Ordering number : EN2247B

SANYO Semiconductors
DATA SHEET

Monolithic Linear IC

LA4535M — For 1.5V Headphone Stereo Power Amplifier

Features

- Low current drain.
- 16Ω load drive capability.
- Excellent reduced voltage characteristics.
- Excellent power supply ripple rejection.
- Minimum number of external parts required (no input capacitor, feedback capacitor required).
- Less harmonic interference in radio band.
- On-chip power switch function, muting function.

Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max	Quiescent	4.5	V
Allowable power dissipation	Pd max		300	mW
Operating temperature	Topr		–20 to +75	°C
Storage temperature	Tstg		–40 to +125	°C

Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V_{CC}		1.5	V
Operating voltage range	V_{CC} op		0.9 to 4.0	V
Recommended load resistance	R_L		16 to 32	Ω

■ Any and all SANYO Semiconductor Co.,Ltd. products described or contained herein are, with regard to "standard application", intended for the use as general electronics equipment (home appliances, AV equipment, communication device, office equipment, industrial equipment etc.). The products mentioned herein shall not be intended for use for any "special application" (medical equipment whose purpose is to sustain life, aerospace instrument, nuclear control device, burning appliances, transportation machine, traffic signal system, safety equipment etc.) that shall require extremely high level of reliability and can directly threaten human lives in case of failure or malfunction of the product or may cause harm to human bodies, nor shall they grant any guarantee thereof. If you should intend to use our products for applications outside the standard applications of our customer who is considering such use and/or outside the scope of our intended standard applications, please consult with us prior to the intended use. If there is no consultation or inquiry before the intended use, our customer shall be solely responsible for the use.

■ Specifications of any and all SANYO Semiconductor Co.,Ltd. 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 Semiconductor Co., Ltd.
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

Electrical Characteristics at Ta = 25°C, R_L = 16Ω, Rg = 600Ω, See specified Test Circuit.

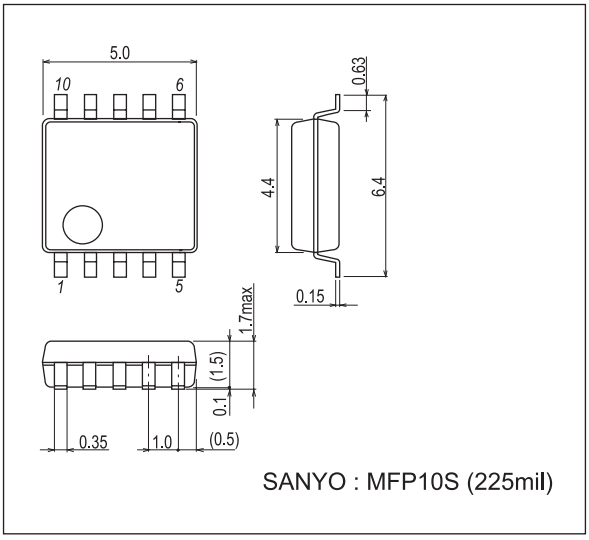
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current *1	$I_{CCO}1$	V_{CC} = 1.2V, quiescent		3.5	6.0	mA
	$I_{CCO}2$	V_{CC} = 2.5V, pin 10 → GND		1.5	2.5	mA
	$I_{CCO}3$	V_{CC} = 2.5V, pin 1 → GND			1.0	μA
Voltage gain	VG1	V_{CC} = 1.2V, f = 1kHz, V_O = –20dBm	20.5	22	23	dB
	VG2	V_{CC} = 0.9V, f = 1kHz, V_O = –20dBm	19.5	22	23	dB
Voltage gain difference	ΔVG1	V_{CC} = 1.2V, f = 1kHz, V_O = –20dBm			1.0	dB
	ΔVG2	V_{CC} = 0.9V, f = 1kHz, V_O = –20dBm			1.0	dB
Total harmonic distortion	THD	V_{CC} = 1.2V, f = 1kHz, P_O = 0.5mW		0.8	1.5	%
Output power	P_O	V_{CC} = 1.5V, f = 1kHz, THD = 10%	5	8		mW
Crosstalk	CT	V_{CC} = 1.2V, f = 100Hz, Rg = 1kΩ, V_O = –20dB	40	45		dB
Ripple rejection	SVRR	V_{CC} = 1.0V, f = 100Hz, Rg = 1kΩ, V_R = –30dBm, BPF = 100Hz	45	50		dB
Output noise voltage	V_{NO}	V_{CC} = 2.5V, Rg = 1kΩ, BPF= 20Hz to 20kHz		30	44	μV
Power off effect	V_O(off)	V_{CC} = 0.9V, f = 100Hz, pin 1 → GND, V_{IN} = –10dB			-80	dBm
Muting effect	V_O(MT)	V_{CC} = 0.9V, f = 100Hz, pin 10 → GND, V_{IN} = –10dB			-80	dBm
Power on current sensitivity	I_1(on)	V_{CC} = 0.85V, V5 ≥ 0.5V		0.1	1.0	μA
Power off voltage sensitivity	V_1(off)	V_{CC} = 0.85V, V5 ≤ 0.1V	0.5	0.65		V
Muting off current sensitivity	I_{10}(off)	V_{CC} = 0.85V, V5 ≥ 0.5V		0.3	1.0	μA
Muting on voltage sensitivity	V_{10}(on)	V_{CC} = 0.85V, V5 ≤ 0.1V	0.5	0.65		V

Note) The quiescent current is represented by the current flowing into pin 6. The respective maximum currents flowing into pin 1 and pin 10 are calculated by (V pin –0.5) / 16 [V/ kΩ] and the total current increases by these current values.

