

**LA4801V****Headphone Stereo Power Amplifier****Overview**

The LA4801V is a headphone stereo power amplifier for portable CD and MD players. It features a high signal-to-noise ratio, a high ripple rejection ratio, low distortion, and low current drain.

**Functions**

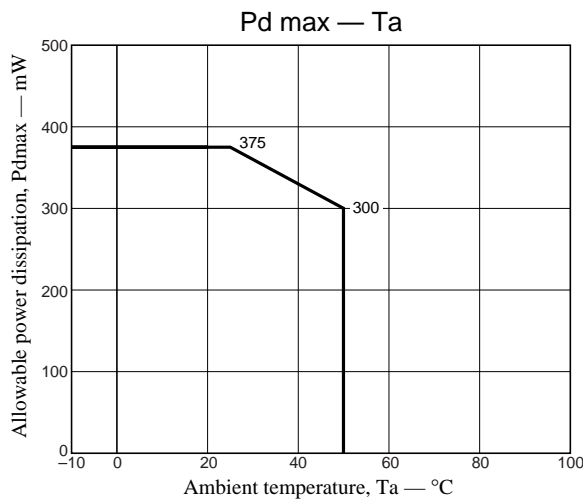
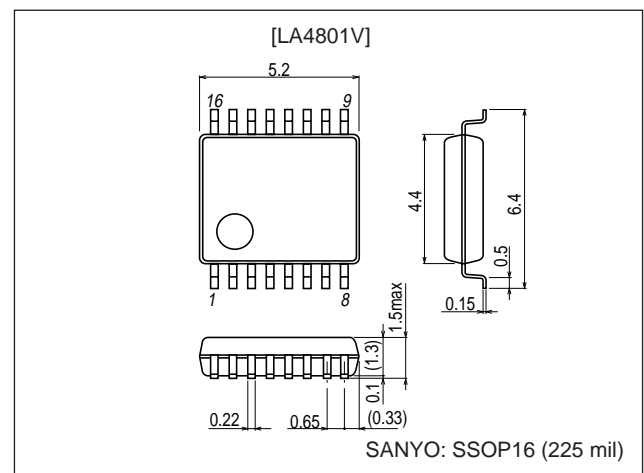
- Headphone stereo power amplifier
- Power switch
- Muting switch
- Center amplifier switch

**Features**

- High signal-to-noise ratio (96 dB typical at 7  $\mu$ V)
- High ripple rejection ratio (76 dB typical)
- Low current drain (4.8 mA typical)
- Low power consumption achieved through the use of a dual power supply system.
- No electrolytic capacitors required for the outputs.
- Ultraminiature package (SSOP-16)

**Package Dimensions**

unit: mm

**3178A-SSOP16**

■ 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.

**SANYO Electric Co.,Ltd. Semiconductor Company**

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

## LA4801V

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{CC\text{ max}}$		4.5	V
Allowable power dissipation	$P_d\text{ max}$		375	mW
Operating temperature	$T_{opr}$		-15 to +50	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-40 to +150	$^\circ\text{C}$

