



Two-Channel Audio Frequency Power Amplifier

Overview

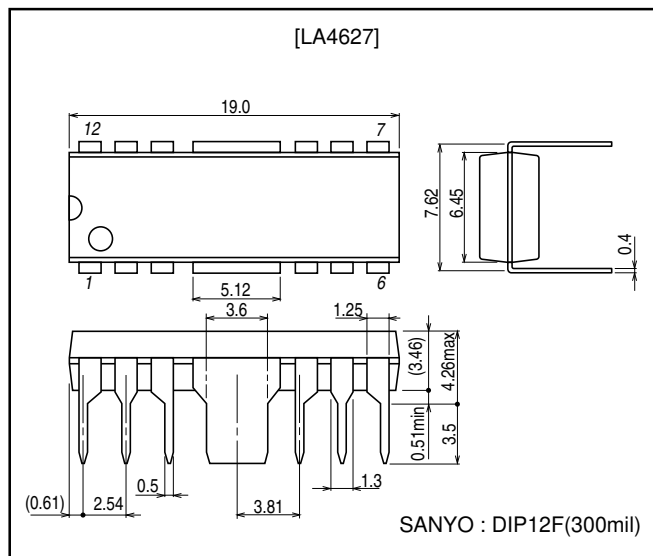
The LA4627 is a 2-channel power amplifier developed for use in radio/cassette player products. The LA4627 reduces the number of required external components by 50% over earlier products (BS/NF capacitors and oscillation prevention RC components) and thus can contribute significantly to space saving in end products.

Features

- Provided in the DIP12F.
- PO :2.0 W × 2 (VCC = 9 V, RL = 4 Ω)
2.5 W × 2 (VCC = 9 V, RL = 3 Ω)
- Standby function built in (supports direct microcontroller control).
- Built-in thermal protection circuit.

Package Dimensions

unit : mm
3022B-DIP12F



Specifications

Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	VCC max	Rg = 0	22	V
Allowable power dissipation	Pd max	When mounted on the Sanyo-recommended PCB	4.0	W
Operating temperature	Topr		-25 to +75	°C
Storage temperature	Tstg		-55 to +150	°C

Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	VCC		9	V
Recommended load resistance	RL		3	Ω
Operating voltage range	VCC op	Under conditions such that the maximum ratings are not exceeded.	5.0 to 20	V
Recommended operating load resistance	RL op		2.7 to 8.0	Ω

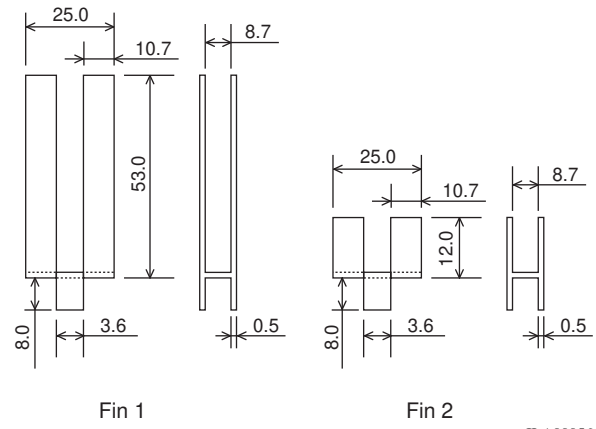
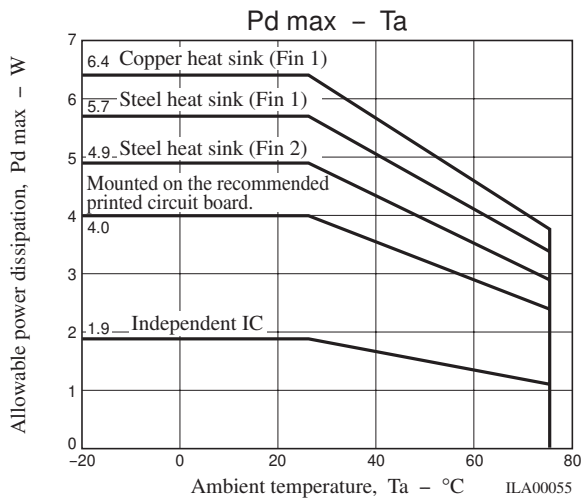
■ Any and all SANYO products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your SANYO representative nearest you before using any SANYO products described or contained herein in such applications.

