



SANYO Semiconductors

# DATA SHEET

## LA4915 — Monolithic Linear IC TV BTL 5W typical 2-channel BTL high-efficiency 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<sub>O</sub>=30mW)
- Built-in protection circuits (overvoltage and thermal protection circuits)

### Applications

- Audio output for TV application

### Specifications

Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V <sub>CC</sub> max	No signal	24	V
Allowable power dissipation	P <sub>d</sub> max	With an infinitely large heat sink	5	W
Maximum junction temperature	T <sub>j</sub> max		150	°C
Thermal resistance	θ <sub>jc</sub>		3	°C/W
Operating temperature	T <sub>opr</sub>		-25 to +75	°C
Storage temperature	T <sub>stg</sub>		-40 to +150	°C

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# LA4915

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

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

## Electrical Characteristics

### Operating Characteristics at $T_a = 25^\circ\text{C}$ , $V_{CC} = 10.5\text{V}$ , $R_L = 8\Omega$ , $f = 1\text{kHz}$ , $R_g = 600\Omega$ ,

See the specified board and circuit.

#### AMP block

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

\*DDL : Stands for Dynamic Distortion Limiter.

### Operating Characteristics at $T_a = 25^\circ\text{C}$ , $V_{CC} = 10.5\text{V}$ , $R_L = 32\Omega$ , $f = 1\text{kHz}$ , $R_g = 600\Omega$ ,

See the specified board and circuit.

#### H/P block

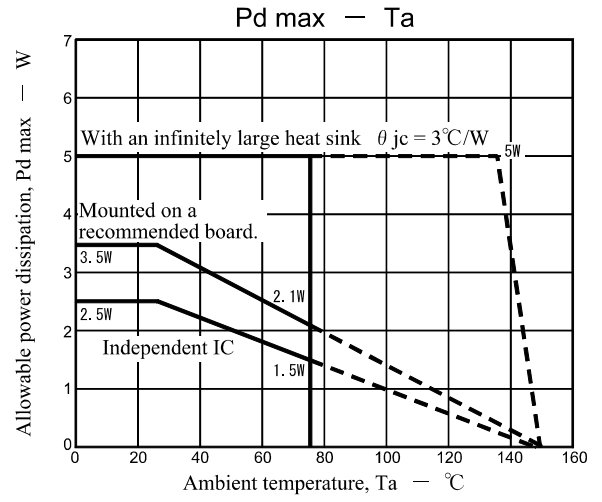
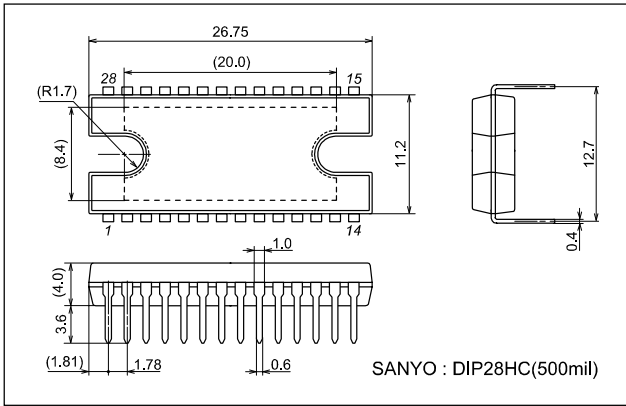
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Voltage gain	VG	$V_O = 0\text{dBm}$	4.5	5.5	6.5	dB
Output power	$P_O$	THD = 1%	25	30		mW
Total harmonic distortion	THD	$V_O = 0\text{dBm}$ , LPF = 30kHz		0.025	0.05	%
Channel selectivity	CH sep	$R_g = 10\text{k}\Omega$ , $V_O = 0\text{dBm}$ ,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