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

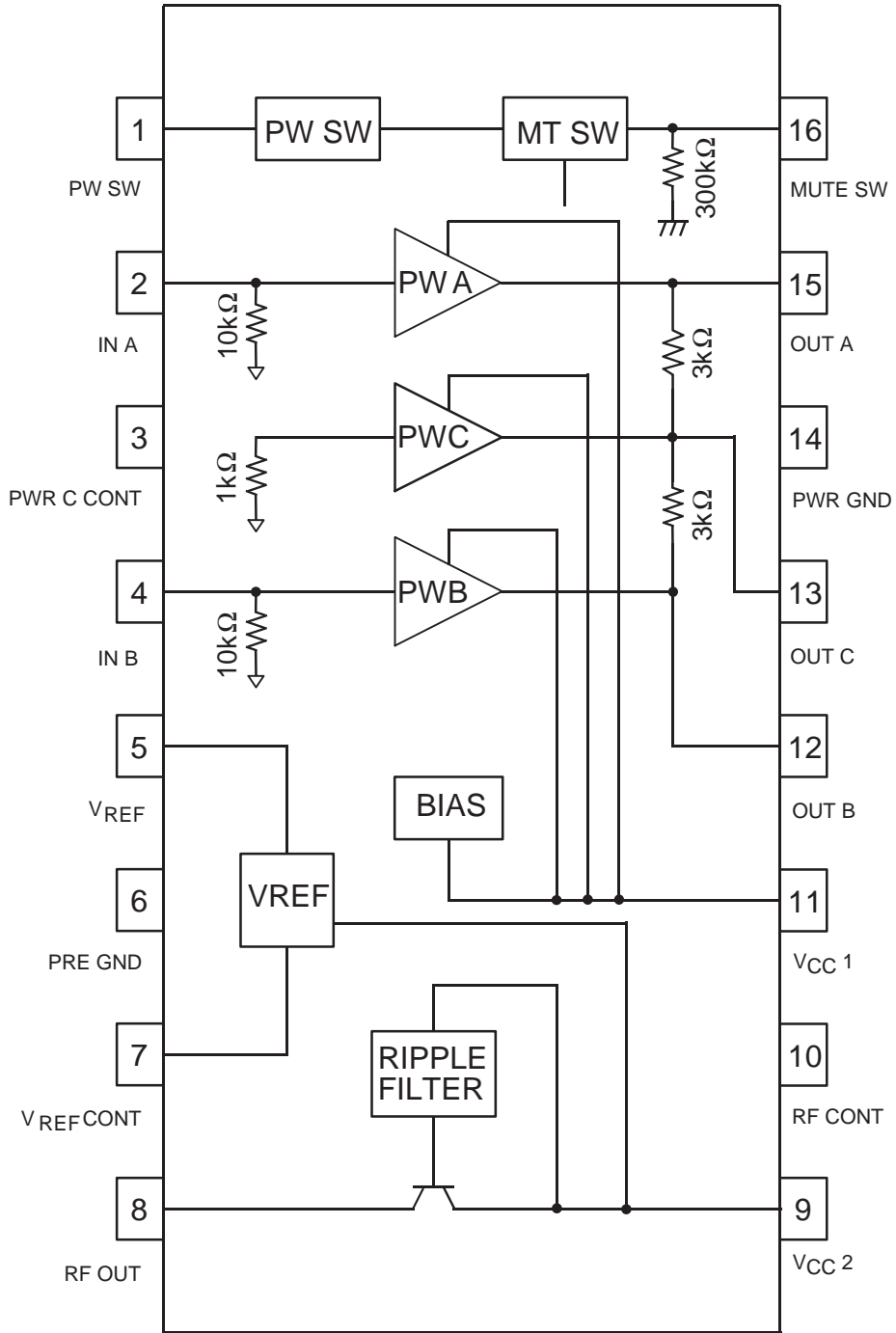
Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	$V_{CC1}$		1.5	V
	$V_{CC2}$		2.5	V
Operating supply voltage range	$V_{CC1\text{ op}}$		0.9 to 4.5	V
	$V_{CC2\text{ op}}$	*	1.5 to 3.5	V
Recommended load resistance	$R_L$		16 to 32	$\Omega$

Note: \* However, when  $V_{CC2}$  is under 2.5 V, with a 1.5 V minimum,  $V_{CC1}$  must be less than or equal to  $V_{CC2}$ .

#### Electrical Characteristics at $T_a = 25^\circ\text{C}$ , $V_{CC1} = 1.5\text{ V}$ , $V_{CC2} = 2.5\text{ V}$ , $f_{IN} = 1\text{ kHz}$ , $R_L = 16\ \Omega$

