LA4538M



Ripple Filter-Provided Stereo Power Amplifier for 1.5V Headphone Stereos

Features

- Low current dissipation.
- Excellent reduced voltage characteristics.
- Minimum number of external parts required.
- On-chip power switch function.
- Power amplifier section

Output power 8mW typ ($V_{CC}=1.5V$, $R_L=16\Omega$, f=1kHz, THD=10%) Ripple rejection 46dB typ ($V_{CC}=1.0V$, $V_{P}=-30dBm$

- Ripple rejection 46dB typ (V_{CC}=1.0V, V_R=-30dBm, f_R =100Hz)
- Ripple filter section

Ripple rejection 39dB typ (V_{CC} =1.0V, V_R =-35dBm, f_R =100Hz) Less output voltage loss

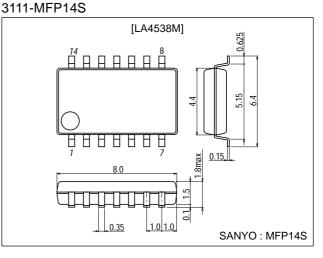
Pin 8 can be used to perform the muting current.

Specifications

Absolute Maximum Ratings at $Ta = 25^{\circ}C$

Package Dimensions

unit:mm



Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V _{CC} max	Quiescent	4.5	V
Maximum output current	1 ₀ 7	Pin 7 flow-out current	5.0	mA
Allowable power dissipation	Pd max		300	mW
Operating temperature	Topr		-20 to +75	°C
Storage temperature	Tstg		-40 to +125	°C

Operating Conditions at $Ta = 25^{\circ}C$

Parameter	Symbol	Conditions	Ratings	Unit
Recommended oprating voltage	VCC		1.5	V
Operating voltage range	V _{CC} op		0.9 to 4.0	V
Recommended load resistance	RL		16 to 32	Ω

Operating Characteristics at $Ta = 25^{\circ}C$, $R_L=16\Omega$, $Rg=600\Omega$, See specified Test Circuit.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	Unit
Quiescent current	lcco1	V_{CC} =1.20V, quiescent, RL3 \rightarrow OFF		4.5	7.0	mA
	lcco2	V_{CC} =2.50V, pin 14 \rightarrow GND, RL3 \rightarrow OFF		1.5	2.5	mA
	lcco3	$V_{CC}\text{=}2.50V, \text{pin} \ 1 \rightarrow \text{GND}, \text{R}_L3 \rightarrow \text{OFF}$			1.0	μΑ
Voltage gain	VG	V _{CC} =0.90V, f=1kHz, V _O =-20dBm	27.5	29	31.5	dB
Voltage gain difference	ΔVG	V _{CC} =0.90V, f=1kHz, V _O =-20dBm			1.0	dB

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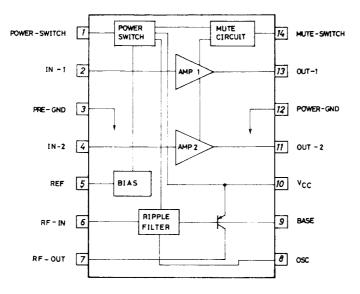
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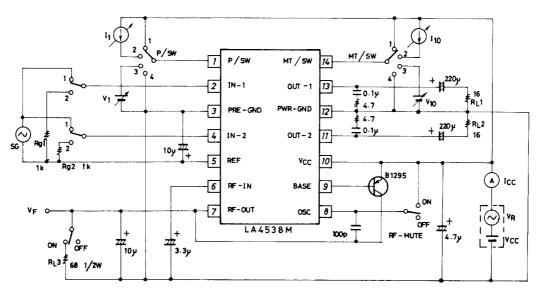
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	Unit
Total harmonic distortion	THD	V _{CC} =1.20V, f=1kHz, P _O =0.5mW		0.9	1.5	%
Output power	PO	V _{CC} =1.50V, f=1kHz, THD=10%	5	8		mW
Crosstalk	CT	V_{CC} =1.20V, f=100Hz, Rg=1k Ω , V_{O} =-20dB	40	45		dB
Ripple rejection (amplifier section)	SVRR1	$V_{CC}\text{=}1.00\text{V},\text{f}\text{=}100\text{Hz},\text{Rg}\text{=}1\text{k}\Omega,\text{V}_{R}\text{=}\text{-}30\text{dBm},\text{BPF}\text{=}100\text{Hz}$	40	46		dB
Ripple rejection (filter section)	SVRR2	V _{CC} =1.00V, f=100Hz, V _R =-35dBm	34	39		dB
Output noise voltage	V _{NO}	V_{CC} =2.50V, Rg=1k Ω , BPF=20Hz to 20kHz		55	80	μV
Power on current sensitivity	I _{1(on)}	V_{CC} =0.85V, Vpin5 \geq 0.5V		0.1	1.0	μA
Power off voltage sensitivity	V _{1(off)}	V_{CC} =0.85V, Vpin5 \leq 0.1V	0.5	0.6		V
Muting off current sensitivity	I _{14(off)}	V_{CC} =0.85V, Vpin5 \geq 0.5V		0.1	1.0	μA
Muting on voltage sensitivity	V _{14(on)}	V_{CC} =0.85V, Vpin5 \leq 0.1V	0.5	0.6		V
Ripple filter output voltage	VF	V _{CC} =1.00V, R _L =68Ω	0.90	0.94		V

Equivalent Circuit Block Diagram

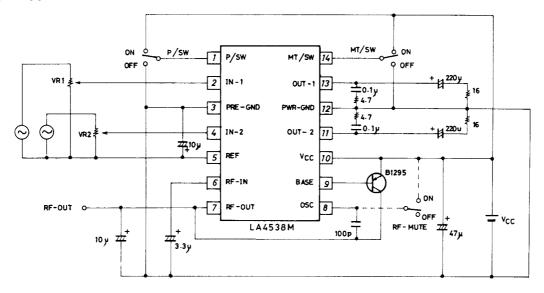


Test Circuit

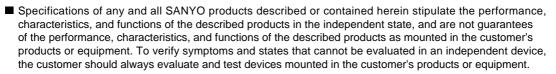
Unit (resistance: Ω, capacitance: F)



Sample Application Circuit



Unit (resistance: Ω , capacitance: F)



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