15B	$\theta_{JC}$	4.6	$^\circ\text{C/W}$
	HZIP-15D		5.0	

### ■ ELECTRICAL CHARACTERISTICS (refer to the test circuit $V_{SS}=22\text{V}$ , $R_L=8\Omega$ , $R_G=50\Omega$ , $T_A=25^\circ\text{C}$ )

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage Range	$V_{SS}$		10		32	V
Output DC Offset Referred to SVR Potential	$V_{OUT(OFF)}$	No Input Signal		200		mV
Quiescent Output Voltage	$V_{Q(OUT)}$			11		V
Output Power	$P_{OUT}$	THD = 10%, $R_L = 8\Omega$	5	5.5		W
		THD = 1%, $R_L = 8\Omega$		4		
		THD = 10%, $R_L = 4\Omega$ , $V_{SS} = 12\text{V}$		2.1		W
		THD = 1%, $R_L = 4\Omega$ , $V_{SS} = 12\text{V}$		1.0		
Total Harmonic Distortion	THD	$G_V = 30\text{dB}$ , $P_{OUT} = 1\text{W}$ , $f = 1\text{KHz}$			0.4	%
Total Quiescent Current	$I_Q$			25	50	mA
Output Peak Current	$I_{PEAK}$	(internally limited)	1.0	1.3		A
Input Signal	$V_{IN}$				2.8	Vrms
Closed Loop Gain	$G_V$	$V_{O(L\ CTRL)} > 4.5\text{V}$	28.5	30	31.5	dB
Monitor Out Gain	$G_{V(LINE)}$	$V_{O(L\ CTRL)} > 4.5\text{V}$ , $Z_{LOAD} > 30\text{K}\Omega$	-1.5	0	1.5	dB
Attenuation at Minimum Volume	$A_{MIN}$	$V_{O(L\ CTRL)} < 0.5\text{V}$	80			dB
Bandwidth	BW			0.6		MHz
Total Output Noise	$e_N$	$f = 20\text{Hz} \sim 22\text{KHz}$	PLAY, Max volume	500	800	$\mu\text{V}$
			PLAY, Max attenuation	100	250	$\mu\text{V}$
			Mute	60	150	$\mu\text{V}$
Slew Rate	SR		5	8		V/ $\mu\text{s}$
Input Resistance	$R_{IN}$		22.5	30		$\text{K}\Omega$
Variable Output Resistance	$R_{VAR(OUT)}$			30	100	$\Omega$
Variable Output Load	$R_{L(OUT)}$		2			$\text{K}\Omega$
Supply Voltage Rejection	SVR	$f=1\text{KHz}$ , $C_{SVR}=470\text{mF}$ , $V_{RIP}=1\text{Vrms}$	Max volume	35	39	dB
			Max attenuation	55	65	dB
Thermal Muting	$T_{MUTE}$			150		$^\circ\text{C}$
Thermal Shut-down	$T_{SHDN}$			160		$^\circ\text{C}$

### ■ ELECTRICAL CHARACTERISTICS (Cont.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>MUTE STAND-BY &amp; INPUT SELECTION FUNCTIONS</b>						
Stand-by ON Threshold	$V_{THD(SON)}$		3.5			V
Stand-by OFF Threshold	$V_{THD(SOFF)}$				1.5	V
Mute ON threshold	$V_{THD(MON)}$		3.5			V
Mute OFF threshold	$V_{THD(MOFF)}$				1.5	V
Mute Attenuation	$A_{MUTE}$		50	65		dB
Quiescent Current @ Stand-by	$I_{Q(ST-BY)}$			0.6	1	mA
Stand-by Bias Current	$I_{ST-BY(BIAS)}$	Stand by ON: $V_{ST-BY} = 5V, V_{MUTE} = 5V$		80		$\mu A$
		Play or Mute	-20	-5		$\mu A$
Mute Bias Current	$I_{MUTE(BIAS)}$	Mute		1	5	$\mu A$