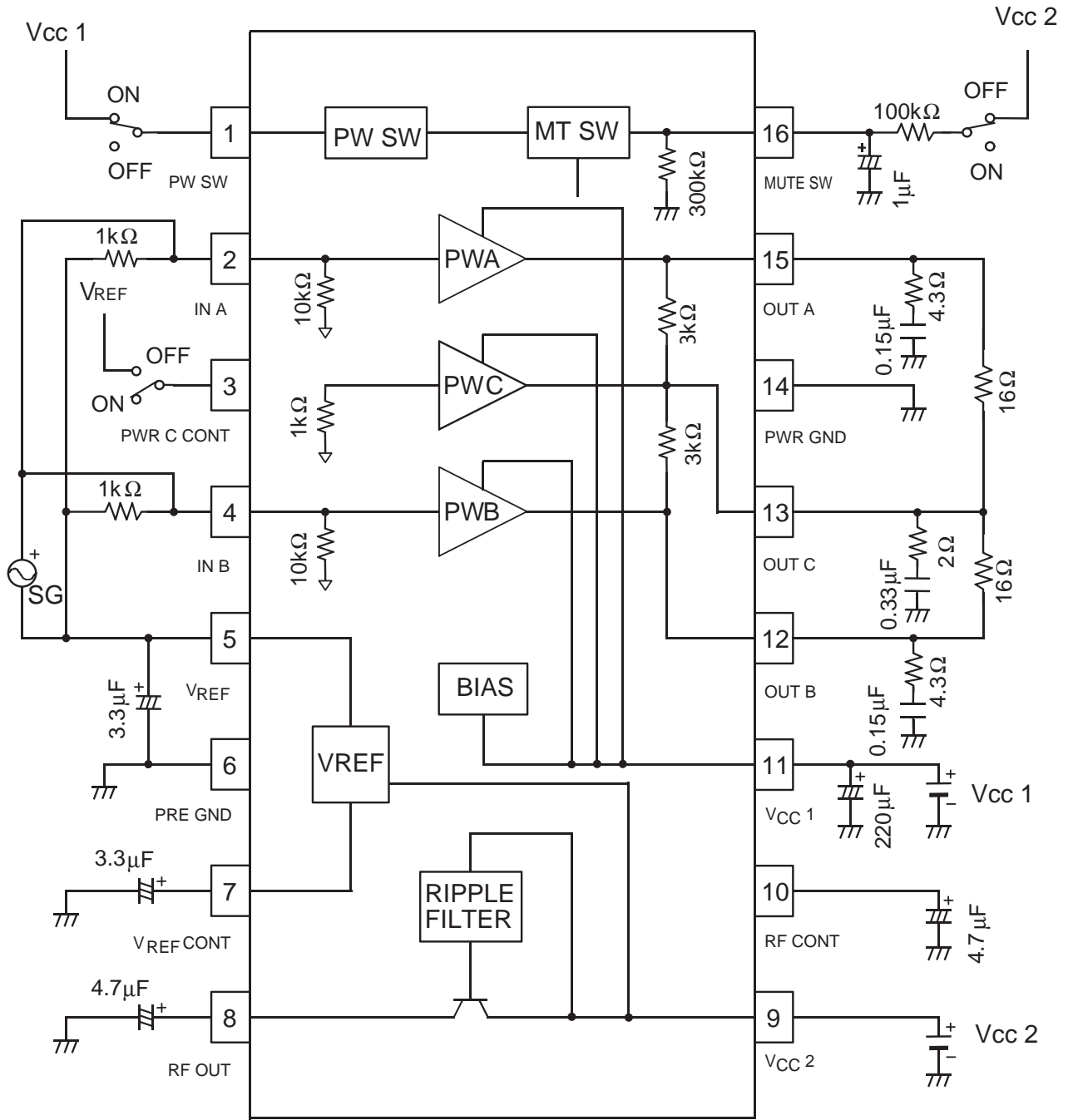
Item	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current	$I_{CCO1}$	IC off: with pin 1 open.		0.05	1.0	$\mu\text{A}$
	$I_{CCO2}$	Mute on		1.3	3.0	mA
	$I_{CCO3}$	Center amplifier off: with pin 3 at $V_{ref}$		3.3	8.0	mA
	$I_{CCO4}$	No input		4.8	9.0	mA
Voltage gain	VG	$V_O = -10\text{ dBm}$	10.3	11.8	13.3	dB
Channel balance	$\Delta VG$	$V_O = -10\text{ dBm}$	-1	0	1	dB
Output power	$P_O$	THD = 10%	6	13		mW
Total harmonic distortion	THD	$P_O = 0.5\text{ mW}$		0.2	1.0	%
Output noise voltage	$V_{NO}$	$R_g = 1\text{ k}\Omega$ , DIN AUDIO		7.8	15	$\mu\text{V}$
Crosstalk	CT	$T_{UN}1\text{ kHz}$ , $V_O = -10\text{ dBm}$	35	45		dB
Ripple rejection ratio	SVRR	$V_{CC} = 1.0\text{ V}$ , $f_r = 100\text{ kHz}$ , $V_r = -20\text{ dBm}$ , $T_{UN}100\text{ Hz}$	60	70		dB
Muting attenuation	$V_{OFF}$	THD = 1%, $T_{UN}1\text{ kHz}$	-80	-96		dB
Output DC offset	$V_{DC\text{ OFF}}$	$V_1 = 0\text{ V}$ , $R_g = 1\text{ k}\Omega$	-20		+20	mV
Power on current sensitivity	I1 ON	$V_{CC1} = 0.9\text{ V}$ , $V_{CC2} = 1.5\text{ V}$ , $V_5 \geq 0.7\text{ V}$		20	40	$\mu\text{V}$
Power off voltage sensitivity	V1 OFF	$V_{CC1} = 0.9\text{ V}$ , $V_{CC2} = 1.5\text{ V}$ , $V_5 \leq 0.1\text{ V}$	0.5	0.6		V
Mute off current sensitivity	I16 OFF	$V_{CC1} = 0.9\text{ V}$ , $V_{CC2} = 1.5\text{ V}$ , $V_5 \geq 0.7\text{ V}$		4.0	6.0	$\mu\text{V}$
Mute on voltage sensitivity	V16 ON	$V_{CC1} = 0.9\text{ V}$ , $V_{CC2} = 1.5\text{ V}$ , $V_5 \geq 0.7\text{ V}$		0.9	1.0	V

