



LA4728

2-Channel BTL Power Amplifier (35 W+35 W) with Standby Switch for Car Stereos

Preliminary

Overview

The LA4728 is a BTL two-channel power IC for car audios developed in pursuit of excellent sound quality. Low-region frequency characteristics have been improved through the use of a new NF capacitorless circuit, and crosstalk which causes “muddy” sound has been reduced by improving both circuit and pattern layout. As a result the LA4728 provides powerful bass and clear treble.

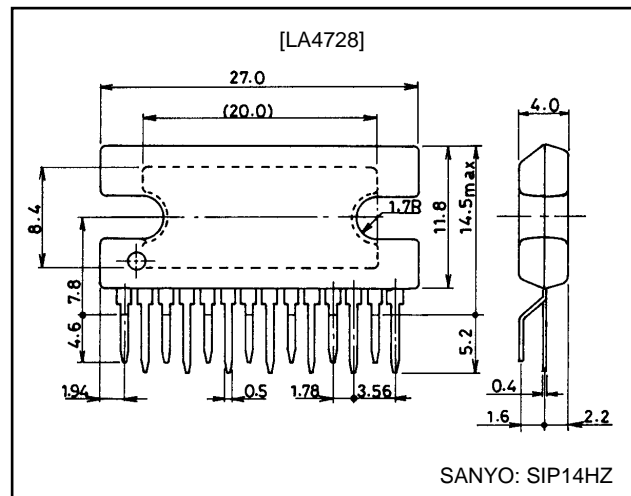
Features

- High power: supports total output of 35 W+35 W. [EIAJ power] ($V_{CC}=14.4\text{ V}$, $\text{THD}=30\%$, $R_L=4\ \Omega$)
- Less pop noise.
- Designed for excellent sound quality. ($f_L<10\text{ Hz}$, $f_H=130\text{ kHz}$)
- Any rise time settable by an external capacitor.
- Standby switch circuit on chip. (microcontroller supported)
- Various protectors on chip. (output-to-ground short/ output-to- V_{CC} short/ load short/ overvoltage/ thermal shutdown circuit)
- The LA4728 is pin-compatible with the LA4725.

Package Dimensions

unit: mm

3113A-SIP14HZ



Specifications

Maximum Ratings at $T_a = 25\ ^\circ\text{C}$

| Parameter | Symbol | Conditions | Ratings | Unit |
|-----------------------------|-----------------------|--|----------------------|------------------|
| Maximum supply voltage | $V_{CC\text{ max}}$ | | 18 | V |
| Surge supply voltage | $V_{CC\text{ surge}}$ | $f \leq 0.2\text{ s}$, single giant pulse | 50 | V |
| Maximum output current | $I_{O\text{ peak}}$ | Per channel | 3.5 | A |
| Allowable power dissipation | $P_{d\text{ max}}$ | With arbitrarily large heat sink | 32 | W |
| Operating temperature | T_{opr} | | $-35\text{ to }+85$ | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | | $-40\text{ to }+150$ | $^\circ\text{C}$ |

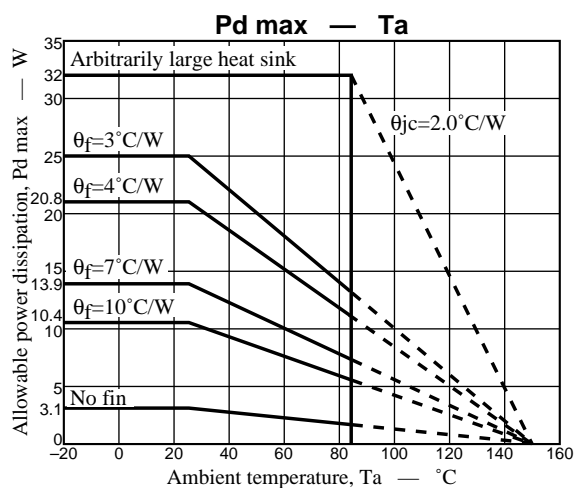
Recommended Conditions at $T_a = 25\ ^\circ\text{C}$

| Parameter | Symbol | Conditions | Ratings | Unit |
|-----------------------------|--------------------|--|---------|----------|
| Recommended supply voltage | V_{CC} | | 13.2 | V |
| Operating voltage range | $V_{CC\text{ op}}$ | Range where $P_{d\text{ max}}$ is not exceeded | 9 to 16 | V |
| Recommended load resistance | $R_{L\text{ op}}$ | | 4 | Ω |

