



## TDA2009

## LINEAR INTEGRATED CIRCUIT

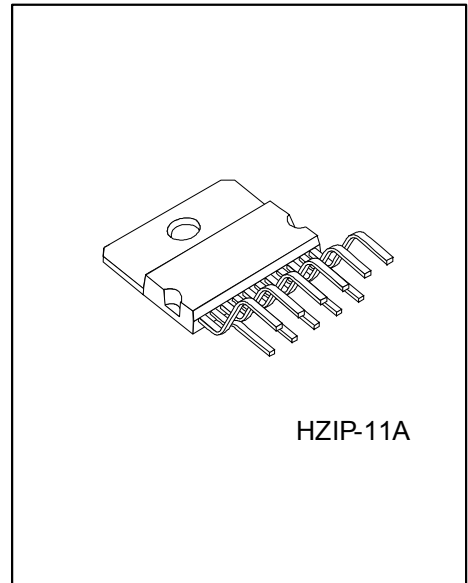
### 10 + 10W STEREO AMPLIFIER

#### DESCRIPTION

The UTC **TDA2009** is a class AB stereo audio power amplifier that contains two identical amplifiers capable of delivering 10W per channel. It is designed for quality Hi-Fi stereo application which is easy to construct and has a minimum need of external components.

#### FEATURES

- \* Supply range 8V ~ 28V
- \* High power outputs (10W/Channel)
- \* High output current up to 3.5A
- \* Short circuit protection
- \* Thermal protection



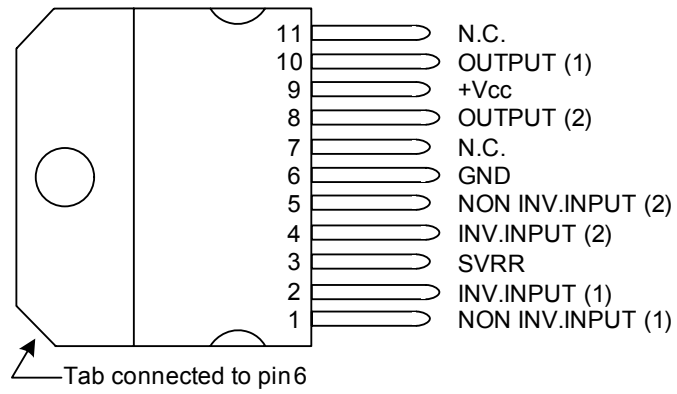
\*Pb-free plating product number: TDA2009L

#### ORDERING INFORMATION

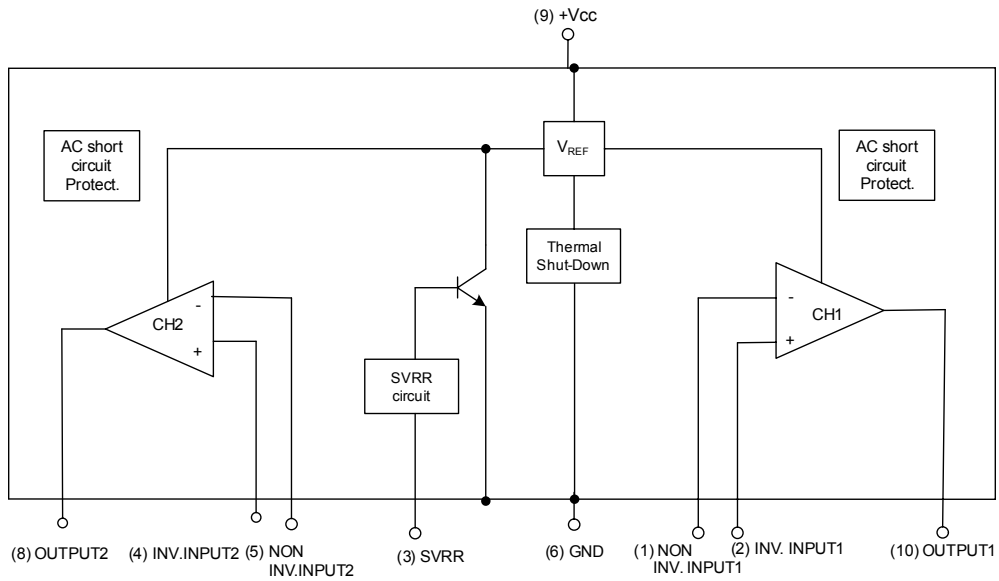
Order Number		Package	Packing
Normal	Lead Free Plating		
TDA2009-J11-A-T	TDA2009L-J11-A-T	HZIP-11A	Tube