Pin Assignment and Block Diagram



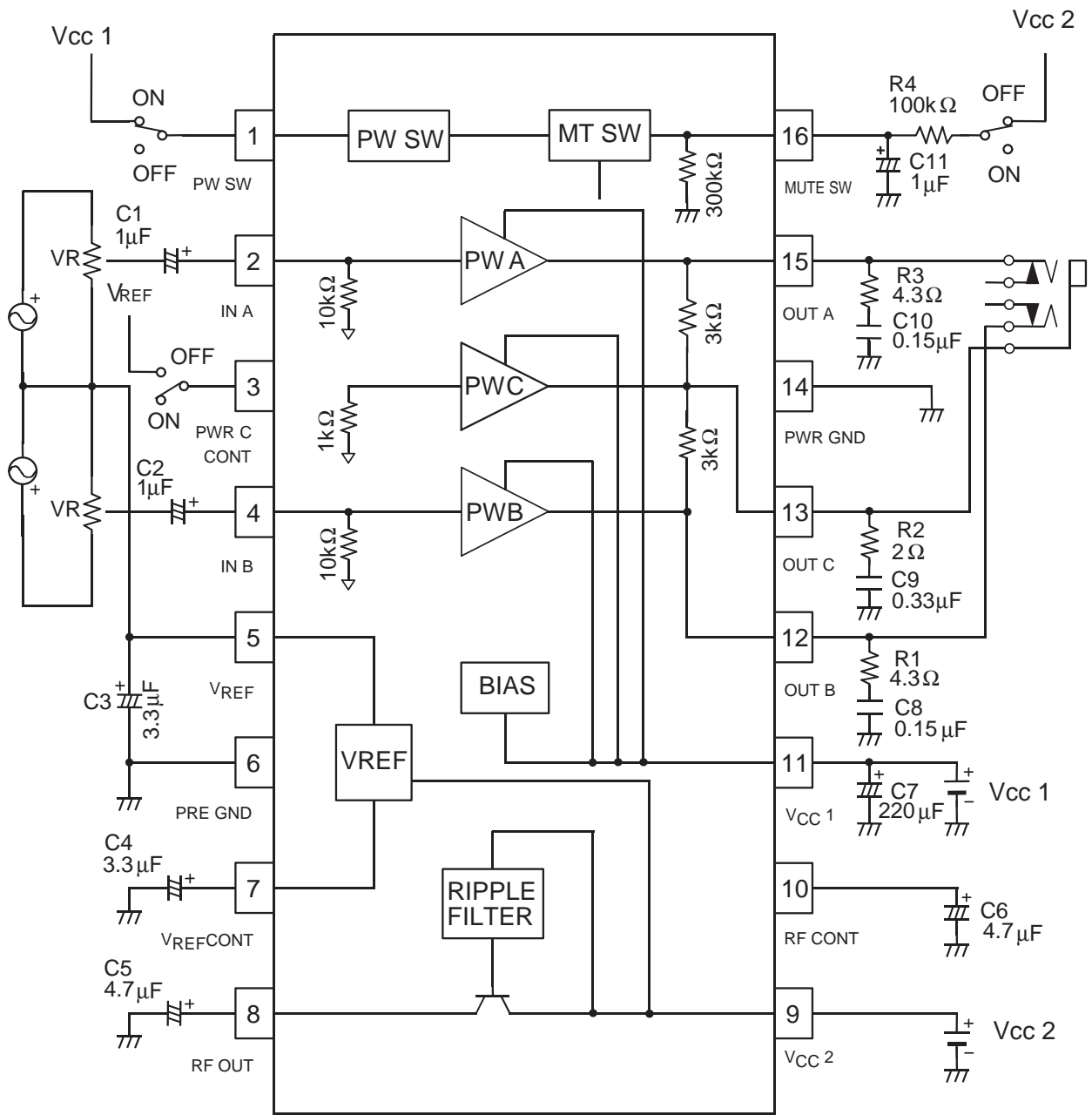
Top view

Test Circuit



Top view

Sample Application Circuit



Top view

# LA4801V

## Pin Descriptions

The pin voltage applies when  $V_{CC} = 1.5\text{ V}$  and  $V_{CC2} = 2.5\text{ V}$ .

Pin No.	Pin name	Pin voltage (V)	Pin description	Equivalent circuit
1	POWER SW		<ul style="list-style-type: none"> <li>IC on/off switch</li> </ul>	
2 4	POWER IN	0.82	<ul style="list-style-type: none"> <li>Power input</li> </ul>	
3	POWER C CONT		<ul style="list-style-type: none"> <li>Center amplifier on/off switch</li> <li>The center amplifier is on when this input is floating or at the ground level.</li> </ul>	
5	$V_{REF}$ OUT	0.82	<ul style="list-style-type: none"> <li><math>V_{REF}</math> amplifier output</li> </ul>	
6	PRE GND			
7	$V_{REF}$ CONT	0.82	<ul style="list-style-type: none"> <li><math>V_{REF}</math> amplifier reference</li> </ul>	