■ SANYO assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all SANYO products described or contained herein.

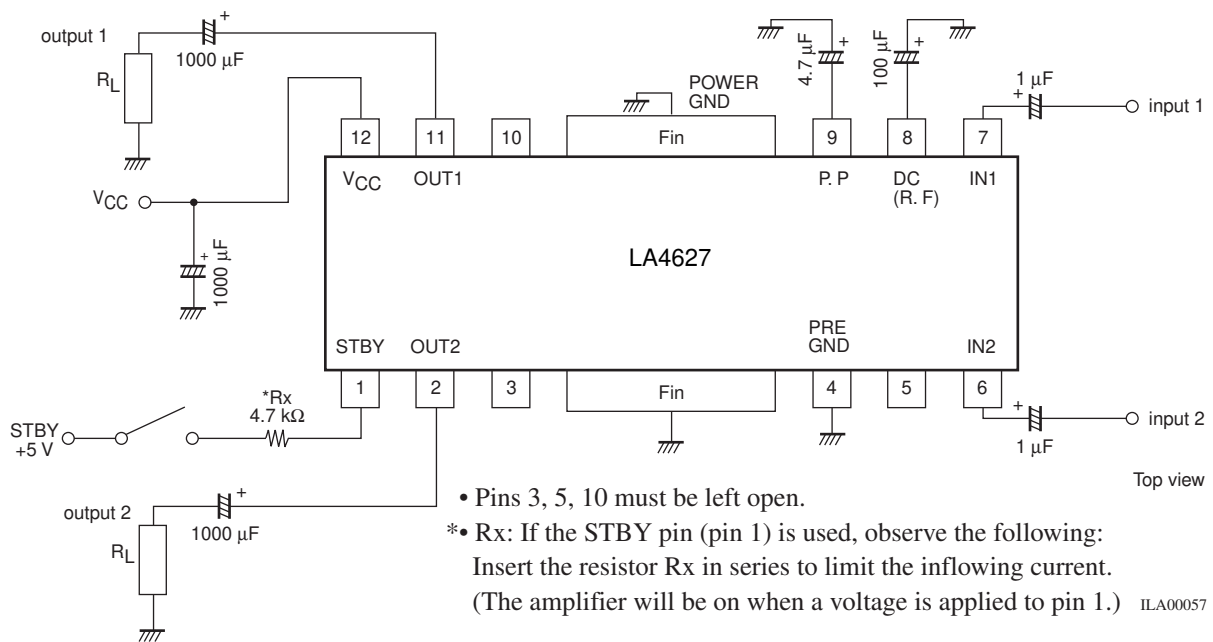
LA4627

Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = 9\text{ V}$, $R_L = 3\ \Omega$, $f = 1\text{ kHz}$, $R_g = 600\ \Omega$

