Ordering number:ENN2667A

Monolithic Linear IC

LA4538M

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

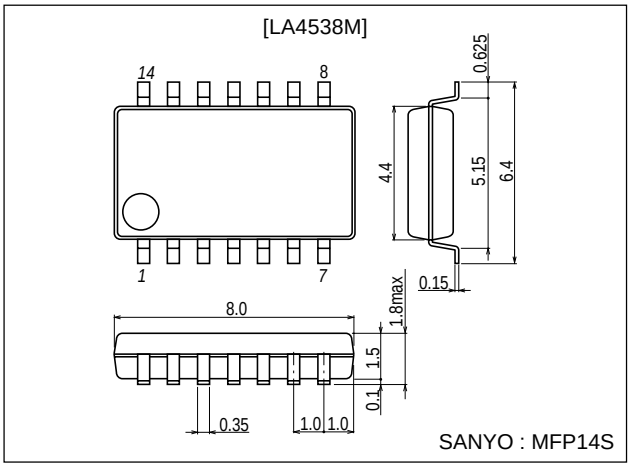
Features

- 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=16Ω, f=1kHz, THD=10%)
  - 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.

Package Dimensions

unit:mm

3111-MFP14S



Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max	Quiescent	4.5	V
Maximum output current	I_O7	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˚C

Parameter	Symbol	Conditions	Ratings	Unit
Recommended oprating 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

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current	Icco1	V_{CC}=1.20V, quiescent, R_L3 →OFF		4.5	7.0	mA
	Icco2	V_{CC}=2.50V, pin 14 →GND, R_L3 →OFF		1.5	2.5	mA
	Icco3	V_{CC}=2.50V, pin 1 →GND, R_L3 →OFF			1.0	μA
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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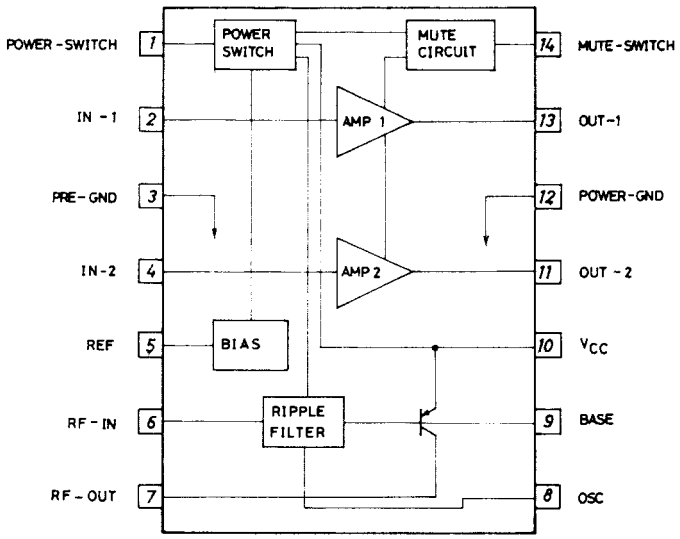
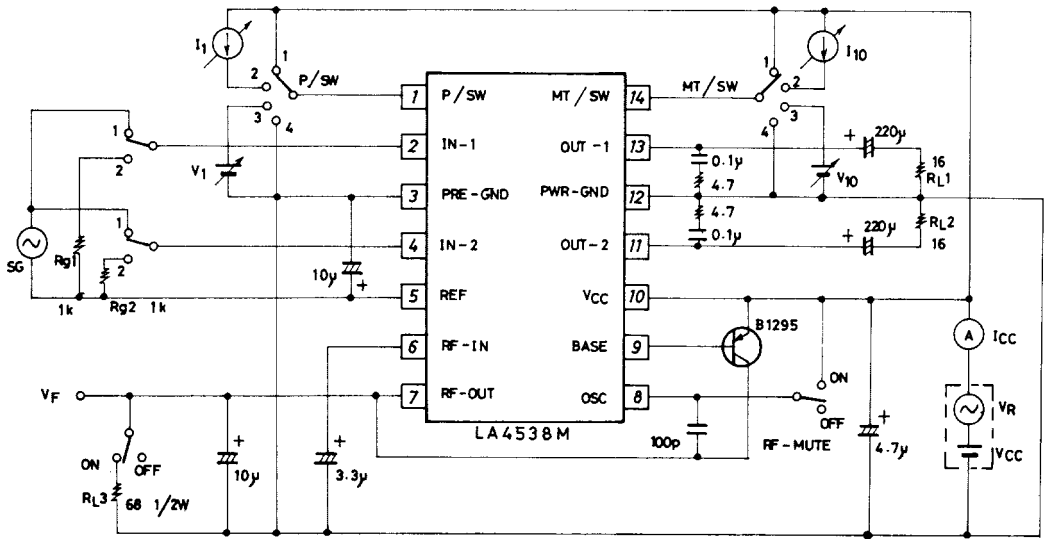
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Total harmonic distortion	THD	V_{CC}=1.20V, f=1kHz, P_O=0.5mW		0.9	1.5	%
Output power	P_O	V_{CC}=1.50V, f=1kHz, THD=10%	5	8		mW
Crosstalk	CT	V_{CC}=1.20V, f=100Hz, Rg=1kΩ, V_O=–20dB	40	45		dB
Ripple rejection (amplifier section)	SVRR1	V_{CC}=1.00V, f=100Hz, Rg=1kΩ, V_R=–30dBm, BPF=100Hz	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=1kΩ, BPF=20Hz to 20kHz		55	80	μV
Power on current sensitivity	$I_{1(on)}$	V_{CC}=0.85V, Vpin5 ≥0.5V		0.1	1.0	μA
Power off voltage sensitivity	$V_{1(off)}$	V_{CC}=0.85V, Vpin5 ≤ 0.1V	0.5	0.6		V
Muting off current sensitivity	$I_{14(off)}$	V_{CC}=0.85V, Vpin5 ≥0.5V		0.1	1.0	μA
Muting on voltage sensitivity	$V_{14(on)}$	V_{CC}=0.85V, Vpin5 ≤ 0.1V	0.5	0.6		V
Ripple filter output voltage	V_F	V_{CC}=1.00V, R_L=68Ω	0.90	0.94		V