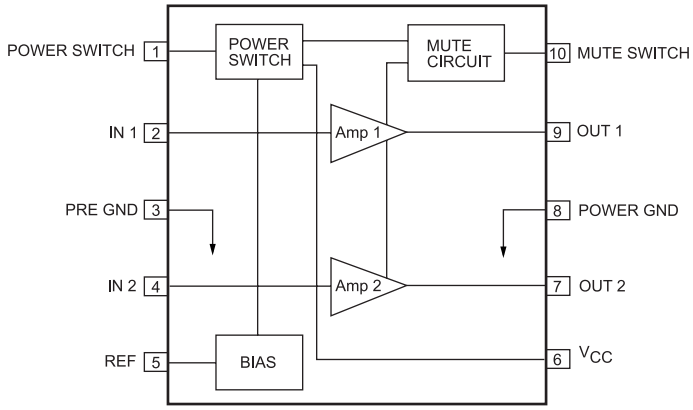
Package Dimensions

unit : mm (typ)

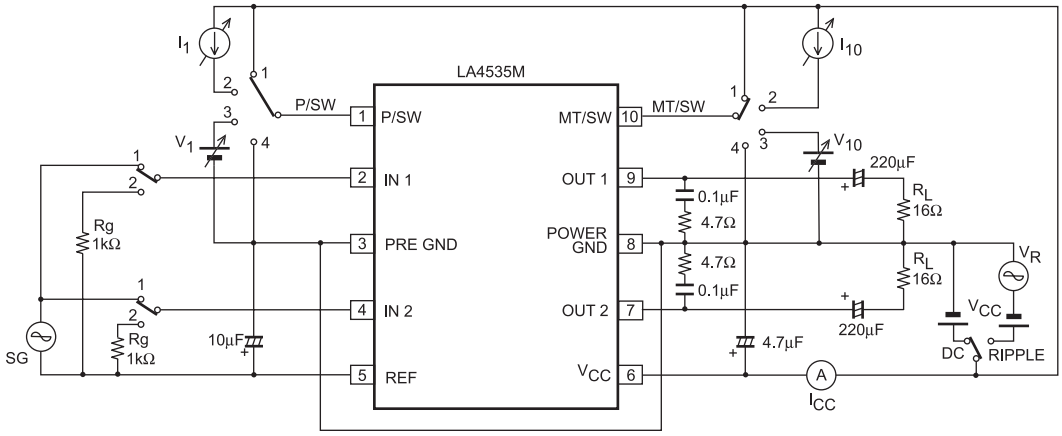
3086B



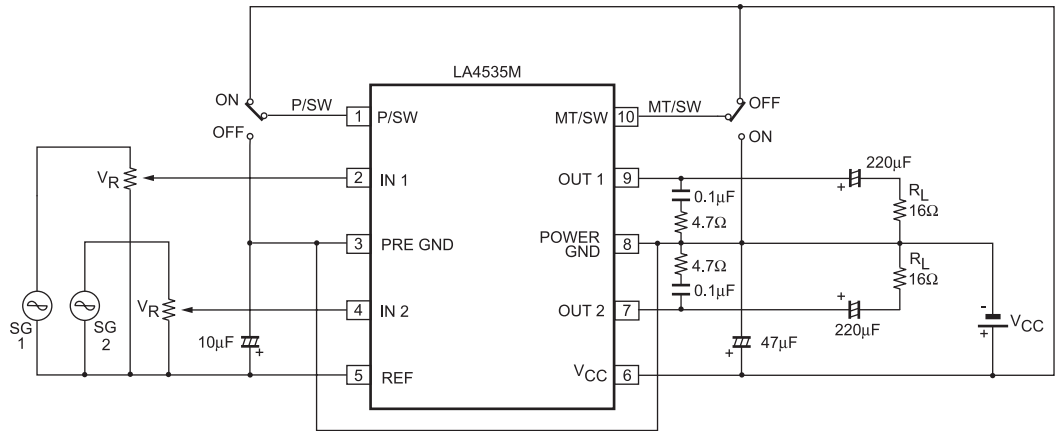
Block Diagram



Test Circuit



Sample Application Circuit



- SANYO Semiconductor Co.,Ltd. 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 Semiconductor Co.,Ltd. products described or contained herein.
- SANYO Semiconductor Co.,Ltd. strives to supply high-quality high-reliability products, however, any and all semiconductor products fail or malfunction with some probability. It is possible that these probabilistic failures or malfunction could give rise to accidents or events that could endanger human lives, trouble that could give rise to smoke or fire, or accidents 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 Semiconductor Co.,Ltd. products described or contained herein are controlled under any of applicable local export control laws and regulations, such products may require 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 consent of SANYO Semiconductor 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 Semiconductor Co.,Ltd. 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.
- Upon using the technical information or products described herein, neither warranty nor license shall be granted with regard to intellectual property rights or any other rights of SANYO Semiconductor Co.,Ltd. or any third party. SANYO Semiconductor Co.,Ltd. shall not be liable for any claim or suits with regard to a third party's intellctual property rights which has resulted from the use of the technical information and products mentioned above.

This catalog provides information as of May, 2008.Specifications and information herein are subject to change without notice.