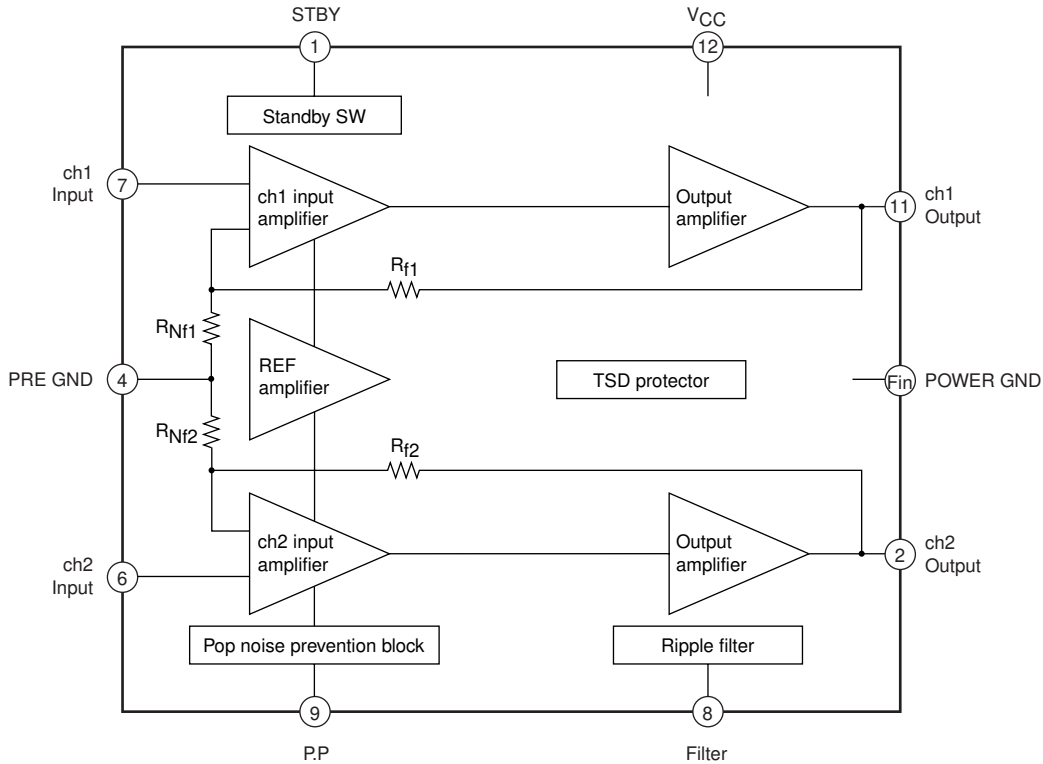
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current	I_{CCO}	$R_g = 0$	17	30	70	mA
Voltage gain	VG	$V_O = 0\text{ dBm}$	43	45	47	dB
Total harmonic distortion	THD	$P_O = 0.33\text{ W}$ ($V_O = 1.0\text{ V}$)		0.1	0.8	%
Output power	$P_{O(1)}$	THD = 10 %	2.0	2.5		W
	$P_{O(2)}$	THD = 10 %, $R_L = 4\ \Omega$		2.0		W
Output noise voltage	VNO	$R_g = 0$, DIN AUDIO		0.15	0.5	mVrms
Ripple rejection ratio	SVRR	$R_g = 0$, $f_R = 100\text{ Hz}$, $V_r = 0\text{ dBm}$, DIN AUDIO	45	52		dB
Channel separation	CHsep	$R_g = 0$, $V_O = 0\text{ dBm}$, DIN AUDIO	50	60		dB
Standby current	I_{ST}	$R_g = 0$		1.0	10	μA
Input resistance	Ri		20	30	40	k Ω
Standby pin voltage	VST	The pin 1 voltage such that the amplifier is on	1.5	5.0		V



Application Circuit



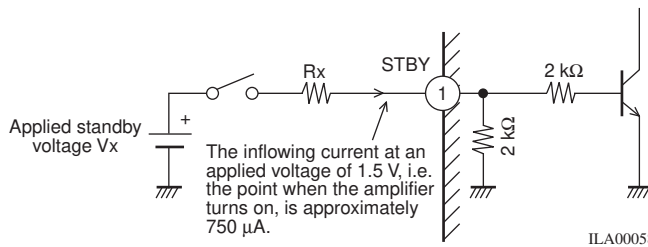
Block Diagram



ILA00059

Pin Functions

1. Standby switch function (pin 1)



STBY pin applied voltage: 5 V

To hold the pin 1 inflow current to about 750 μA insert a resistor (R_x) of 4.7 $\text{k}\Omega$

STBY pin applied voltage: 12 V

To hold the pin 1 inflow current to about 750 μA insert a resistor (R_x) of 14 $\text{k}\Omega$ (12 $\text{k}\Omega$).

STBY pin applied voltage: Other value (V_x)

To hold the pin 1 inflow current to about 750 μA insert a resistor (R_x) of $(V_x - 1.5\text{ V})/750\ \mu\text{A}$.

- If a microcontroller output signal is applied directly, insert a resistor in series and adjust the current to a level optimal for the drive capability of the microcontroller.

2. Input pins (pins 6 and 7)

The input pin voltage is about $2V_{BE}$ (1.4 V).

The input pin impedance is about 30 $\text{k}\Omega$.

- Although the recommended value for the input capacitor is 0.22 μF , the starting time can be modified by changing the value of this capacitor. (The time from the point a voltage is applied to the standby pin to the point sound is emitted.)