Equivalent Circuit Block Diagram

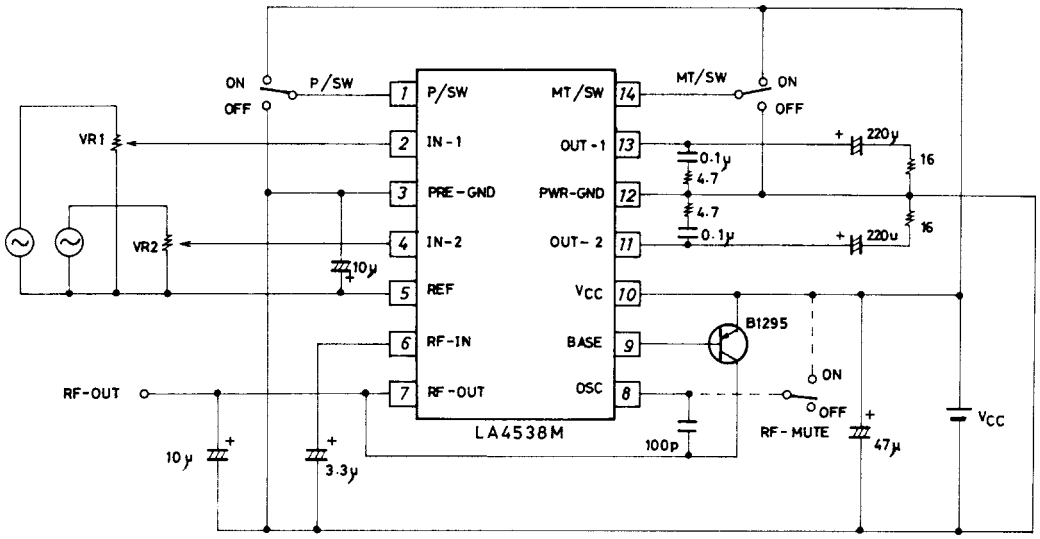


Test Circuit

Unit (resistance: Ω, capacitance: F)



Sample Application Circuit



Unit (resistance: Ω, capacitance: F)