



## TDA2009

### LINEAR INTEGRATED CIRCUIT

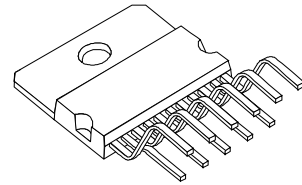
## 10 +10W STEREO AMPLIFIER

### 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



HZIP-11A

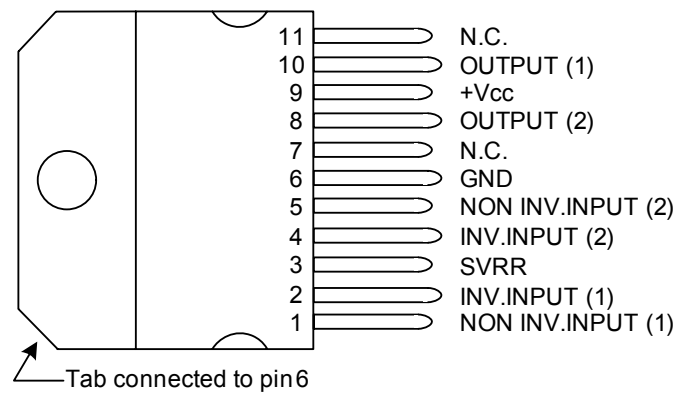
\*Pb-free plating product number: TDA2009L

### ORDERING INFORMATION

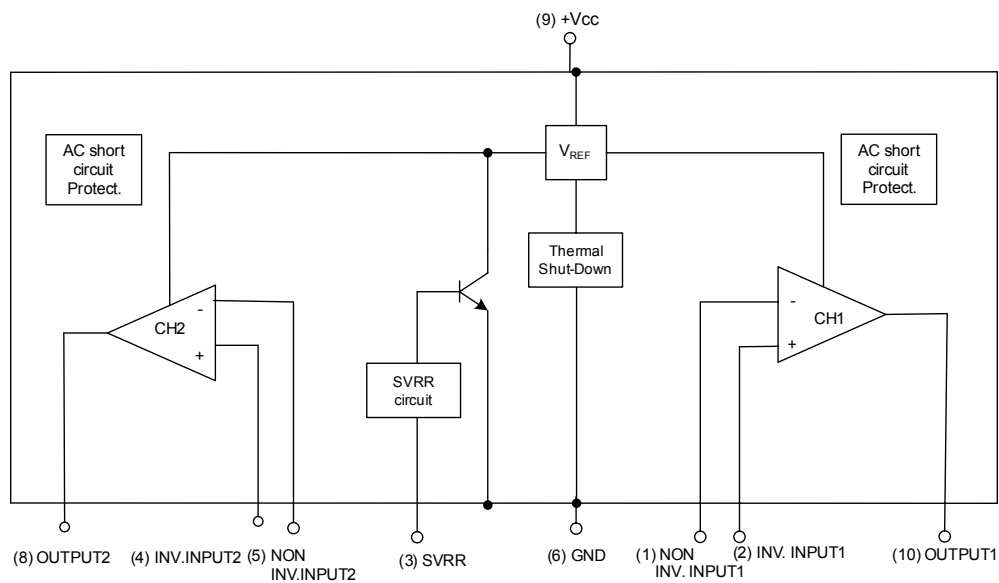
| Order Number    |                   | Package  | Packing |
|-----------------|-------------------|----------|---------|
| Normal          | Lead Free Plating |          |         |
| TDA2009-J11-A-T | TDA2009L-J11-A-T  | HZIP-11A | Tube    |