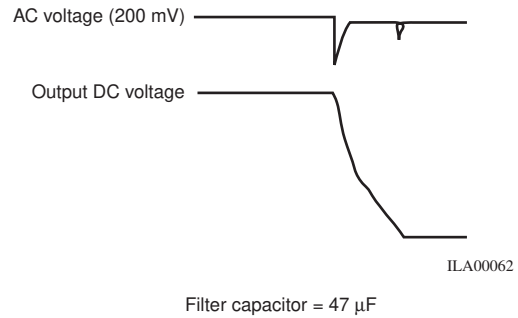
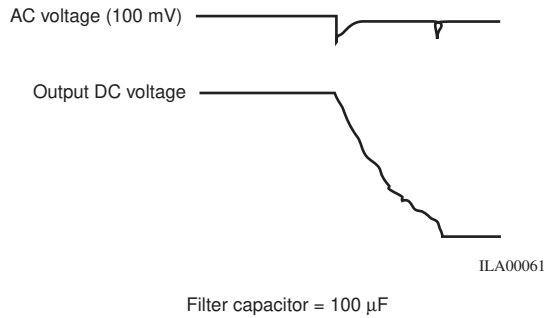
Input capacitor	1.0 μF	2.2 μF	3.3 μF	4.7 μF	10 μF
Starting time (ts)	0.2 s	0.3 s	0.5 s	0.65 s	1.5 s

3. FILTER (decoupling) pin (pin 8)

The pin voltage is about 1/2 VCC.

The recommended value for the filter capacitor is 100 μF.

The pulse noise that occurs when the standby pin is set low (power off) will be degraded if a value under 100 μF is used.



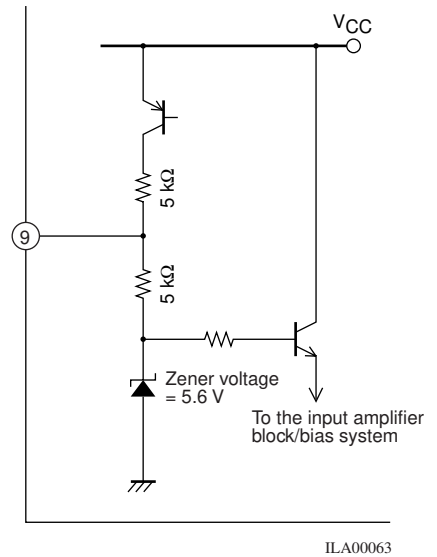
4. P.P (pulse noise) pin (pin 9)

$$\text{Pin 9 pin voltage} \approx \frac{V_{CC} - V_{CE} (\text{about } 0.3 \text{ V}) - 5.6 \text{ V}}{2 \text{ k}\Omega} + 5.6 \text{ V}$$

• The recommended value for the P.P capacitor is 4.7 μF.

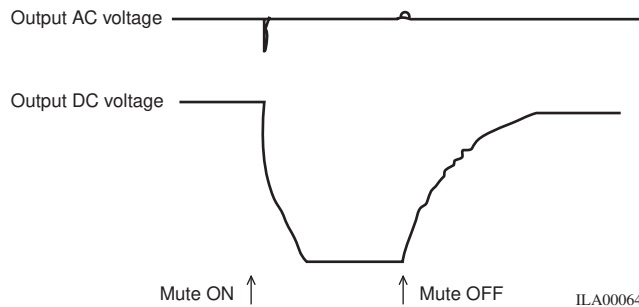
The pulse noise that occurs when the standby pin is set low (power off) will be degraded if a value under 2.2 μF is used.