## ■ TYPICAL APPLICATION CIRCUIT

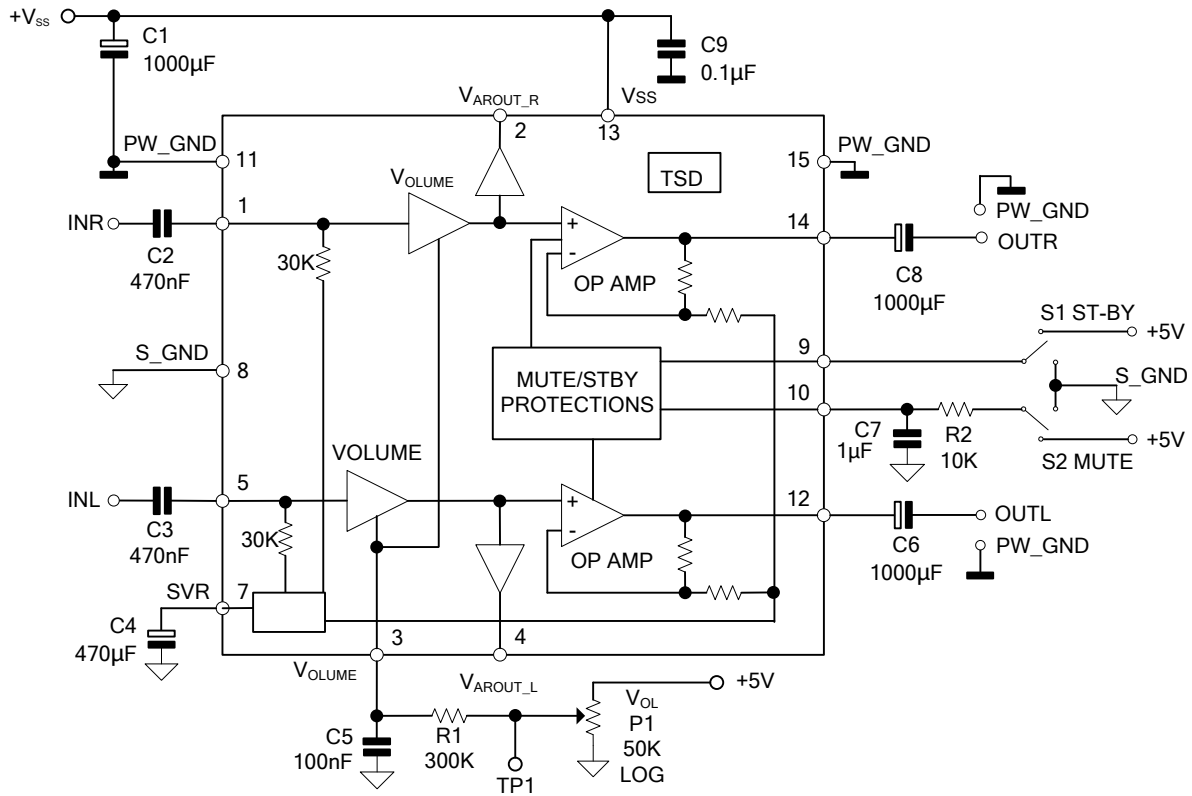


Fig. 1 Application Circuit

MUTE STAND-BY TRUTH TABLE

MUTE	STAND-BY	OPERATING CONDITION
H	H	STAND-BY
L	H	STAND-BY
H	L	MUTE
L	L	PLAY

## ■ TYPICAL APPLICATION CIRCUIT (Cont.)

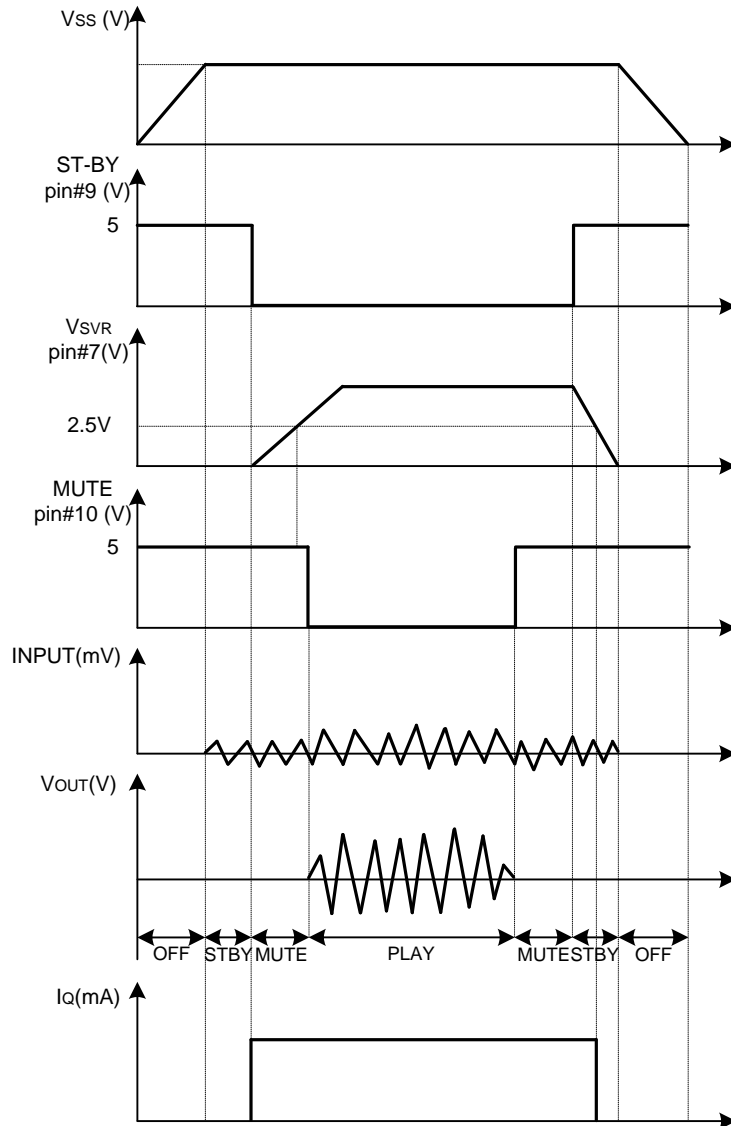