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

Package Dimensions

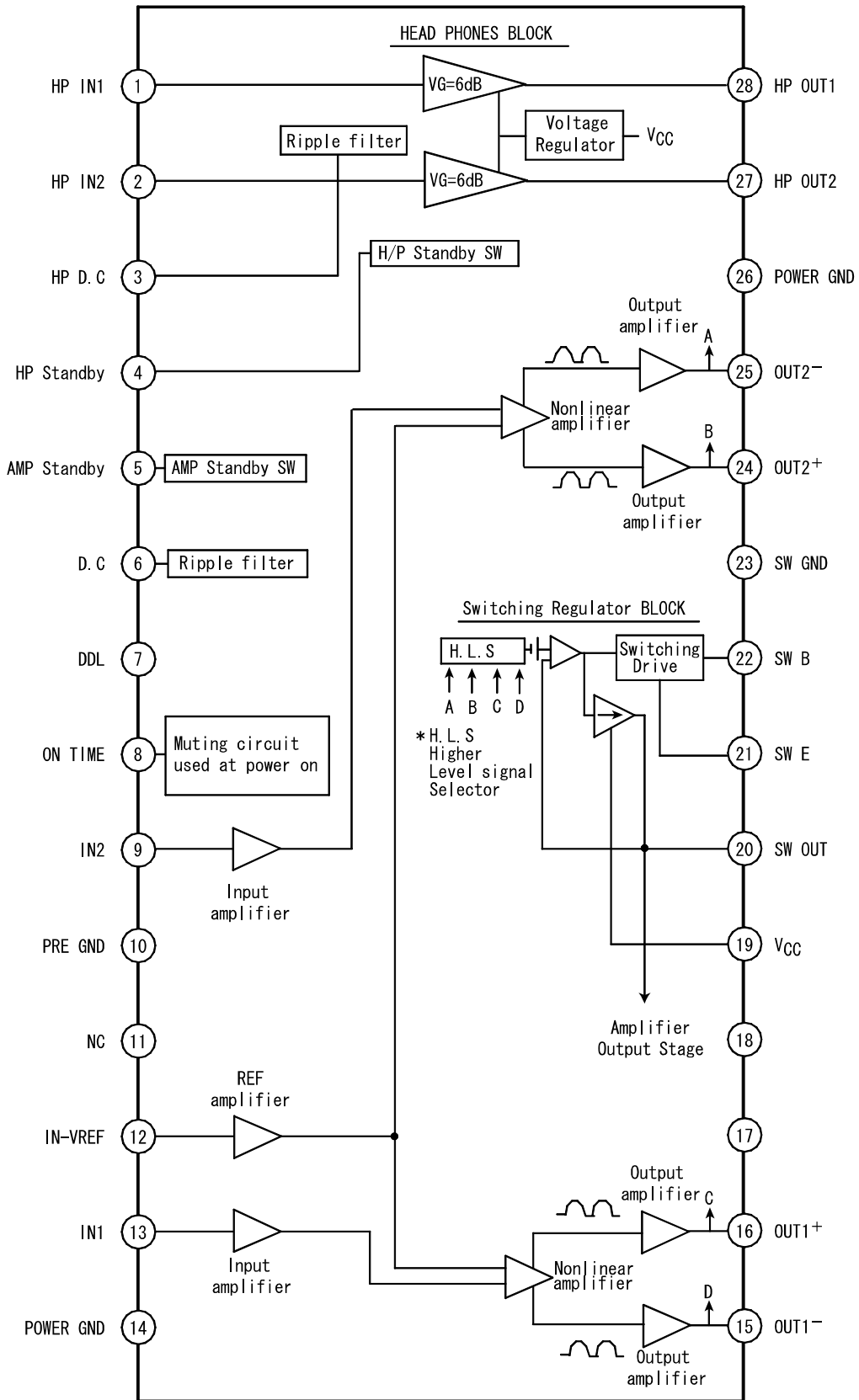
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3241A

