Ordering number : ENN8378

SANYO Semiconductors
DATA SHEET

LA4915 — Monolithic Linear IC
TV BTL 5W typical 2-channel BTL high-effciency power amplifier

Overview

The LA4915 is a BTL two-channel power amplifier for use in TV audio systems. Increases in the number of external components are held to a minimum by adopting both a signal-following type switching scheme in the amplifier's output stage power supply, and a nonlinear amplifier that has nonlinear characteristics in the signal system. The power dissipation (thermal loss) in the actual operating range has been reduced to about 1/2 that of earlier class B amplifier ICs.
When used with the DIP-28HC package, the IC dispenses with the heat sink and significantly contributes to space saving in the end product case.

Functions

- High-efficiency 5W+5W power amplifier
- Encapsulated in a DIP-28HC package (heat sink free)
- Requires only one signal-following type switching circuit, contributing to a reduction in the number of external components
- Provides analog outputs that generate no switching noise on the output lines
- Built-in standby switches (amplifier and headphone amplifier blocks)
- Built-in headphone amplifier with 2 inputs and 2 outputs (VG=6dB, P_O=30mW)
- Built-in protection circuits (overvoltage and thermal protection circuits)

Applications

- Audio output for TV application

Specitications

Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max	No signal	24	V
Allowable power dissipation	Pd max	With an infinitely large heat sink	5	W
Maximum junction temperature	Tj max		150	°C
Thermal resistance	θ jc		3	°C /W
Operating temperature	Topr		-25 to +75	°C
Storage temperature	Tstg		-40 to +150	°C

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Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V_{CC}		10.5	V
Recommended load resistance	R_L	AMP block	8	Ω
Recommended load resistance	R_L	H/P block	32	Ω
Operating supply voltage range	V_{CC} op	Not exceeding the package Pd	7 to 18	V

Electrical Characteristics

Operating Characteristics at Ta = 25°C, V_{CC} = 10.5V, R_L = 8Ω, f = 1kHz, Rg = 600Ω,
See the specified board and circuit.

AMP block

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current	I_{CCO}	Rg = 0	35	65	120	mA
Standby current	Ist			0	10	μA
Voltage gain	VG	V_O = 0dBm	28	30	32	dB
Output power	P_O	THD = 10%	4	5		W
Total harmonic distortion	THD	P_O = 1W, LPF = 30kHz		0.04	0.4	%
Output noise voltage	V_{NO}	Rg = 0, DIN AUDIO		0.05	0.3	mV
Channel selectivity	CHsep	Rg = 10kΩ, V_O = 0dBm, DIN AUDIO	50	60		dB
Ripple rejection	SVRR	Rg = 0, f_R = 100Hz, V_R = 0dBm, DIN AUDIO	60	70		dB
Input resistance	Ri		21	30	39	kΩ
Output offset voltage	V_N offset	Rg = 0	-200		+200	mV
Standby OFF voltage	V_{ST}	AMP = ON, Application via 10kΩ	3		V_{CC}	V
Pin 7 inrush current (DDL ON current)	I7Pin	Apply+5V to pin via 10kΩ, THD = 10%	100	150	200	μA

*DDL : Stands for Dynamic Distortion Limiter.

Operating Characteristics at Ta = 25°C, V_{CC} = 10.5V, R_L = 32Ω, f = 1kHz, Rg = 600Ω,
See the specified board and circuit.

H/P block

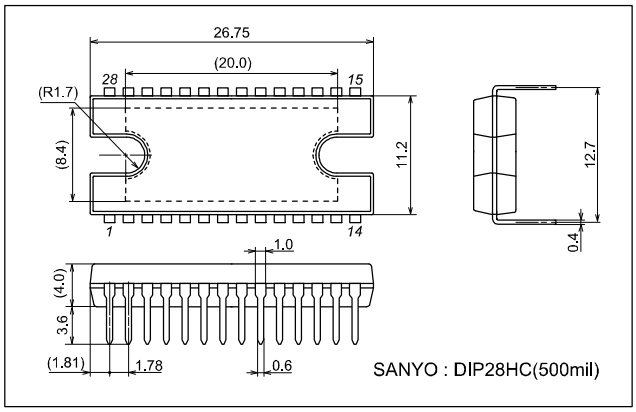
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Voltage gain	VG	V_O = 0dBm	4.5	5.5	6.5	dB
Output power	P_O	THD = 1%	25	30		mW
Total harmonic distortion	THD	V_O = 0dBm, LPF = 30kHz		0.025	0.05	%
Channel selectivity	CH sep	Rg = 10kΩ, V_O = 0dBm, DIN AUDIO	50	60		dB
Ripple rejection	SVRR	Rg = 0, f_R = 100Hz, V_R = 0dBm, DIN AUDIO	65	75		dB
Output noise voltage	V_{NO}	Rg = 0, DIN AUDIO		0.01	0.04	mV
Standby OFF voltage	V_{ST}	H/P AMP = ON, Application via 10kΩ	3		V_{CC}	V