<p>TDA2009L-J11-A-T</p> <p>(1)Packing Type (2)Package Type (3)Lead Plating</p>	<p>(1) T: Tube (2) J11-A: HZIP-11A (3) Lead Free Plating Blank: Pb/Sn</p>
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### ■ PIN CONFIGURATION



■ BLOCK DIAGRAM



## ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage		$V_{CC}$	28	V
Peak Output Current	repetitive, $f \geq 20\text{Hz}$	$I_{O(PEAK)}$	3.5	A
	non repetitive, $t_p=100\mu\text{s}$		4.5	A
Power Dissipation@ $T_c = 90^\circ\text{C}$		$P_D$	20	W
Junction Temperature		$T_J$	+150	$^\circ\text{C}$
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	RATING	UNIT
Thermal Resistance Junction to Case	$\theta_{JC}$	3.0	$^\circ\text{C/W}$

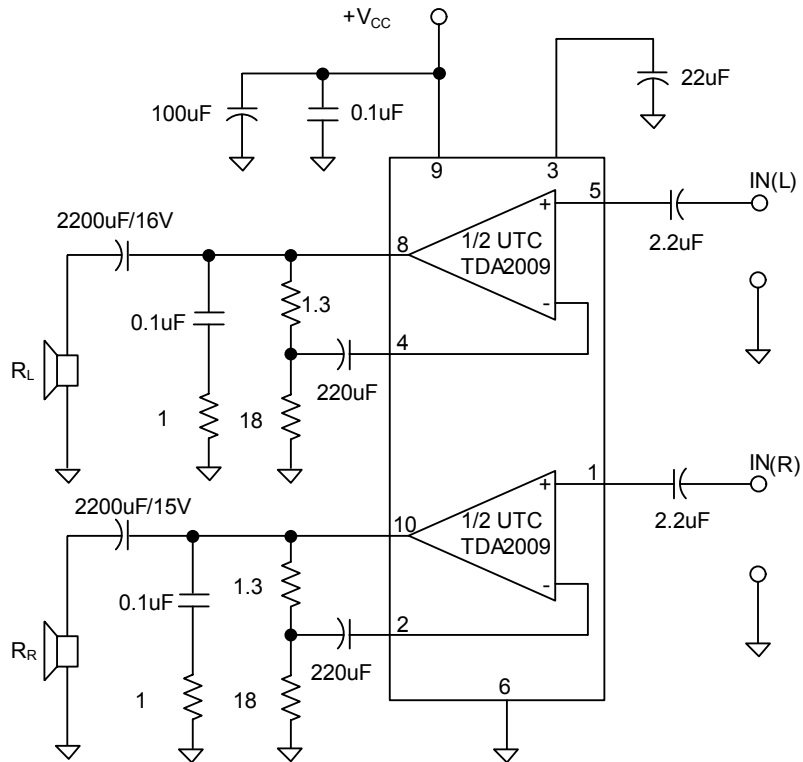
## ■ ELECTRICAL CHARACTERISTICS

(Refer to test circuit,  $T_a = 25^\circ\text{C}$ ,  $V_{CC} = 24\text{V}$ ,  $G_v = 36\text{dB}$ , unless otherwise specified)

