



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

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SANYO Semiconductor Co., Ltd.

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

LA4535M

Electrical Characteristics at $T_a = 25^\circ\text{C}$, $R_L = 16\Omega$, $R_g = 600\Omega$, See specified Test Circuit.

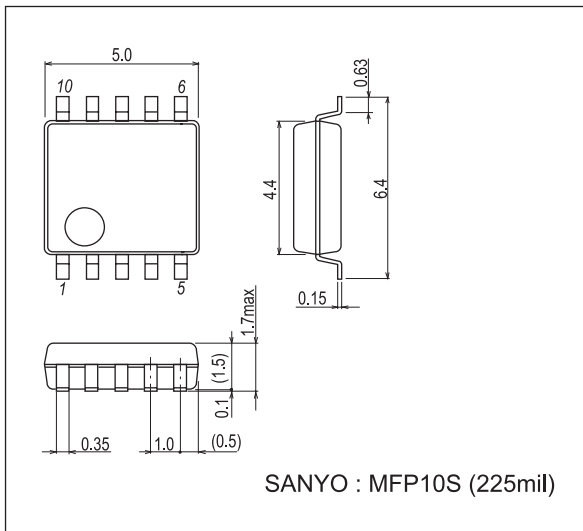
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current *1	I_{CCO1}	$V_{CC} = 1.2\text{V}$, quiescent		3.5	6.0	mA
	I_{CCO2}	$V_{CC} = 2.5\text{V}$, pin 10 \rightarrow GND		1.5	2.5	mA
	I_{CCO3}	$V_{CC} = 2.5\text{V}$, pin 1 \rightarrow GND			1.0	μA
Voltage gain	VG1	$V_{CC} = 1.2\text{V}$, $f = 1\text{kHz}$, $V_O = -20\text{dBm}$	20.5	22	23	dB
	VG2	$V_{CC} = 0.9\text{V}$, $f = 1\text{kHz}$, $V_O = -20\text{dBm}$	19.5	22	23	dB
Voltage gain difference	ΔVG1	$V_{CC} = 1.2\text{V}$, $f = 1\text{kHz}$, $V_O = -20\text{dBm}$			1.0	dB
	ΔVG2	$V_{CC} = 0.9\text{V}$, $f = 1\text{kHz}$, $V_O = -20\text{dBm}$			1.0	dB
Total harmonic distortion	THD	$V_{CC} = 1.2\text{V}$, $f = 1\text{kHz}$, $P_O = 0.5\text{mW}$		0.8	1.5	%
Output power	P_O	$V_{CC} = 1.5\text{V}$, $f = 1\text{kHz}$, THD = 10%	5	8		mW
Crosstalk	CT	$V_{CC} = 1.2\text{V}$, $f = 100\text{Hz}$, $R_g = 1\text{k}\Omega$, $V_O = -20\text{dB}$	40	45		dB
Ripple rejection	SVRR	$V_{CC} = 1.0\text{V}$, $f = 100\text{Hz}$, $R_g = 1\text{k}\Omega$, $V_R = -30\text{dBm}$, BPF = 100Hz	45	50		dB
Output noise voltage	V_{NO}	$V_{CC} = 2.5\text{V}$, $R_g = 1\text{k}\Omega$, BPF= 20Hz to 20kHz		30	44	μV
Power off effect	$V_{O(\text{off})}$	$V_{CC} = 0.9\text{V}$, $f = 100\text{Hz}$, pin 1 \rightarrow GND, $V_{IN} = -10\text{dB}$			-80	dBm
Muting effect	$V_{O(\text{MT})}$	$V_{CC} = 0.9\text{V}$, $f = 100\text{Hz}$, pin 10 \rightarrow GND, $V_{IN} = -10\text{dB}$			-80	dBm
Power on current sensitivity	$I_1(\text{on})$	$V_{CC} = 0.85\text{V}$, $V_5 \geq 0.5\text{V}$		0.1	1.0	μA
Power off voltage sensitivity	$V_1(\text{off})$	$V_{CC} = 0.85\text{V}$, $V_5 \leq 0.1\text{V}$	0.5	0.65		V
Muting off current sensitivity	$I_{10}(\text{off})$	$V_{CC} = 0.85\text{V}$, $V_5 \geq 0.5\text{V}$		0.3	1.0	μA
Muting on voltage sensitivity	$V_{10}(\text{on})$	$V_{CC} = 0.85\text{V}$, $V_5 \leq 0.1\text{V}$	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 $(V_{\text{pin } -0.5} / 16 [V / \text{k}\Omega])$ and the total current increases by these current values.

