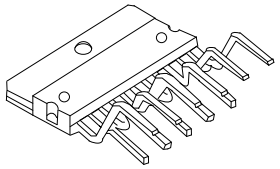
# 20W BRIDGE/STEREO AUDIO AMPLIFIER WITH CLIPPING DETECTOR



HZIP-11A

## ■ DESCRIPTION

The UTC **TDA7360** is a new technology class AB Audio Power Amplifier in the Multiwatt® package. The high power performance of the UTC **TDA7360** is obtained without bootstrap capacitors due to the fully complementary PNP/NPN output configuration

The audible on/off noise is eliminated by a delayed turn-on mute circuit, and a novel short circuit protection system prevents spurious intervention.

The device provides a circuit for the detection of clipping in the output stages. An open collector output is able to drive systems with automatic volume control.

## ■ FEATURES

* Very few external components
* Without boucherot cells
* Without boostrap capacitors
* High output power
* Very low STAND-BY current
* Fixed gain (20dB stereo)
* Programmable turn-on delay
* Clipping detector
* No switch on/off noise
* STAND-BY function

## ■ ORDERING INFORMATION

| Ordering Number | | Package | Packing |
|---|---|---|---|
| Lead Free | Halogen Free | | |
| TDA7360L-J11-T | TDA7360G-J11-T | HZIP-11A | Tube |

