



**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.

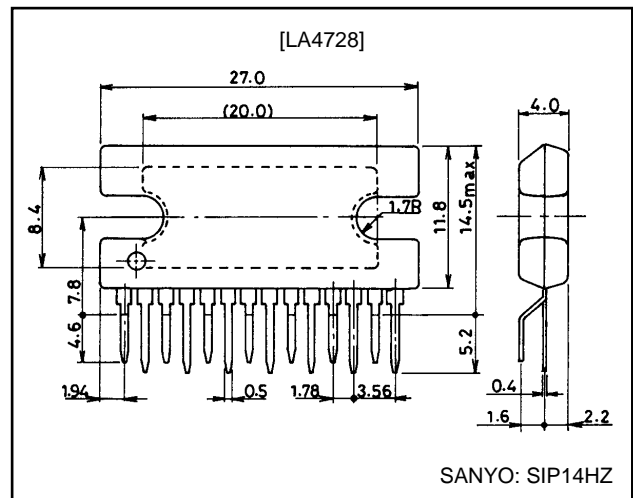
**Features**

- 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       | $T_{op}$              |  | -35 to +85  | $^\circ\text{C}$ |
| Storage temperature         | $T_{stg}$             |  | -40 to +150 | $^\circ\text{C}$ |

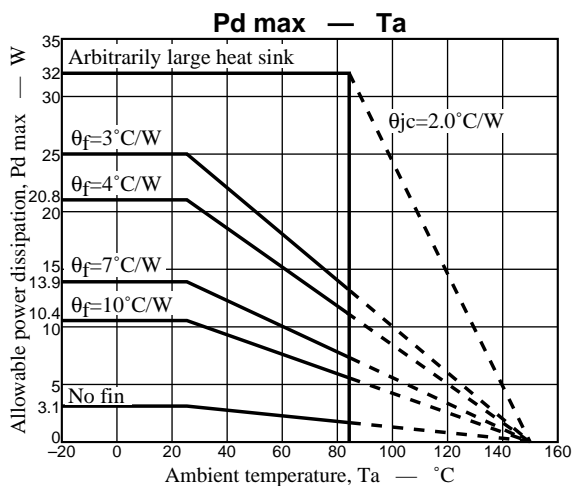
**Recommended Conditions at  $T_a = 25\ ^\circ\text{C}$**

| 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       | $\Omega$ |

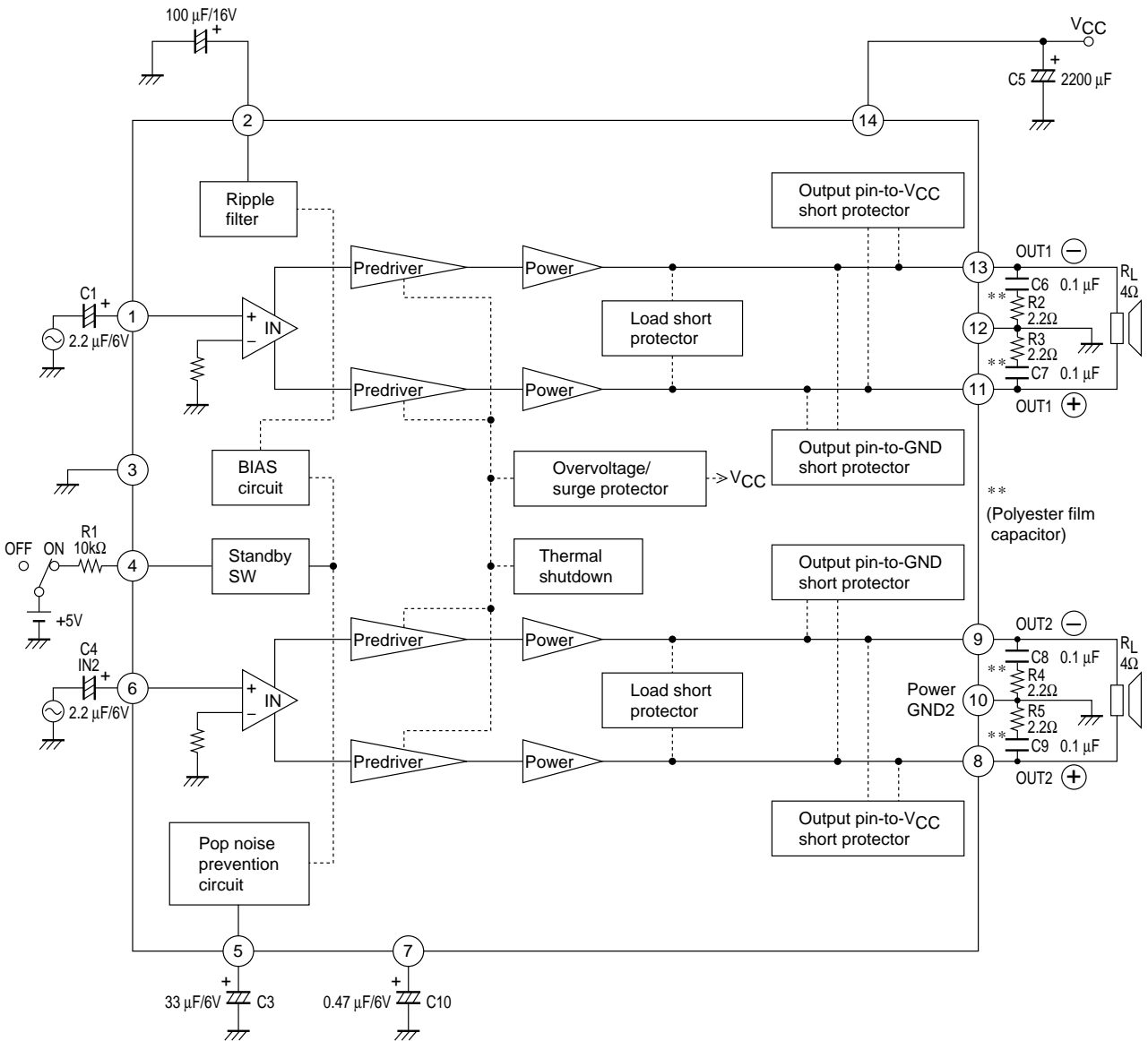
## LA4728

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

| 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       | $\mu\text{A}$    |
| Voltage gain                | VG                    |  | 38      | 40   | 42       | dB               |
| Total harmonic distortion   | THD                   | $P_O=1\text{ W}$                                   |         | 0.06 | 0.2      | %                |
| Output power                | $P_{O1}$              | $R_L=4\ \Omega$ , THD=10%, $V_{CC}=13.2\text{ V}$  | 16      | 20   |          | W                |
|                             | $P_{O2}$              | $R_L=4\ \Omega$ , THD=10%, $V_{CC}=14.4\text{ V}$  |         | 25   |          | W                |
|                             | $P_{O3}$              | $R_L=4\ \Omega$ , 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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