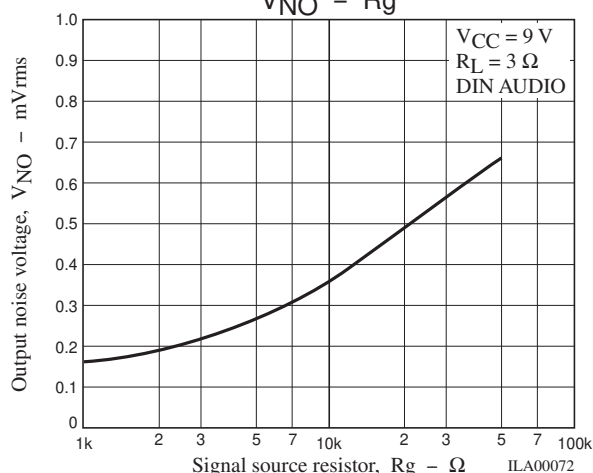
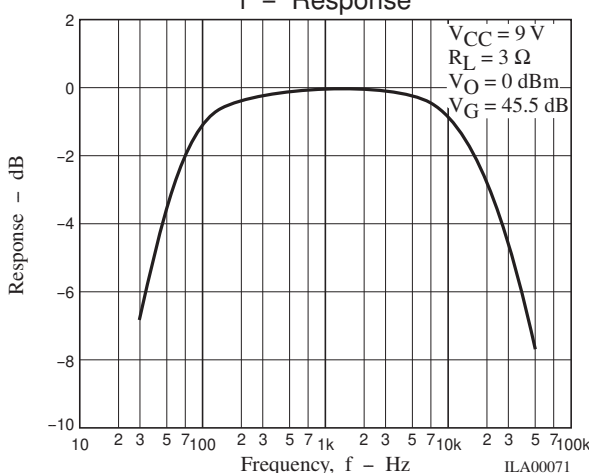
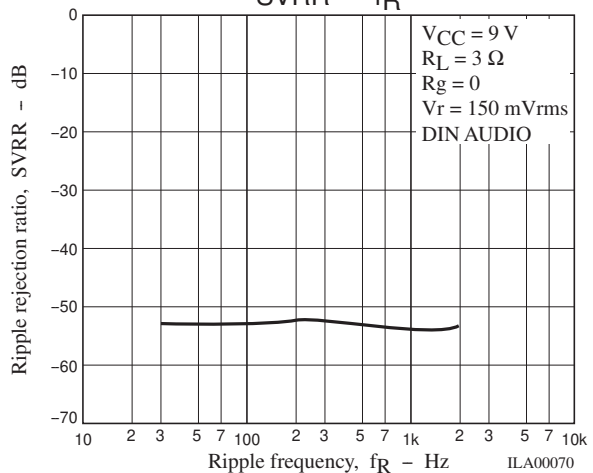
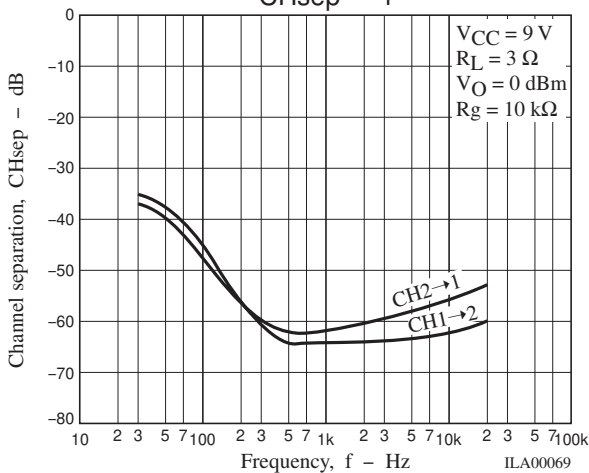
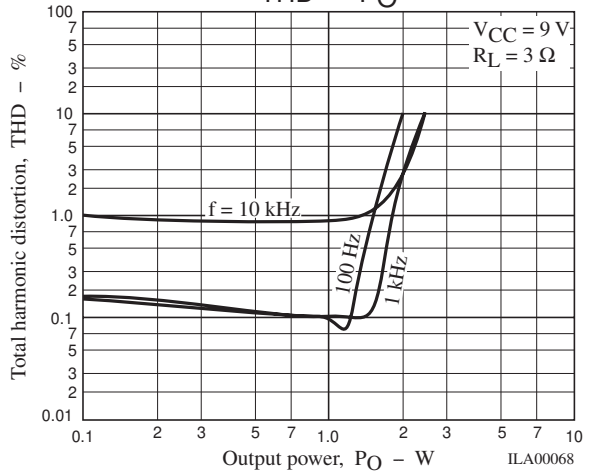
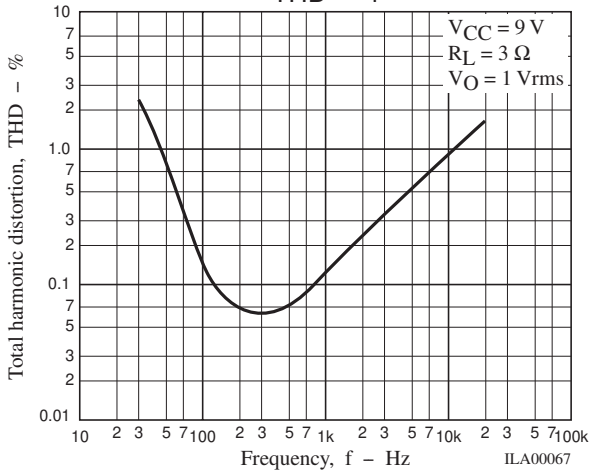
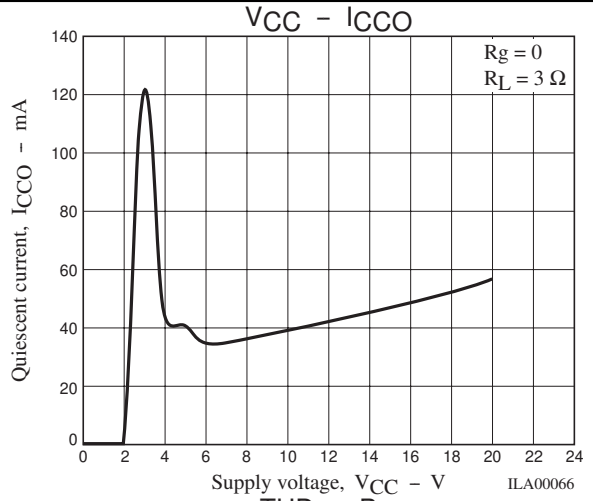
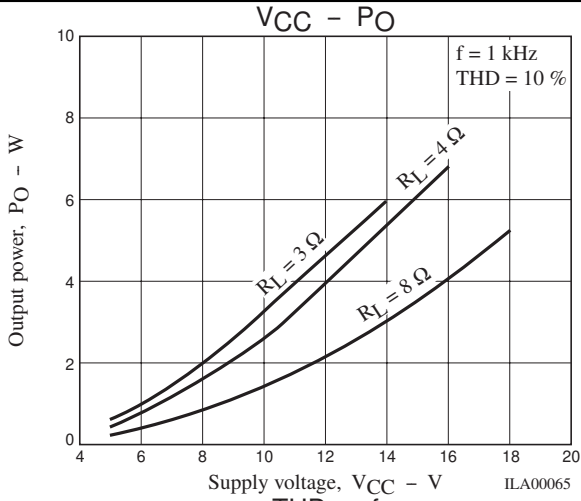
Furthermore, if a value over 10 μF is used, the signal may not be cut off and sound may remain audible when the standby pin is set low (power off).