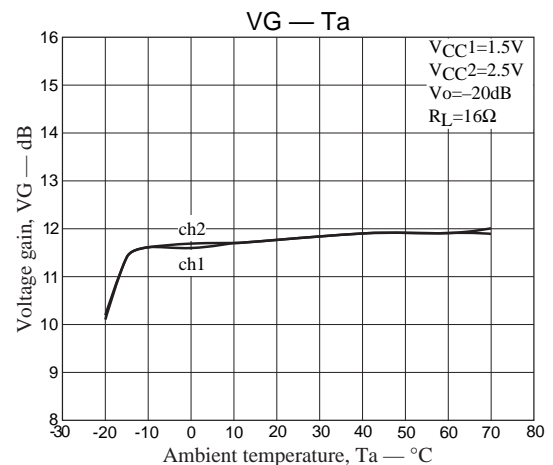
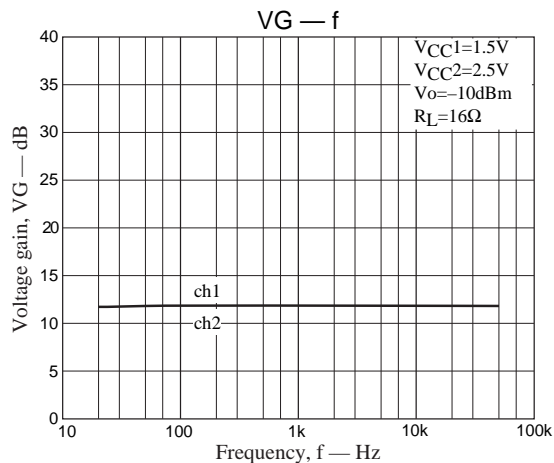
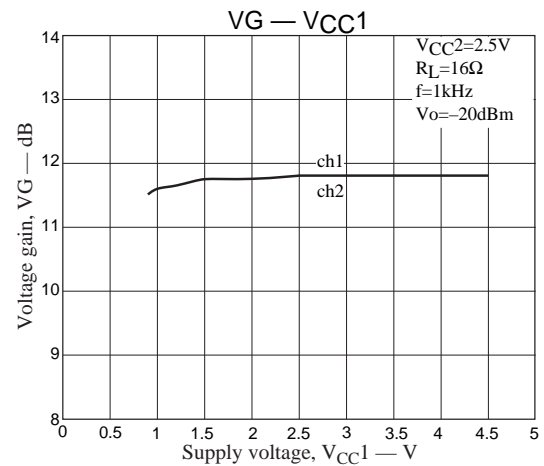
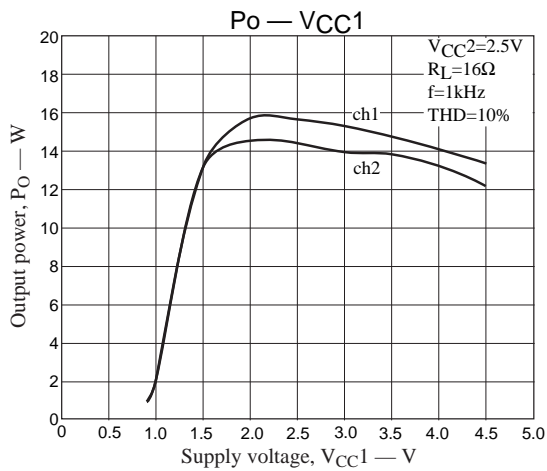