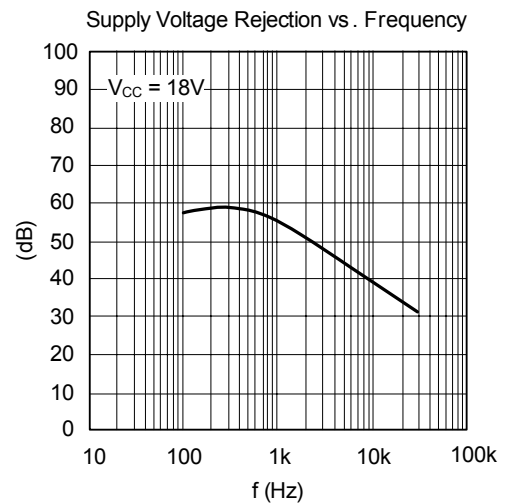
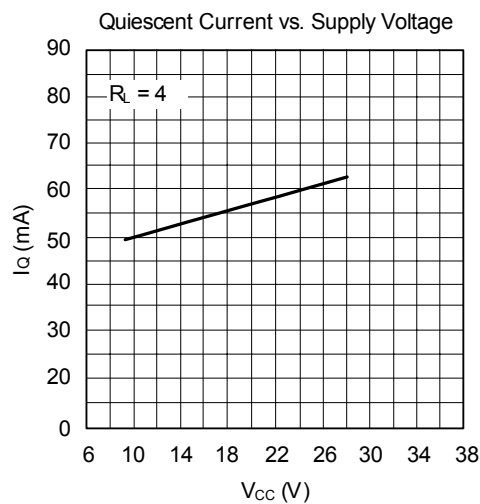
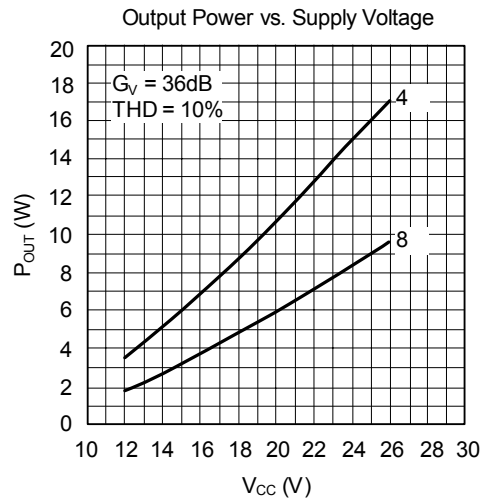
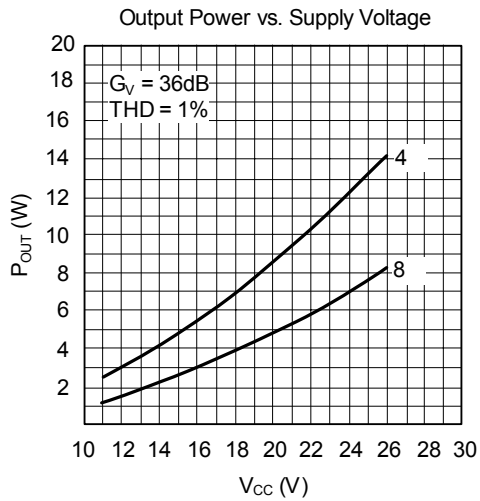
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage		$V_{CC}$		8		28	V
Quiescent Output Voltage		$V_{OUT}$	$V_{CC} = 24\text{V}$		11.5		V
Input Saturation Voltage (rms)		$V_{IN(SAT)}$		300			mV
Total Input Noise Voltage		$e_N$	$R_g = 10\text{K}\Omega$ , 22Hz~22KHz		2.5	8	$\mu\text{V}$
Total Quiescent Drain Current		$I_Q$	$V_{CC} = 24\text{V}$		60	120	mA
Output Power for each channel	$R_L = 4\Omega$	$P_{OUT}$	THD=1%, $V_{CC}=24\text{V}$ , $f=1\text{kHz}$		12.5		W
	$R_L = 8\Omega$				7		W
	$R_L = 4\Omega$		$f = 40\text{Hz} \sim 12.5\text{kHz}$	10			W
	$R_L = 8\Omega$			5			W
	$R_L = 4\Omega$		$V_{CC} = 18\text{V}$ , $f = 1\text{kHz}$		7		W
	$R_L = 8\Omega$				4		W
Total Harmonic Distortion for each channel	$R_L = 4\Omega$	THD	$P_{OUT} = 0.1 \sim 7.0\text{W}$	$f = 1\text{kHz}$ , $V_{CC}=24\text{V}$	0.2		%
	$R_L = 8\Omega$		$P_{OUT} = 0.1 \sim 3.5\text{W}$		0.1		%
	$R_L = 4\Omega$		$V_{CC}=18\text{V}$	$P_{OUT} = 0.1 \sim 5.0\text{W}$	0.2		%
	$R_L = 8\Omega$			$P_{OUT} = 0.1 \sim 2.5\text{W}$	0.1		%
Input Resistance		$R_{IN}$	$f = 1\text{kHz}$ , Non-Inverting Input	70	200		$\text{k}\Omega$
Frequency Roll off (-3dB)	Low	$f_L$	$R_L = 4\Omega$		20		Hz
	High	$f_H$	$R_L = 4\Omega$		80		kHz
Closed Loop Voltage Gain		$G_v$	$f = 1\text{kHz}$	35.5	36	36.5	dB
Closed Loop Gain Matching		$G_v$			0.5		dB
Cross Talk	$f = 1\text{kHz}$	CT	$R_L = \quad, R_g = 10\text{K}\Omega$		60		dB
	$f = 10\text{kHz}$				50		dB
Supply Voltage Rejection for each channel		SVR	$f_{RIPPLE} = 100\text{Hz}$ , $V_{RIPPLE} = 0.5\text{V}$ , $R_g = 10\text{k}\Omega$		55		dB
Thermal Shut-Down Junction Temperature					145		$^\circ\text{C}$

■ TEST AND APPLICATION CIRCUIT

( $G_v = 36\text{dB}$ )



## ■ TYPICAL CHARACTERISTICS



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