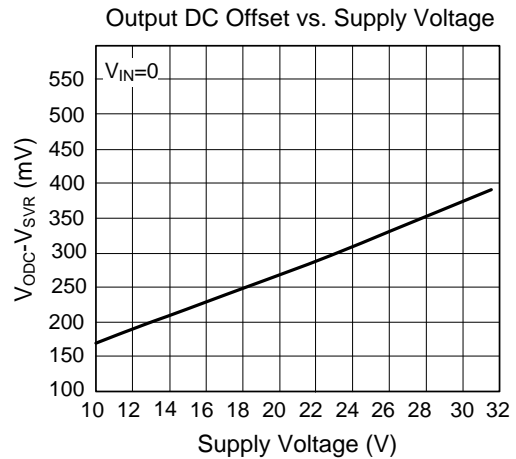
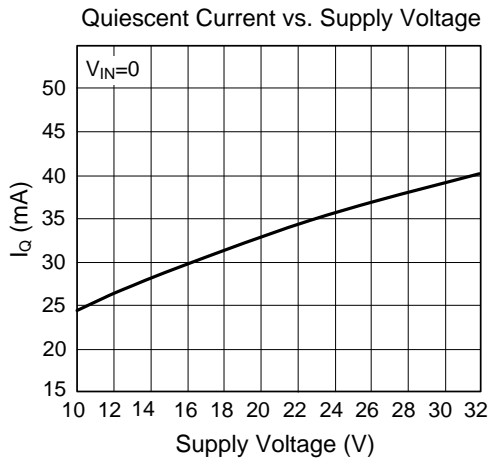
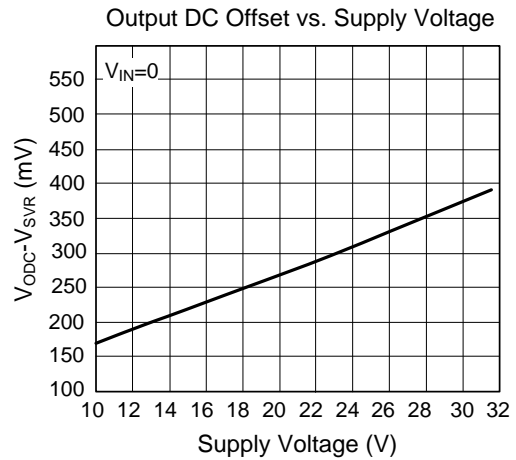
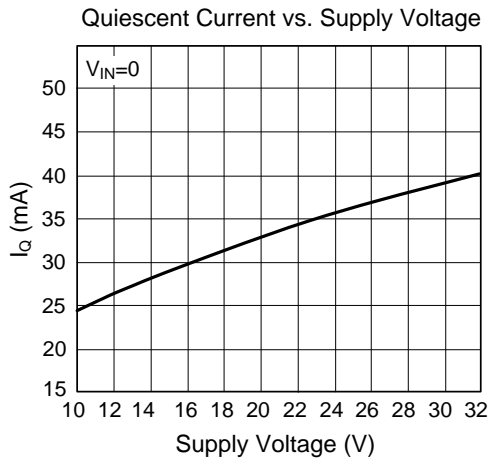


Fig. 2 Turn ON/OFF Sequences (use only the MUTE function)

## ■ TYPICAL CHARACTERISTICS



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