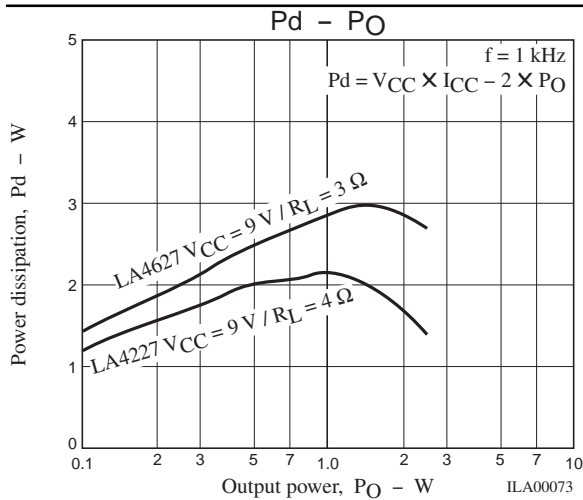


5. MUTE (Muting)

The output signal can be controlled by shifting the pin 8 (FILTER) level towards ground with a 300 to 500 Ω resistor. However, note that the degree of suppression is reduced if a value of 750 Ω or more is used.







- Specifications of any and all SANYO products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.
- SANYO Electric Co., Ltd. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.
- In the event that any or all SANYO products (including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.
- No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of SANYO Electric Co., Ltd.
- Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the SANYO product that you intend to use.
- Information (including circuit diagrams and circuit parameters) herein is for example only; it is not guaranteed for volume production. SANYO believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

This catalog provides information as of April, 2000. Specifications and information herein are subject to change without notice.

This datasheet has been download from:

www.datasheetcatalog.com

Datasheets for electronics components.