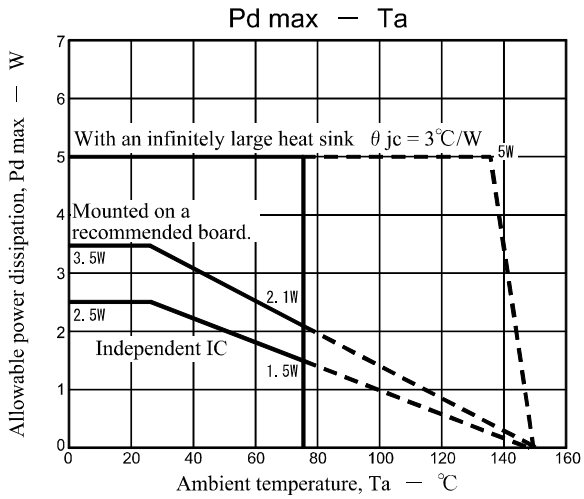
*1 : DIN AUDIO (20Hz to 20kHz)

Package Dimensions

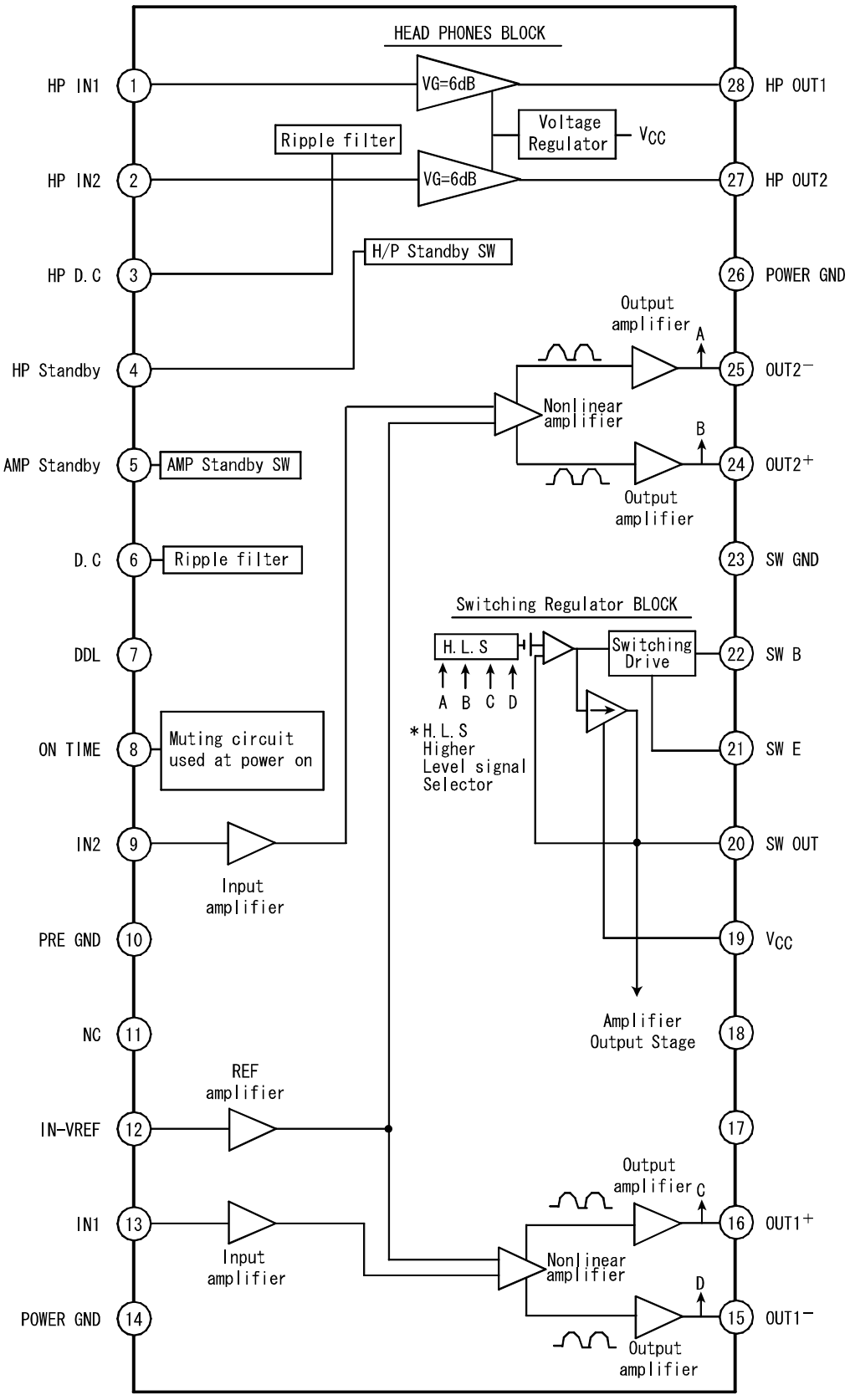
