

Ordering number: ENN6984

Monolithic Linear IC



LA4635B

For General Audio Use 2-Channel BTL AF Power Amplifier

Overview

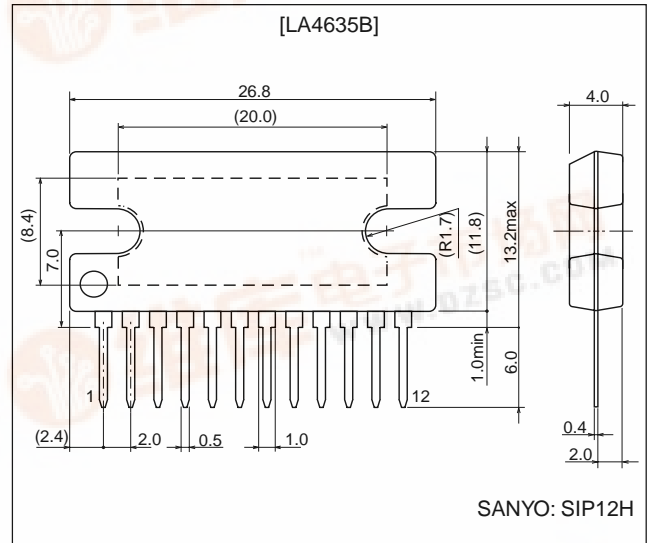
The LA4635B is a 2-channel power IC that is pin-compatible with the LA4636.

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 $V_{CC} = 9\text{ V}$ and $V_{CC} = 12\text{ V}$ specifications and is available in two versions with different voltage gains (LA4635B with $VG = 45\text{ dB}$ and LA4635A with $VG = 35\text{ dB}$).

Package Dimensions

unit: mm

3049B-SIP12H



Specifications

Maximum Ratings at $T_a = 25^\circ\text{C}$

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

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

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

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

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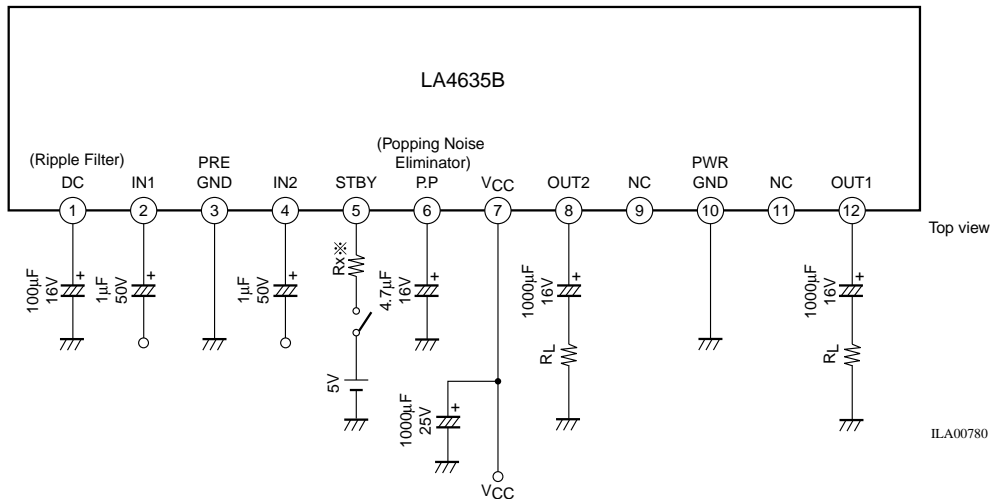


LA4635B

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

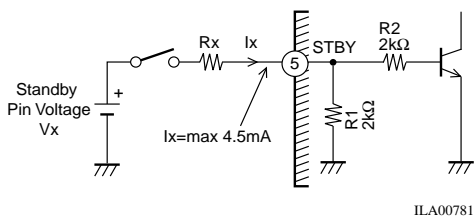
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current	I_{CCO}	$R_g = 0$	18	35	80	mA
Standby current	I_{ST}			1	10	μA
Voltage gain	VG	$V_O = 0\text{ dBm}$	43	45	47	dB
Total harmonic distortion	THD	$P_O = 1\text{ W}$		0.25	0.8	%
Output power	P_{O1}	THD = 10%	3.0	4.5		W
	P_{O2}	$V_{CC} = 9\text{ V}$, THD = 10%	2.0	2.5		W
Output noise voltage	V_{NO}	$R_g = 0$, BPF = 20 Hz to 20 kHz		0.15	0.5	mV
Ripple rejection	SVRR	$R_g = 0$, $f_R = 100\text{ Hz}$, $V_R = 0\text{ dBm}$	45	55		dB
Channel separation	CH Sep	$R_g = 10\text{ k}\Omega$, $V_O = 0\text{ dBm}$	45	55		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

Circuit Application Example



* 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

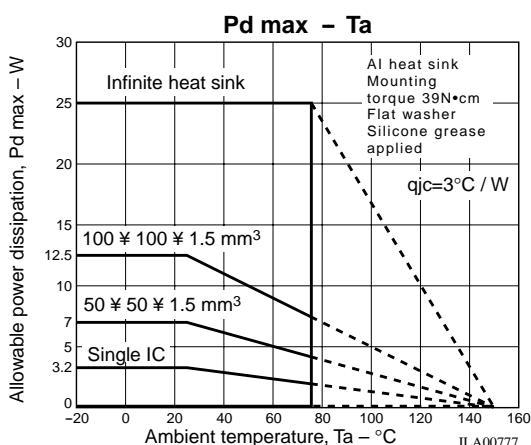


- The amplifier can be turned on and off by controlling the level (high/low) of pin 5.
- Applying a signal equal or greater than 1.5 V and 800 μA to pin 5 turns on the amplifier. (If 5 V is applied directly to pin 5 the inflow current of pin 5 is approximately 4.5 mA.)
- If a voltage, V_x , exceeding 5 V is to be applied, current limiting resistor (R_x) should be inserted to limit the inflow current to 4.5 mA. (See following equation.)

$$R_x = (V_x - 5\text{ V}) / 4.5\text{ mA}$$

- 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.

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



Note: The LA4635B 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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