



# LA4635B

## For General Audio Use 2-Channel BTL AF Power Amplifier

### Overview

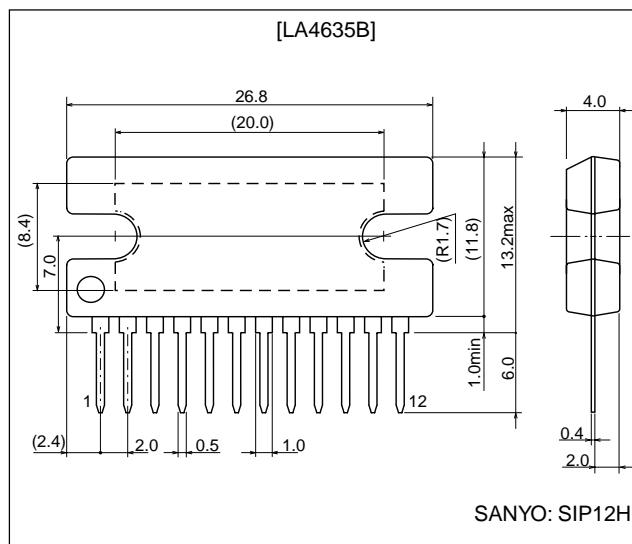
The LA4635B is a 2-channel power IC that is pin-compatible with the LA4636.

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	$T_{opr}$		-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	$\Omega$
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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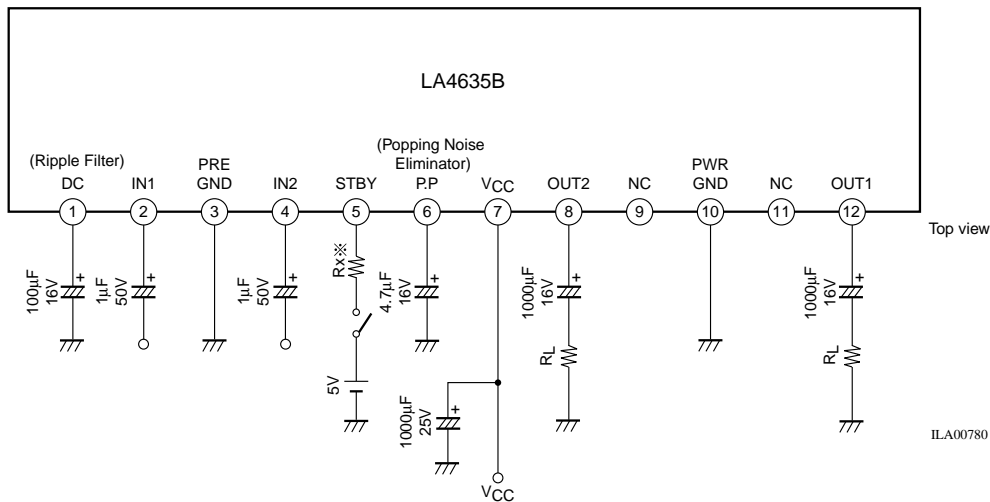
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# LA4635B

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

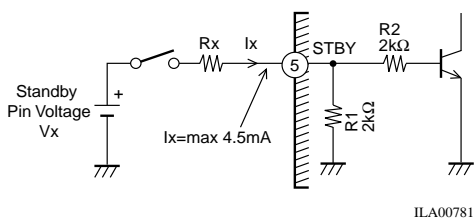
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current	$I_{CCO}$	$R_g = 0$	18	35	80	mA
Standby current	$I_{st}$			1	10	$\mu\text{A}$
Voltage gain	VG	$V_O = 0\text{ dBm}$	43	45	47	dB
Total harmonic distortion	THD	$P_O = 1\text{ W}$		0.25	0.8	%
Output power	$P_{O1}$ $P_{O2}$	THD = 10% $V_{CC} = 9\text{ V}$ , THD = 10%	3.0 2.0	4.5 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.

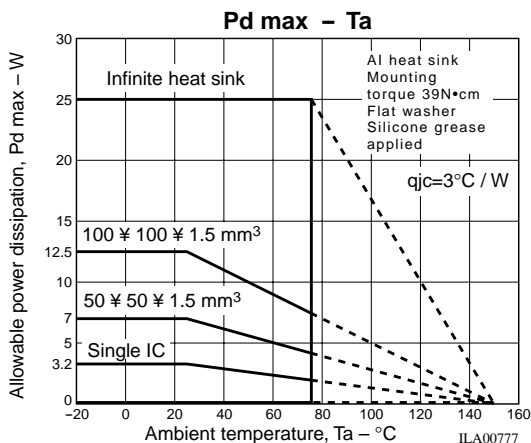
## (Reference) Pin 5 Equivalent Circuit Inside IC



- 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  $\mu\text{A}$  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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