TDA7360L-J11-A-T

(1)Packing Type

(2)Package Type

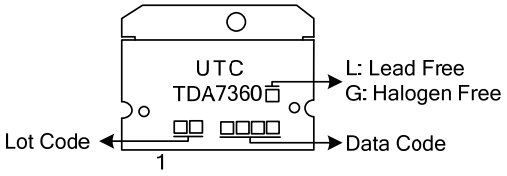
(3)Green Package

(1) T: Tube

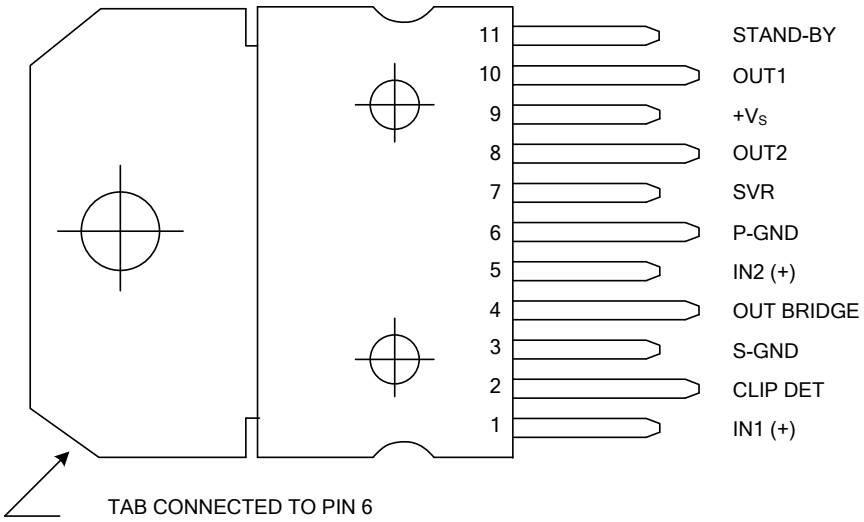
(2) J11-A: HZIP-11A

(3) L: Lead Free, G: Halogen Free and Lead Free

## ■ MARKIN



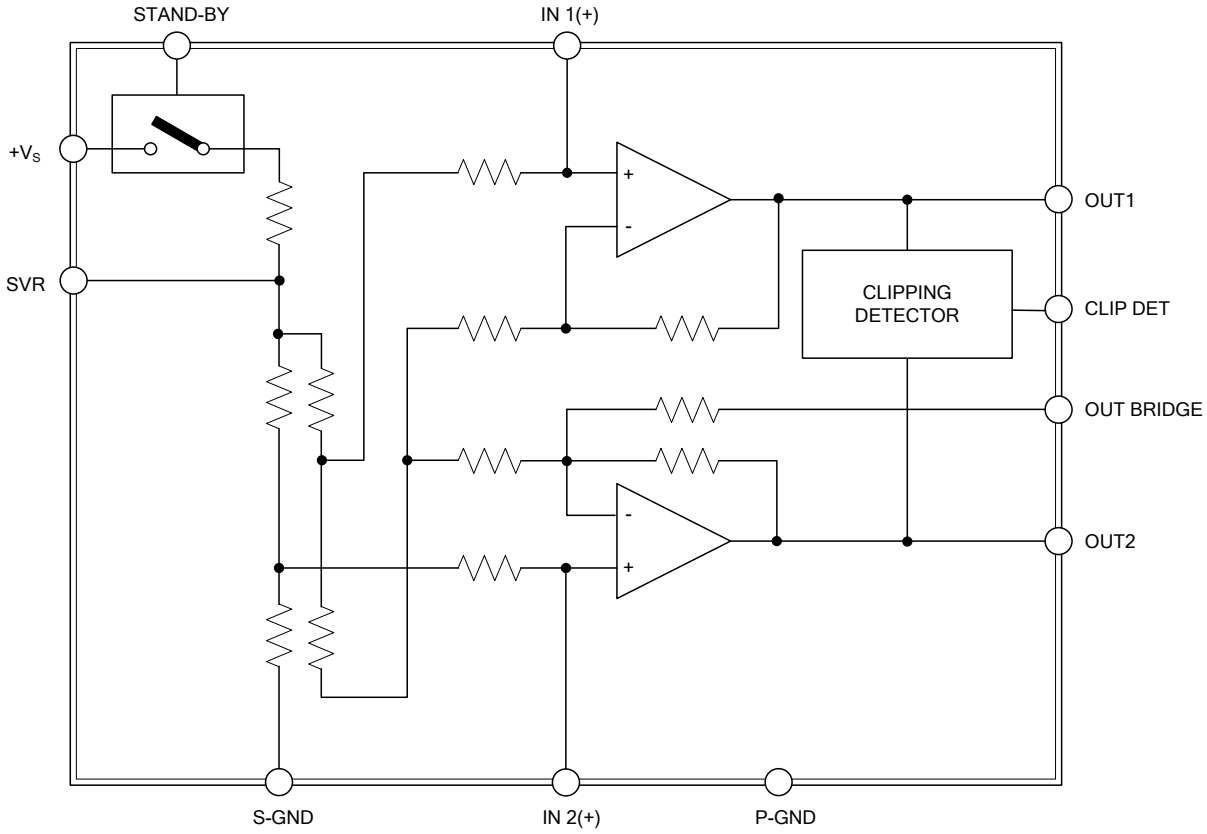

## ■ PIN CONFIGURATION




## ■ PIN DESCRIPTION

| PIN NO. | PIN NAME | DESCRIPTION |
|---|---|---|
| 1 | IN1 (+) | Amp IN1 (+) |
| 2 | CLIP DET | Clip detector |
| 3 | S-GND | Signal Ground |
| 4 | OUT BRIDGE | Bridge output |
| 5 | IN2 (+) | Amp IN2 (+) |
| 6 | P-GND | Power Ground |
| 7 | SVR | Supply voltage rejection |
| 8 | OUT2 | Output2 |
| 9 | $+V_S$ | Supply voltage |
| 10 | OUT1 | Output1 |
| 11 | STAND-BY | Stand-by |

## ■ BLOCK DIAGRAM



## ■ ABSOLUTE MAXIMUM RATING

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---|---|---|---|
| Operating Supply Voltage | $V_S$ | 22 | V |
| Output Peak Current (non rep. for t=100μs) | $I_O$ | 5 | A |
| Output Peak Current (rep. freq. >10Hz) | $I_O$ | 4 | A |
| Power Dissipation At $T_{CASE}$=85°C | $P_{TOT}$ | 36 | W |
| Storage And Junction Temperature | $T_{STG}$, $T_J$ | -40 ~ +150 | °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

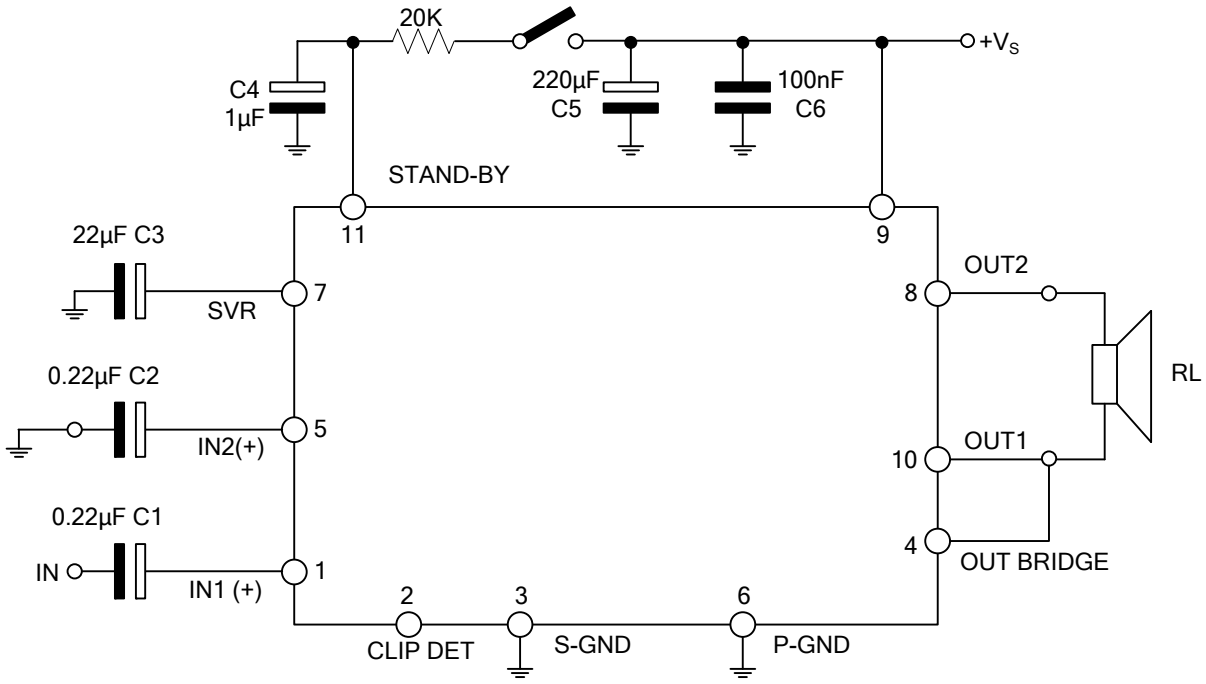
| PARAMETER | SYMBOL | RATINGS | UNIT |
|---|---|---|---|
| Thermal Resistance Junction-case Max | $R_{THJ-CASE}$ | 1.8 | °C/W |