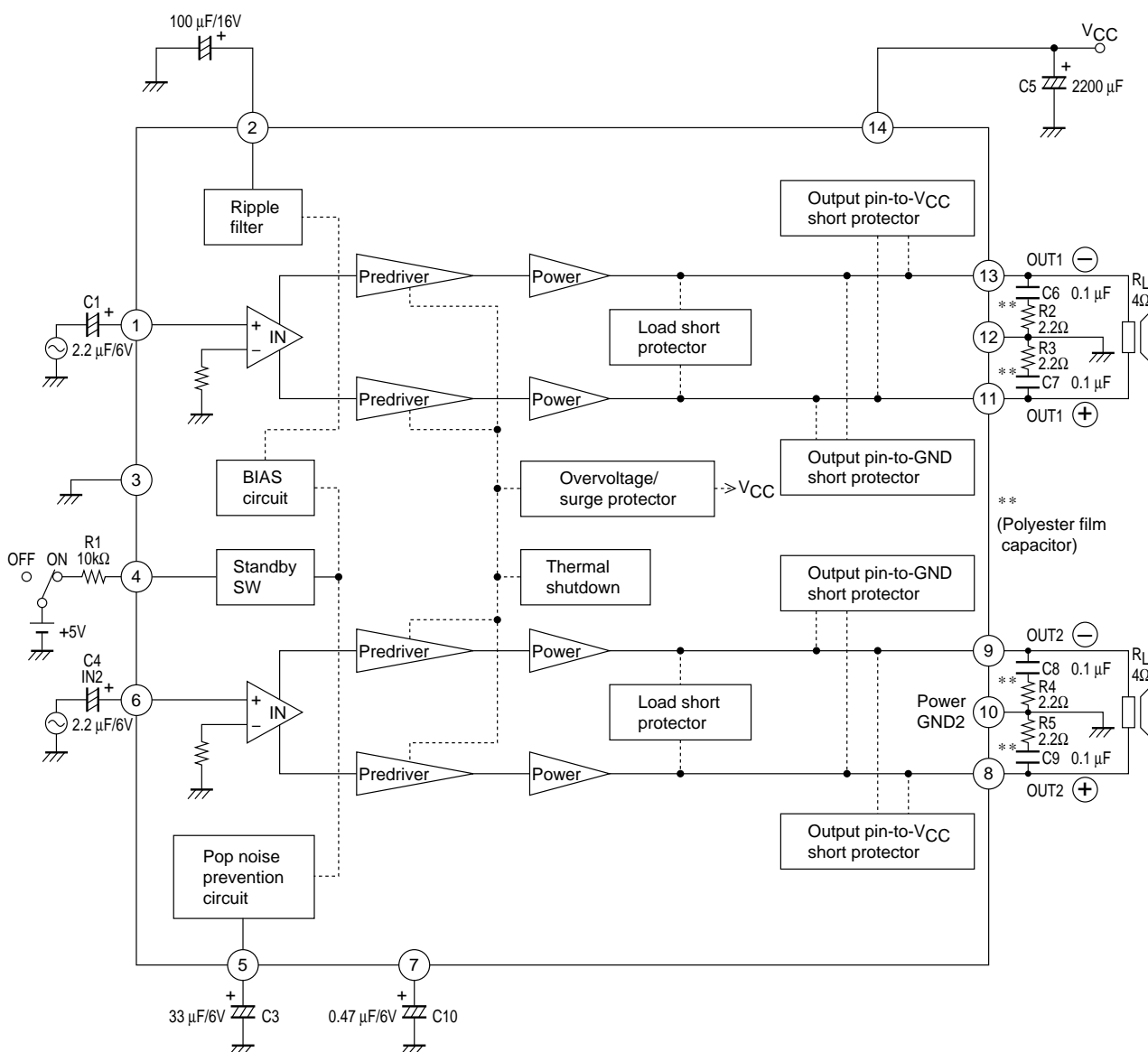
LA4728

Operating Characteristics $T_a = 25^\circ\text{C}$, $V_{CC} = 13.2\text{ V}$, $R_L = 4\text{ k}\Omega$, $f = 1\text{ kHz}$, $R_g = 600\text{ }\Omega$

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|-----------------------------|-----------------------|--|---------|------|----------|------------------|
| | | | min | typ | max | |
| Quiescent current | I_{CCO} | $R_g=0$ | 70 | 125 | 250 | mA |
| Standby current | I_{ST} | | | 10 | 60 | μA |
| Voltage gain | VG | | 38 | 40 | 42 | dB |
| Total harmonic distortion | THD | $P_O=1\text{ W}$ | | 0.06 | 0.2 | % |
| Output power | P_{O1} | $R_L=4\text{ }\Omega$, THD=10 %, $V_{CC}=13.2\text{ V}$ | 16 | 20 | | W |
| | P_{O2} | $R_L=4\text{ }\Omega$, THD=10 %, $V_{CC}=14.4\text{ V}$ | | 25 | | W |
| | P_{O3} | $R_L=4\text{ }\Omega$, THD=30 %, $V_{CC}=14.4\text{ V}$ | | 35 | | W |
| Output offset voltage | $V_{N\text{ offset}}$ | $R_g=0$ | -300 | | +300 | mV |
| Output noise voltage | V_{NO} | $R_g=0$, B.P.F.=20 Hz to 20 kHz | | 0.1 | 0.5 | mVrms |
| Ripple rejection ratio | SVRR | $R_g=0$, $f_R=100\text{ Hz}$, $V_R=0\text{ dBm}$ | 40 | 50 | | dB |
| Channel separation | Chsep | $R_g=10\text{ k}\Omega$, $V_O=0\text{ dBm}$ | 50 | 60 | | dB |
| Input resistance | R_i | | 21 | 30 | 39 | $\text{k}\Omega$ |
| Standby pin applied voltage | V_{st} | Amp on, applied through $10\text{ k}\Omega$ | 2.5 | | V_{CC} | V |



Block Diagram and Sample Application Circuit



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