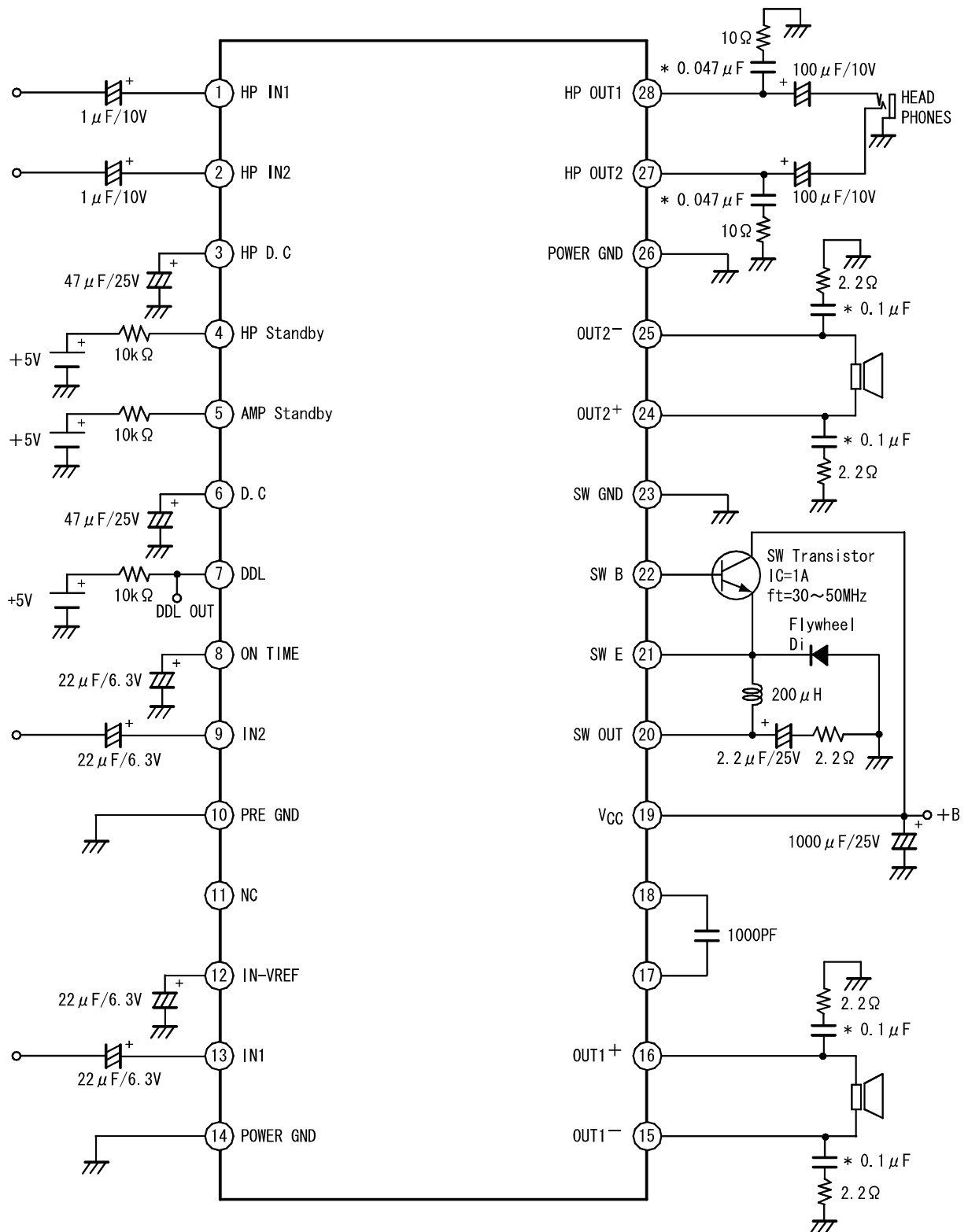


# LA4915

## Block Diagram



Sample Application Circuit



\* Polyester film capacitor

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