## ■ ELECTRICAL CHARACTERISTICS

(Refer to the test circuits, $T_{AMB}$=25°C, $V_S$=14.4V, f=1KHz unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|---|
| Supply Voltage Range | $V_S$ | | | 8 | | 18 | V |
| Total Quiescent Drain Current | $I_D$ | stereo configuration | | | 65 | 120 | mA |
| Stand-by Attenuation | $A_{SB}$ | | | 60 | 80 | | dB |
| Stand-by Current | $I_{SB}$ | | | | | 100 | μA |
| Standby ON Threshold | $V_{ST\_ON}$ | | | | | 1 | V |
| Standby OFF Threshold | $V_{ST\_OFF}$ | | | 3.5 | | | V |
| Clip Detector Prog. Current | $I_{CO}$ | pin 2 pull up to 5V d=1% | | | 70 | | μA |
| | | with 10KW d=5% | | | 130 | | |
| **STEREO** | | | | | | | |
| Output Power (each channel) THD=10% | $P_O$ | $R_L$=2Ω | | | 11 | | W |
| | | $R_L$=3.2Ω | | 7 | 8 | | |
| | | $V_{CC}$=12V, $R_L$=4Ω | | | 4.5 | | |
| | | $R_L$=4Ω | | | 6.5 | | |
| Distortion | D | Po=0.1~2.5W, $R_L$=4Ω | | | 0.05 | 0.5 | % |
| | | Po=0.1~4W, $R_L$=3.2Ω | | | 0.05 | 0.5 | |
| Supply Voltage Rejection | SVR | Rg=10KΩ, C3=22μF | | 45 | | | dB |
| | | f=100Hz, C3=100μF | | | 62 | | |
| Crosstalk | CT | f=1KHz | | 45 | | | dB |
| | | f=10KHz | | | 55 | | |
| Input Resistance | $R_I$ | | | | 50 | | KΩ |
| Voltage Gain | $G_V$ | | | 19 | 20 | 21 | dB |
| Voltage Gain Match | $G_V$ | | | | | 1 | dB |
| Input Noise Voltage | $E_{IN}$ | 22Hz~22KHz | Rg=50Ω | | 2.5 | 5 | μV |
| | | | Rg=10KΩ | | 3 | 7 | |
| | | | Rg=∞ | | 3.5 | | |
| **BRIDGE** | | | | | | | |
| Output Offset Voltage | $V_{OS}$ | | | | | 250 | mV |
| Output Power THD=10% | Po | $V_{CC}$=12V, $R_L$=4Ω | | | 15 | | W |
| | | $V_{CC}$=14.4V, $R_L$=4Ω | | 16 | 20 | | |
| Distortion | d | Po=0.1~7W, $R_L$=4Ω | | | 0.05 | 0.5 | % |
| Supply Voltage Rejection | SVR | Rg=10KΩ, C3=22μF | | 45 | | | dB |
| | | f=100Hz, C3=100μF | | | 62 | | |
| Input Resistance | $R_I$ | | | | 50 | | KΩ |
| Voltage Gain | $G_V$ | | | | 26 | | dB |
| Input Noise Voltage | EIN | 22Hz~22KHz | Rg=50Ω | | 3.5 | | μV |
| | | | Rg=10KΩ | | 4 | | μV |

## ■ BRIDGE APPLICATION CIRCUIT




## ■ STEREO APPLICATION CIRCUIT