unit : mm

3241A

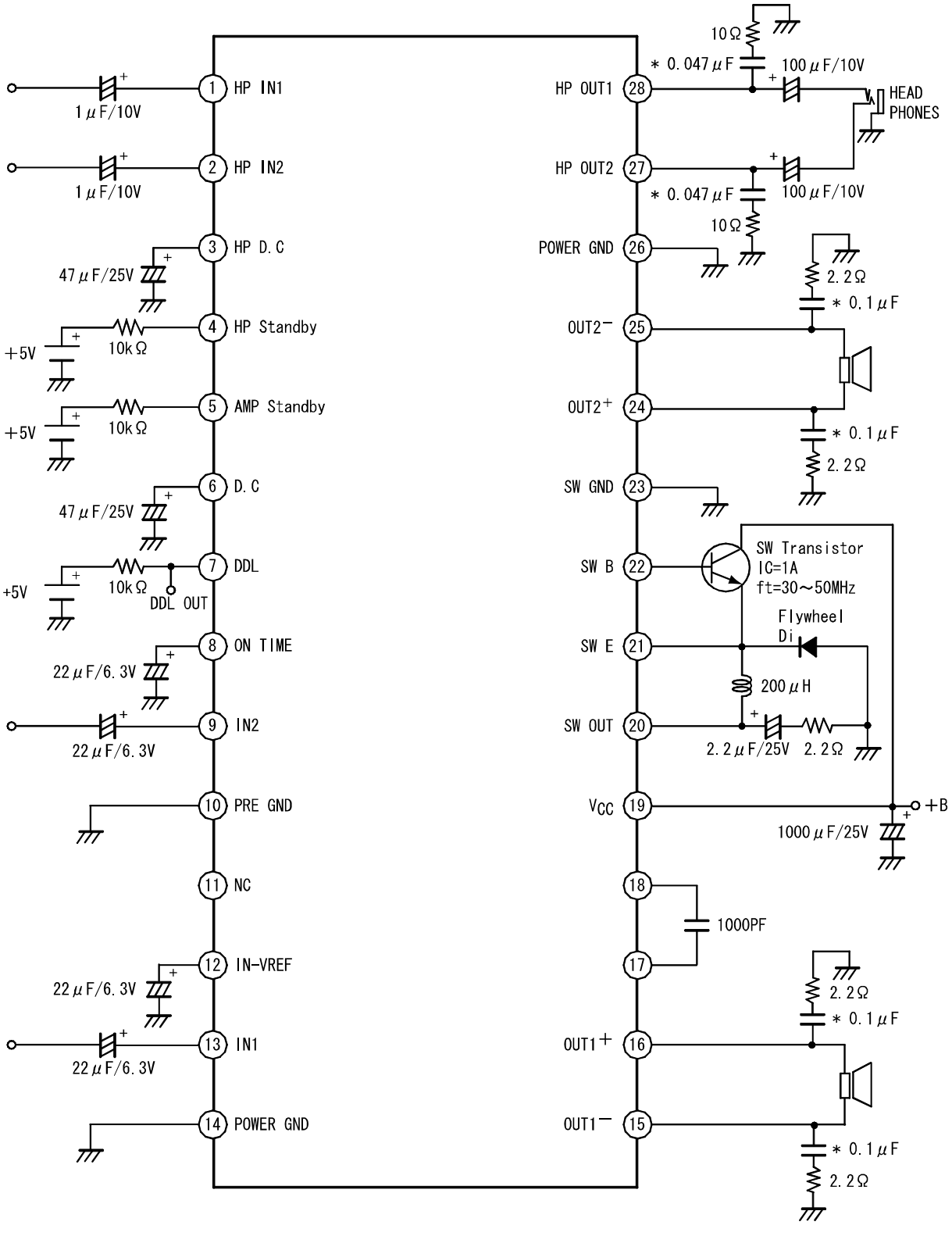




Block Diagram



Sample Application Circuit



* Polyester film capacitor