



2-Channel BTL Power Amplifier (30 W+30 W) with Standby Switch for Car Stereos

Preliminary

Overview

The LA4725 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 LA4725 provides powerful bass and clear treble.

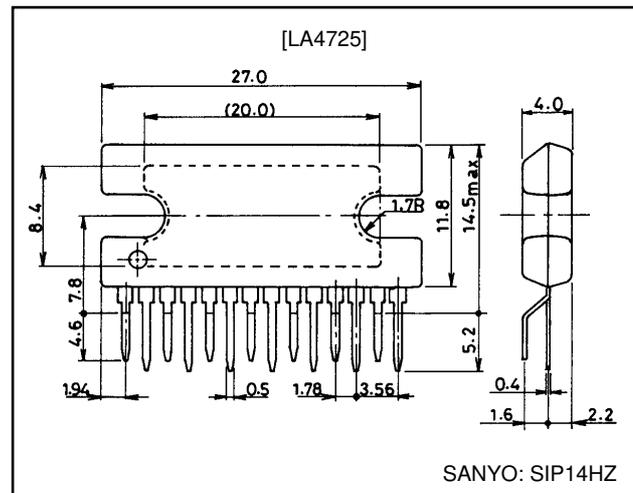
Features

- High power: supports total output of 30 W+30 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 LA4725 is pin-compatible with the LA4728.

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	3.0	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	$^\circ\text{C}$

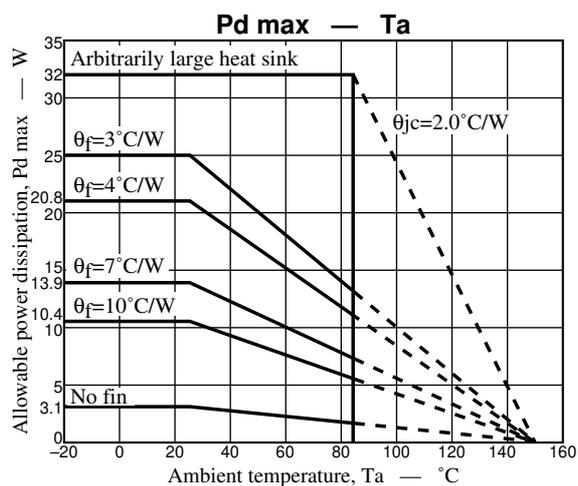
Recommended Conditions at $T_a = 25\ ^\circ\text{C}$

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	Ω

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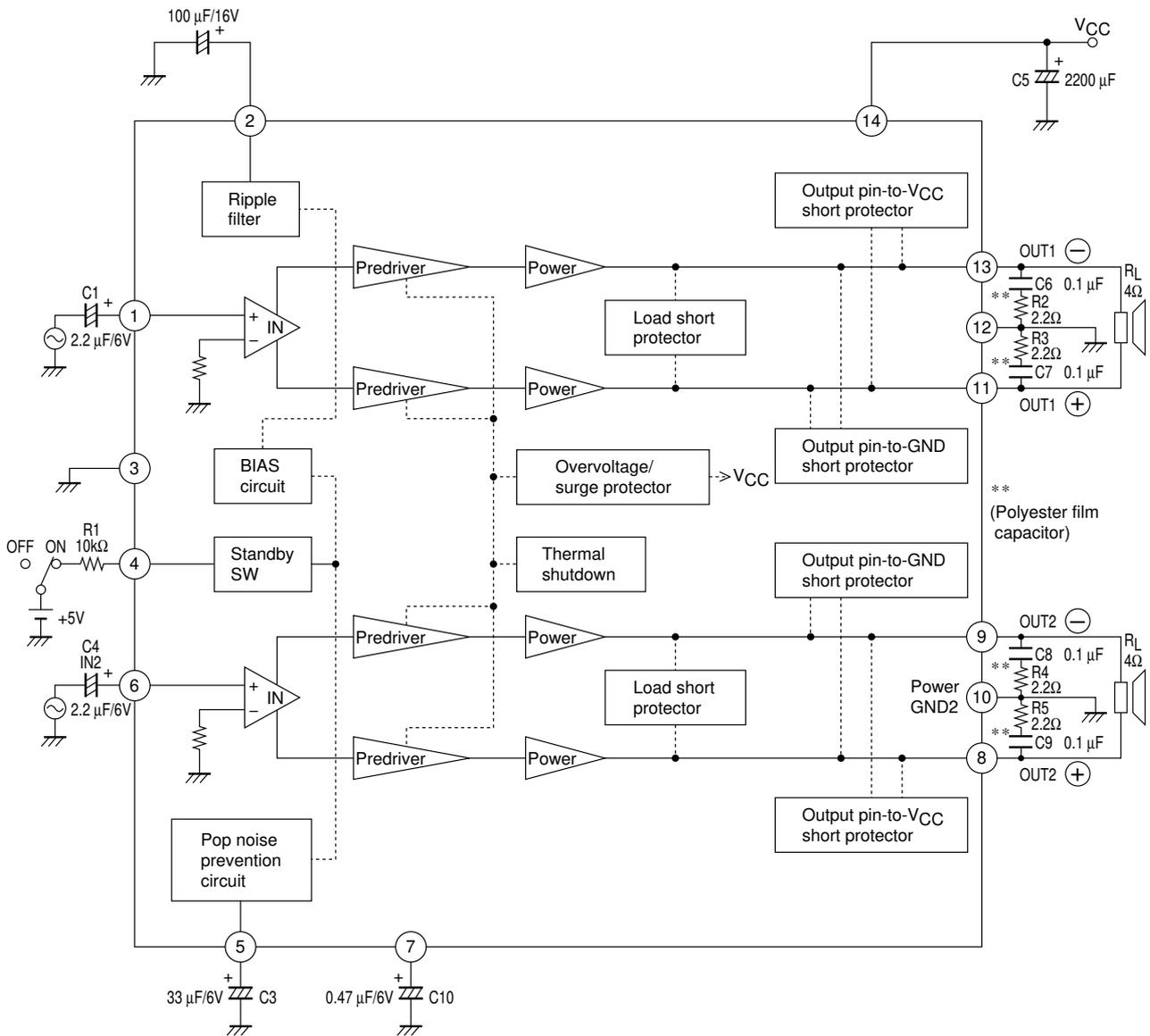
Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = 13.2\text{ V}$, $R_L = 4\text{ k}\Omega$, $f = 1\text{ kHz}$, $R_g = 600\ \Omega$

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	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}	$R_L=4\ \Omega$, THD=10%, $V_{CC}=13.2\text{ V}$	13	17		W
	P_{O2}	$R_L=4\ \Omega$, THD=10%, $V_{CC}=14.4\text{ V}$		20		W
	P_{O3}	$R_L=4\ \Omega$, THD=30%, $V_{CC}=14.4\text{ V}$		30		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



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Block Diagram and Sample Application Circuit



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