Package Dimensions

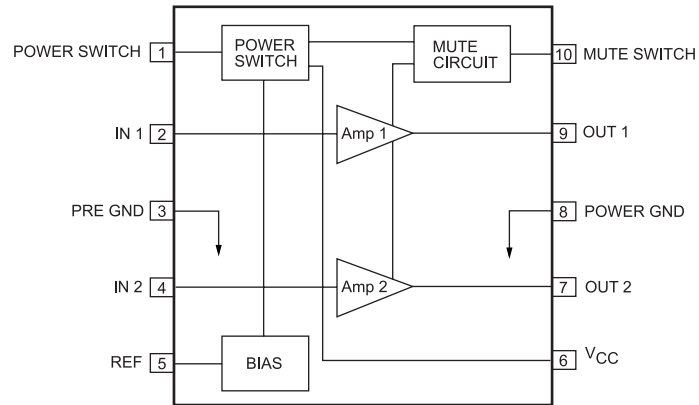
unit : mm (typ)

3086B

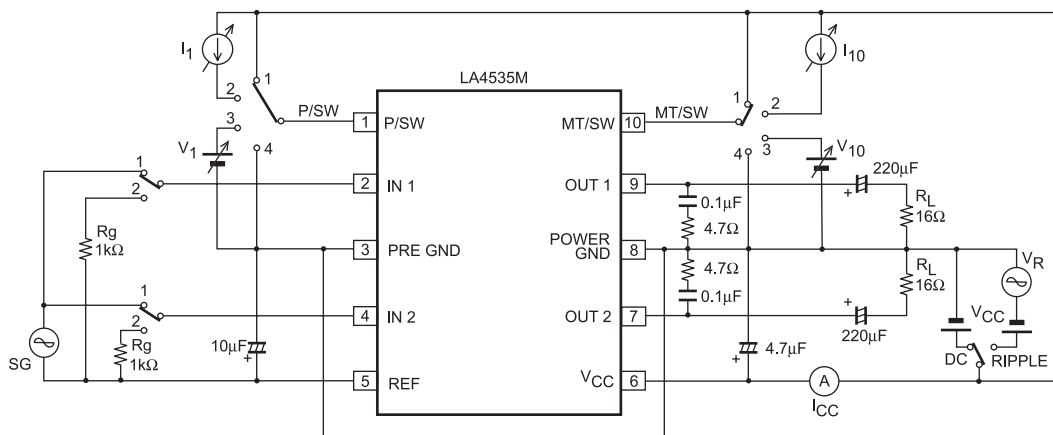


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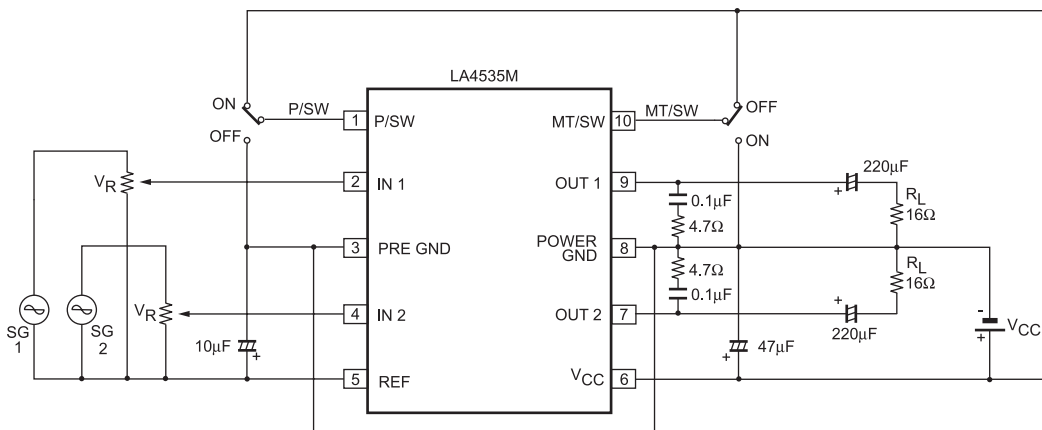
Block Diagram



Test Circuit



Sample Application Circuit



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