



SANYO Semiconductors

## DATA SHEET

# LA4635A — Monolithic Linear IC For General Audio Use 2-Channel BTL AF Power Amplifier

## Overview

The LA4635A is a 2-channel power amplifier that is pin-compatible with the LA4636. It represents a new concept in devices of this type by allowing design editing based on common circuit board pin compatibility for products of different power ranks. It is compatible with  $V_{CC} = 9V$  and  $V_{CC} = 12V$  specifications and is available in two versions with different voltage gains (LA4635A with  $VG = 35dB$  and LA4635B with  $VG = 45dB$ ).

## Specifications

### Maximum Ratings at $T_a = 25^\circ C$

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{CC}$ max	No signal	24	V
Maximum output current	$I_O$ peak	Per channel	2.5	A
Allowable power dissipation	$P_d$ max	Infinite heat sink	25	W
Operating temperature	$T_{opr}$		-20 to +75	$^\circ C$
Storage temperature	$T_{stg}$		-40 to +150	$^\circ C$

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

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	$V_{CC}$		12	V
Recommended load resistance	$R_L$ op		3 to 8	$\Omega$
Allowable operating voltage range	$V_{CC}$ op		5.5 to 22	V

\* Set  $V_{CC}$ ,  $R_L$ , and output level such that  $P_d$  max. is not exceeded for the size of heat sink used.

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# LA4635A

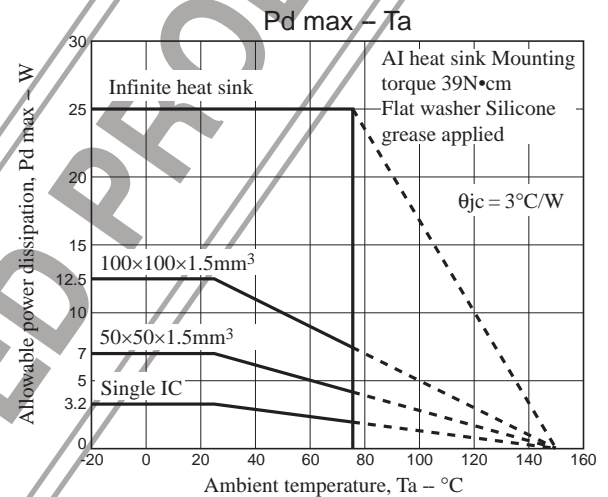
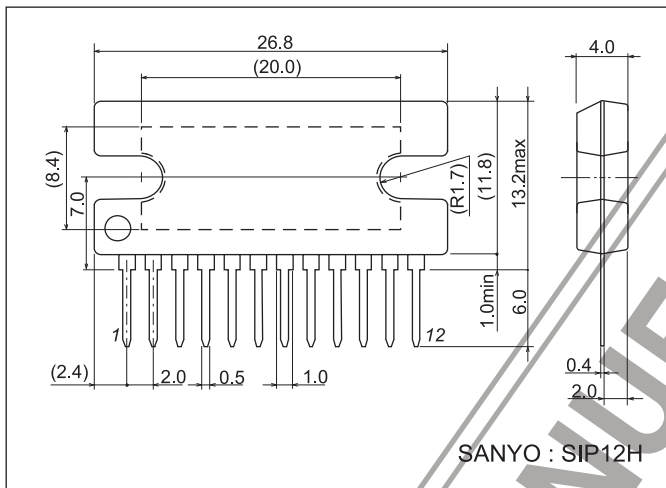
**Electrical Characteristics** at  $T_a = 25^\circ\text{C}$ ,  $V_{CC} = 12\text{V}$ ,  $R_L = 3\Omega$ ,  $f = 1\text{kHz}$ ,  $R_g = 600\Omega$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current	$I_{CCO}$	$R_g = 0$	18	35	80	mA
Standby current	$I_{st}$			1	10	$\mu\text{A}$
Voltage gain	VG	$V_O = 0\text{dBm}$	33	35	37	dB
Total harmonic distortion	THD	$P_O = 1\text{W}$		0.15	0.4	%
Output power	$P_{O1}$	THD = 10%	3.0	4.5		W
	$P_{O2}$	$V_{CC} = 9\text{V}$ , THD = 10%	2.0	2.5		W
Output noise voltage	$V_{NO}$	$R_g = 0$ , BPF = 20Hz to 20kHz		0.05	0.25	mV
Ripple rejection	SVRR	$R_g = 0$ , $f_R = 100\text{Hz}$ , $V_R = 0\text{dBm}$	50	60		dB
Channel separation	CHsep	$R_g = 10\text{k}\Omega$ , $V_O = 0\text{dBm}$	55	65		dB
Input resistance	$R_i$		20	30	40	$\text{k}\Omega$
Standby pin voltage	$V_{ST}$	Amplifier on (pin 5 voltage)	1.5	5.0		V

