



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	Ω
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

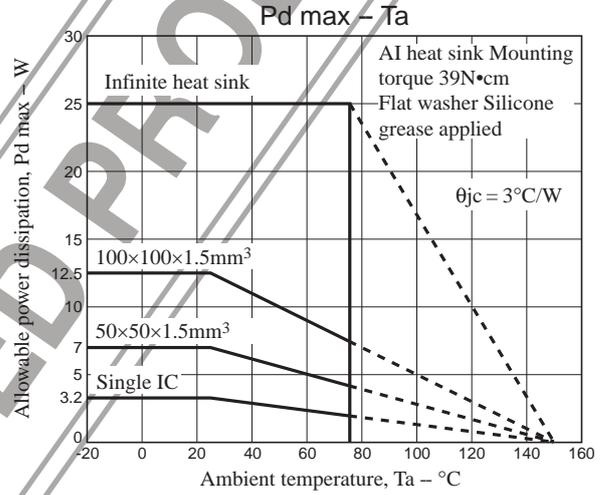
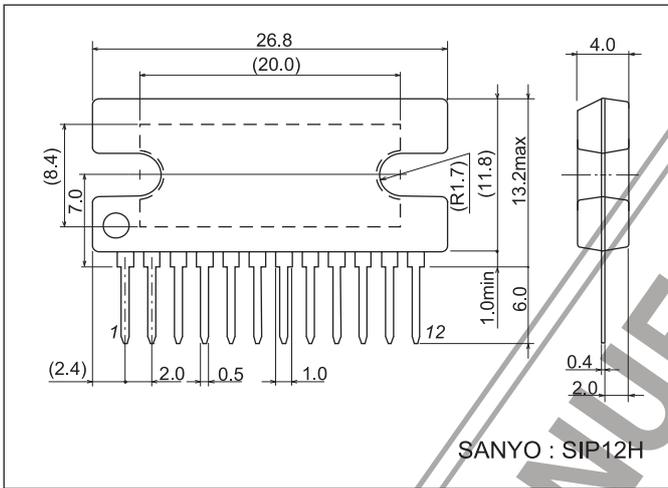
Electrical Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = 12\text{V}$, $R_L = 3\Omega$, $f = 1\text{kHz}$, $R_g = 600\Omega$

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	μA
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

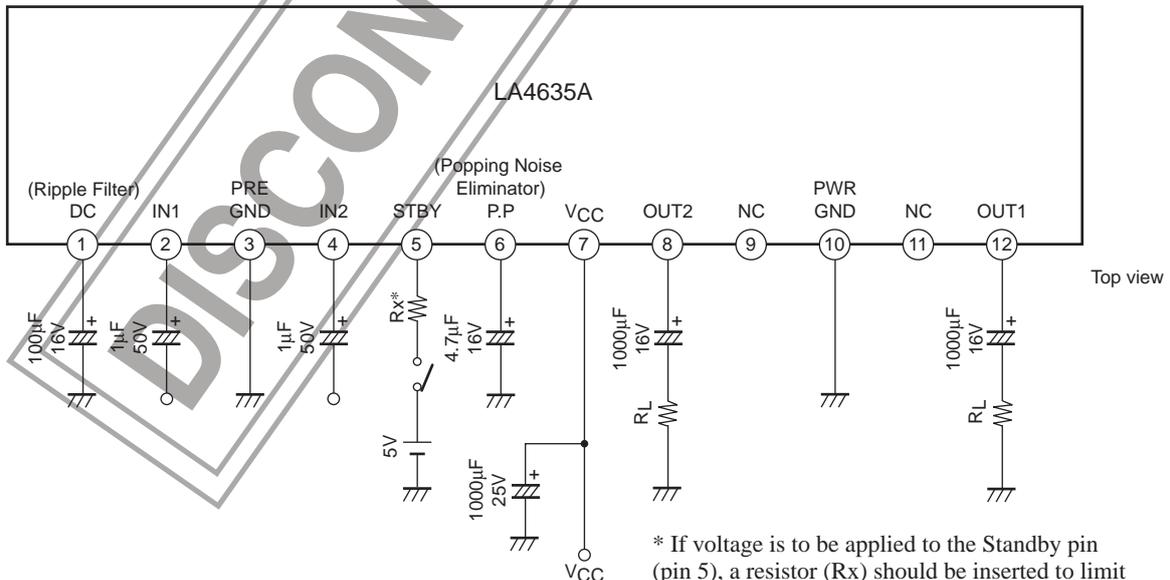
Package Dimensions

unit : mm (typ)

3049B



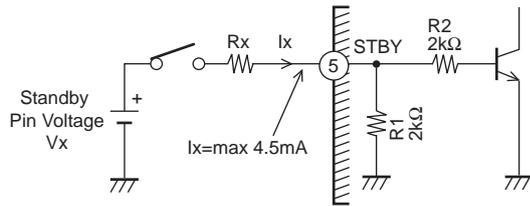
Sample Application Circuit



* 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.

LA4635A

(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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