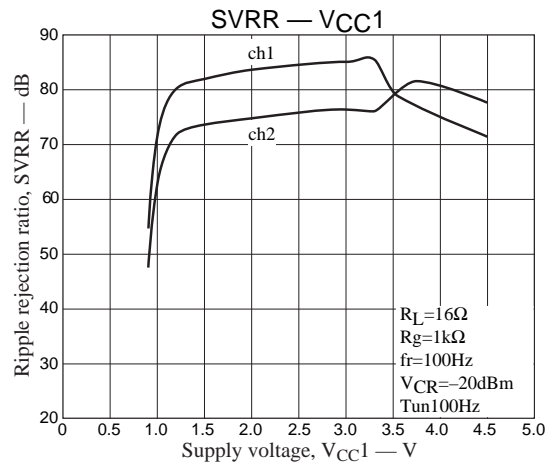
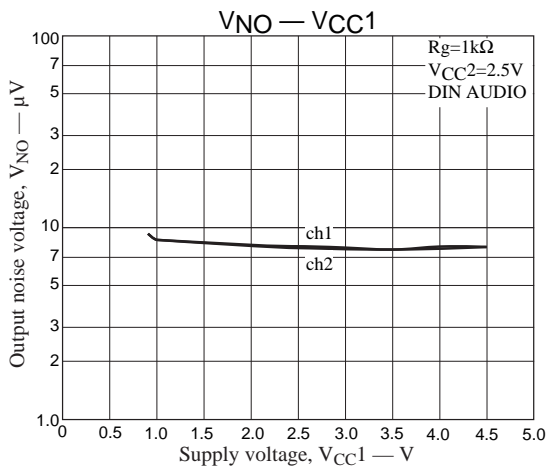
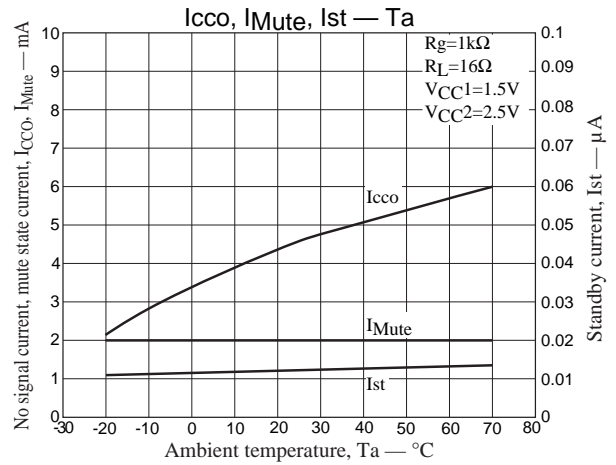
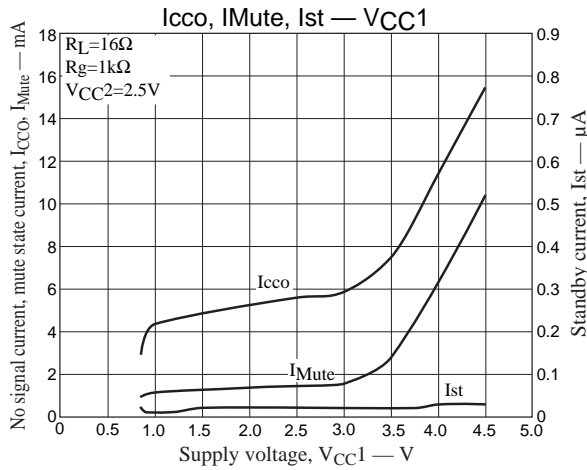
Continued on next page.