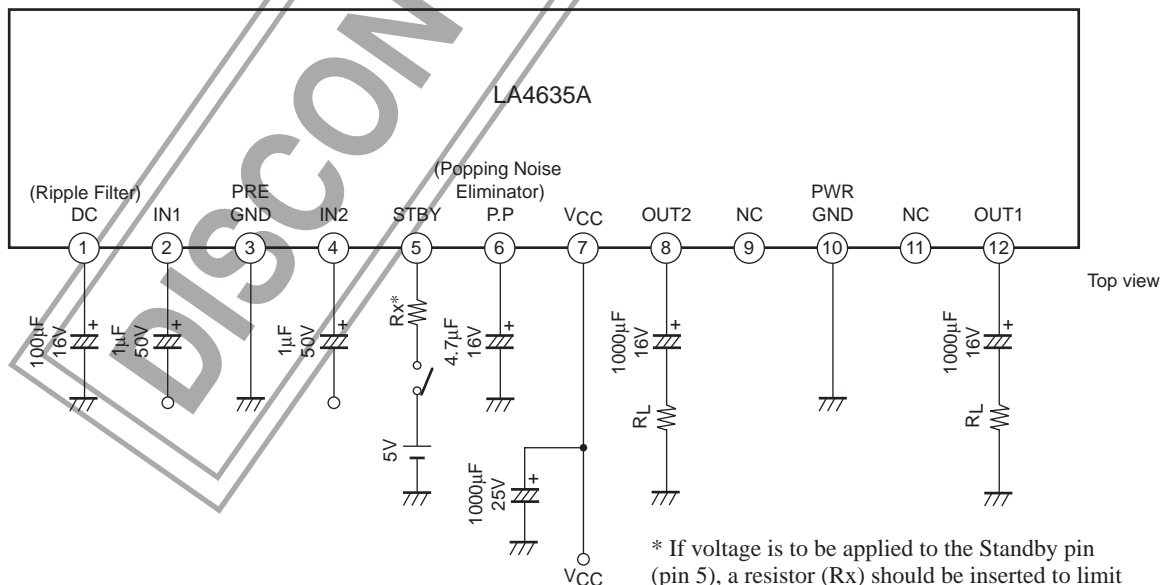
## Package Dimensions

unit : mm (typ)

3049B

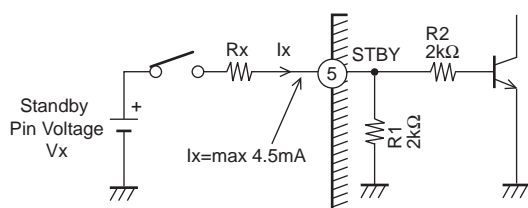


## Sample Application Circuit



\* If voltage is to be applied to the Standby pin (pin 5), a resistor ( $R_x$ ) should be inserted to limit the inflow current, as required. Please refer to the information below.

## (Reference) Pin 5 Equivalent Circuit Inside IC



- The amplifier can be turned on and off by controlling the level (high/low) of pin 5.
- Applying a signal equal or greater than 1.5V and 800μA to pin 5 turns on the amplifier. (If 5V is applied directly to pin 5 the inflow current of pin 5 is approximately 4.5mA.)
- If a voltage,  $V_x$ , exceeding 5V is to be applied, current limiting resistor ( $R_x$ ) should be inserted to limit the inflow current to 4.5mA. (See following equation.)
- If pin 5 is to be controlled by the microprocessor, the pin 5 inflow current ( $I_x$ ) should be optimized for the capacity of the microprocessor by calculating  $R_x$  using the following equation, as a general guideline, and then confirming the inflow current through actual measurement.

$$R_x = (V_x - 5V) / 4.5mA$$

$$R_x = (V_x / I_x) - R_1 (2k\Omega)$$

Note : The LA4635A is basically pin-compatible with the LA4636, but there are partial differences in operation and usage, including with regard to externally connected parts.

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