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

## ■ 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    | $^\circ\text{C/W}$ |

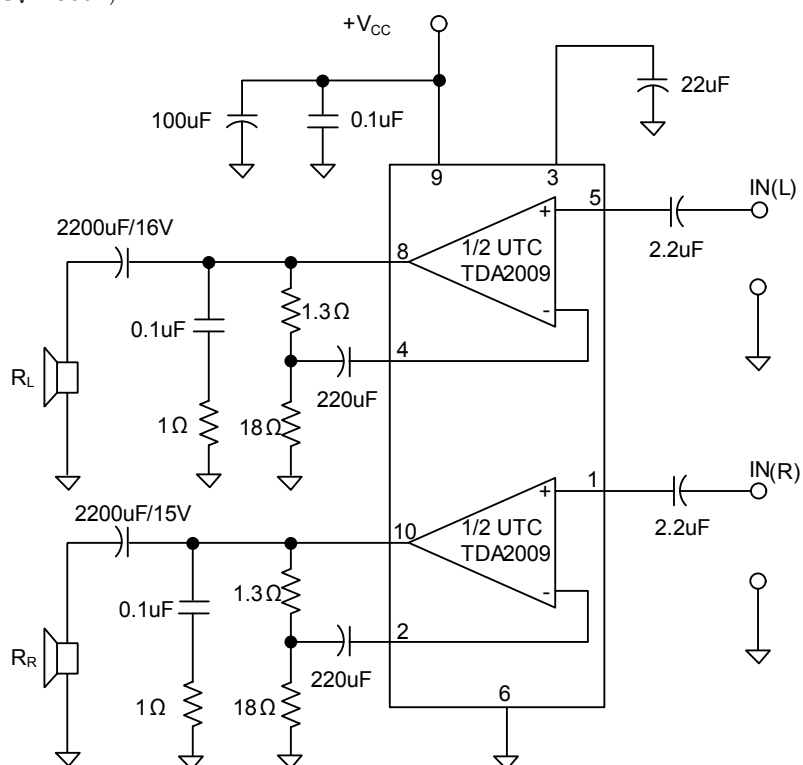
## ■ ELECTRICAL CHARACTERISTICS

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

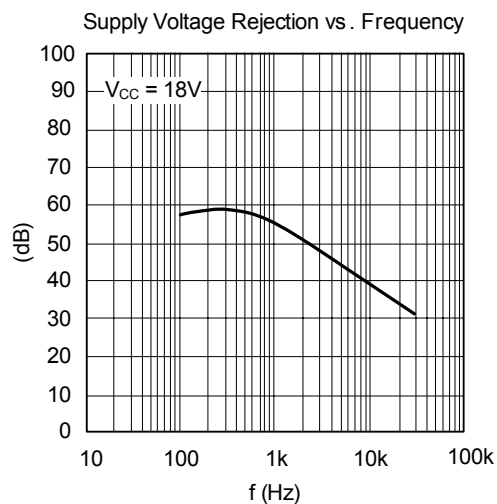
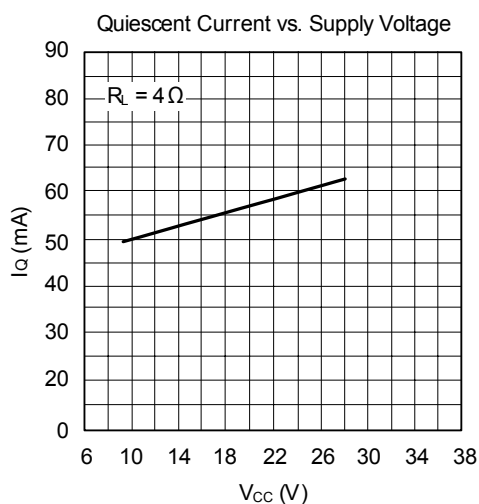
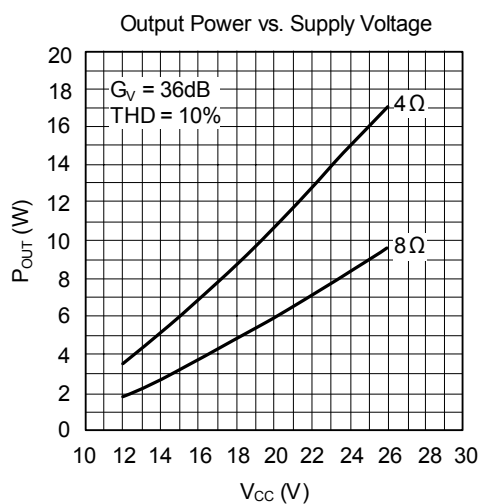
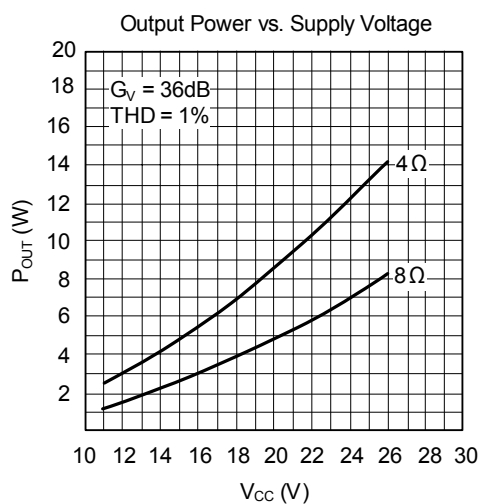
| PARAMETER                                  |                    | SYMBOL        | TEST CONDITIONS                                                                     | MIN  | TYP  | MAX  | UNIT             |
|--------------------------------------------|--------------------|---------------|-------------------------------------------------------------------------------------|------|------|------|------------------|
| 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  |      | %                |
|                                            | $R_L = 8\Omega$    |               | $P_{OUT} = 0.1 \sim 3.5\text{W}$ , $V_{CC}=24\text{V}$                              |      | 0.1  |      | %                |
|                                            | $R_L = 4\Omega$    |               | $P_{OUT} = 0.1 \sim 5.0\text{W}$ , $V_{CC}=18\text{V}$                              |      | 0.2  |      | %                |
|                                            | $R_L = 8\Omega$    |               | $P_{OUT} = 0.1 \sim 2.5\text{W}$ , $V_{CC}=18\text{V}$                              |      | 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                  |                    | $\Delta G_v$  |                                                                                     |      | 0.5  |      | dB               |
| Cross Talk                                 | $f = 1\text{kHz}$  | CT            | $R_L = \infty$ , $R_g = 10\text{K}\Omega$                                           |      | 60   |      | dB               |
|                                            | $f = 10\text{kHz}$ |               |                                                                                     |      | 50   |      |                  |
| 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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- Поставка более 17-ти миллионов наименований электронных компонентов;
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- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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