# LA4801V

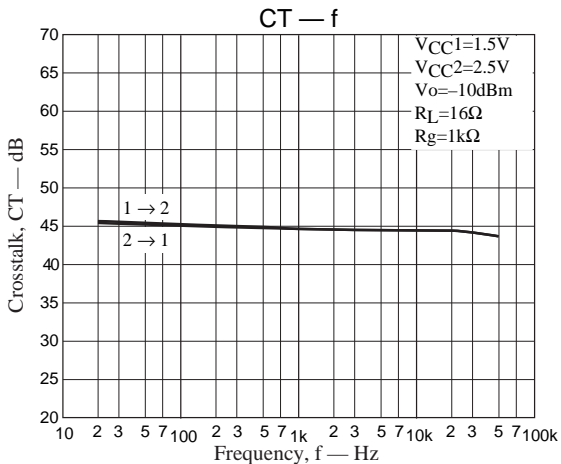
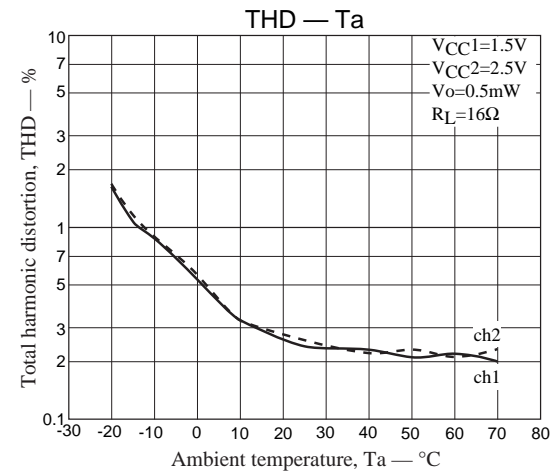
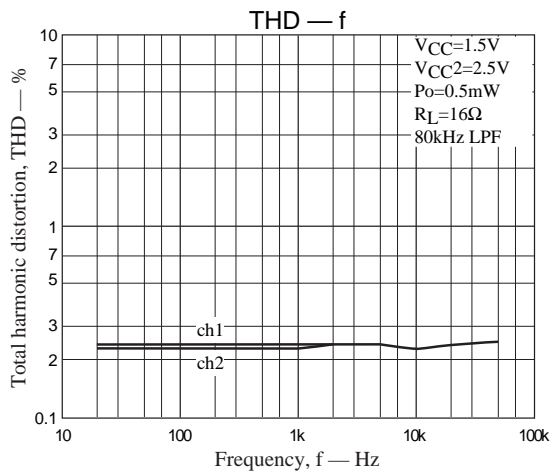
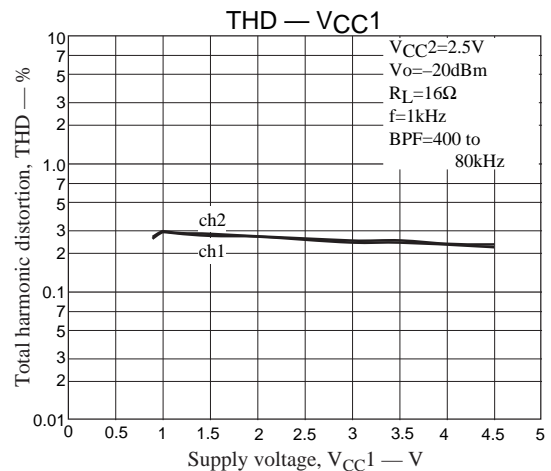
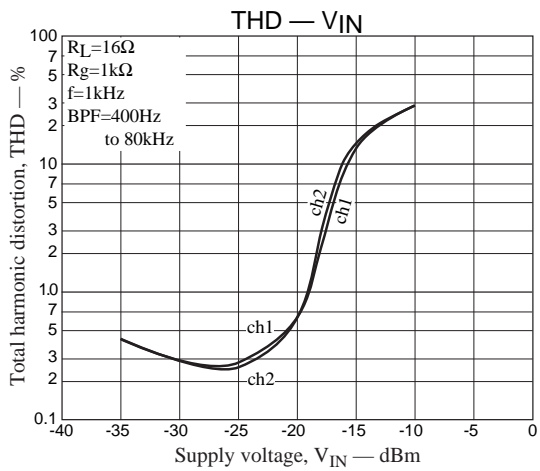
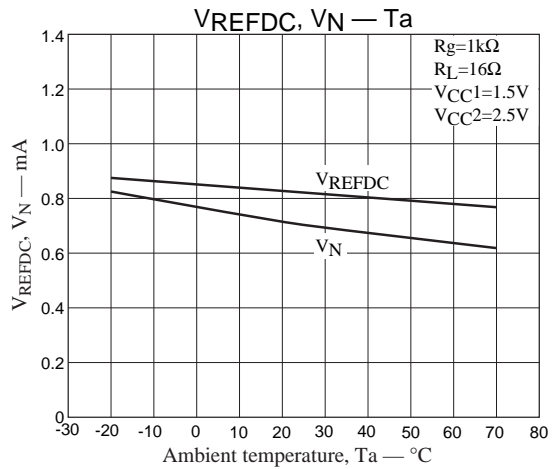
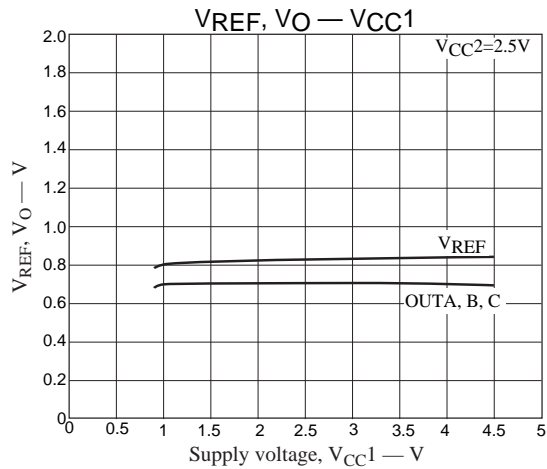
Continued from preceding page.

Pin No.	Pin name	Pin voltage (V)	Pin description	Equivalent circuit
8	RF OUT	2.17	<ul style="list-style-type: none"> <li>Ripple filter output</li> </ul>	
9	V <sub>CC2</sub>			
10	RF CONT	2.19	<ul style="list-style-type: none"> <li>Ripple filter reference</li> </ul>	
11	V <sub>CC1</sub>			
12 13 15	OUT B OUT C OUT A	0.69	<ul style="list-style-type: none"> <li>OUT A and OUT B are the power amplifier outputs.</li> <li>Pin 13 (OUT C) is the center amplifier output. This pin is a virtual ground when driving headphones.</li> </ul>	
14	PWR GND			
16	MUTE SW		<ul style="list-style-type: none"> <li>Mute on/off switch</li> <li>The mute function is on when this pin is at the ground level.</li> </ul>	

# LA4801V







- 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 July, 2002. Specifications and information herein are subject to change without notice.