



LA4535M

Power Amplifier for 1.5V Headphone Stereo

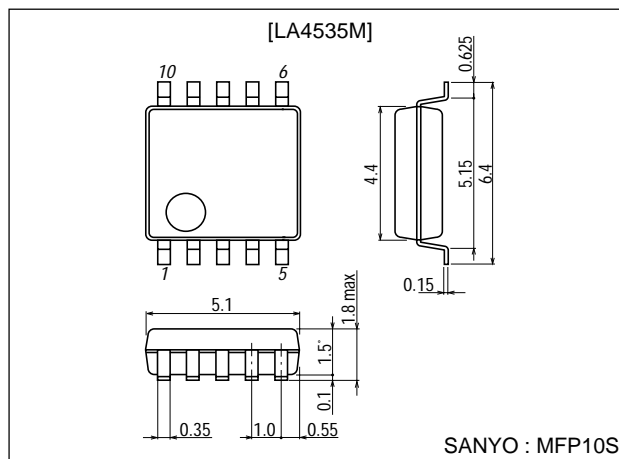
Features

- 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.

Package Dimensions

unit:mm

3086A-MFP10S



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

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current *1	I _{CCO1}	V _{CC} =1.2V, quiescent		3.5	6.0	mA
	I _{CCO2}	V _{CC} =2.5V, pin 10 → GND		1.5	2.5	mA
	I _{CCO3}	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

Continued on next page.

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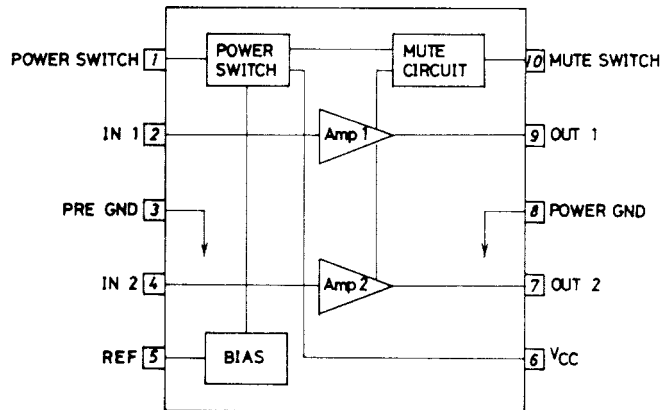
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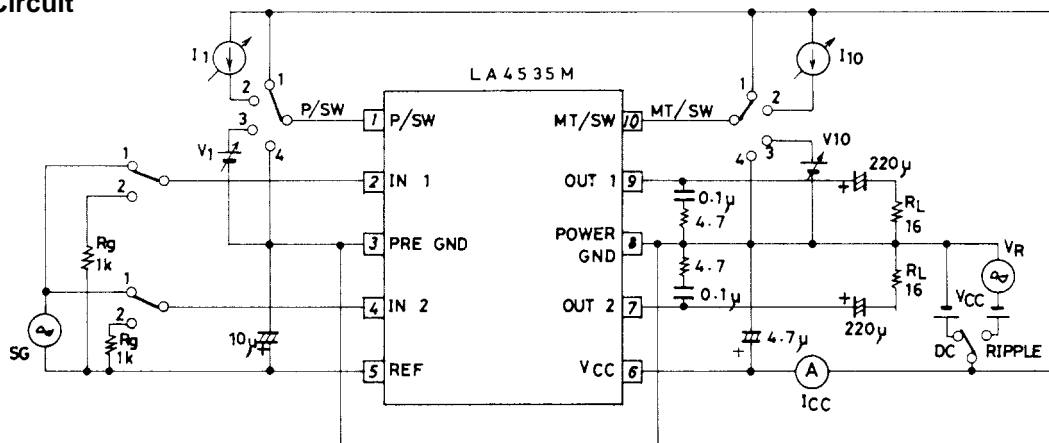
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Total harmonic distortion	THD	$V_{CC}=1.2V$, $f=1kHz$, $P_O=0.5mW$		0.8	1.5	%
Output power	P_O	$V_{CC}=1.5V$, $f=1kHz$, $THD=10\%$	5	8		mW
Crosstalk	CT	$V_{CC}=1.2V$, $f=100Hz$, $R_g=1k\Omega$, $V_O=-20dB$	40	45		dB
Ripple rejection	SVRR	$V_{CC}=1.0V$, $f=100Hz$, $R_g=1k\Omega$, $V_R=-30dBm$, $BPF=100Hz$	45	50		dB
Output noise voltage	V_{NO}	$V_{CC}=2.5V$, $R_g=1k\Omega$, $BPF=20Hz$ to $20kHz$		30	44	μV
Power off effect	V_O (off)	$V_{CC}=0.9V$, $f=100Hz$, pin 1 \rightarrow GND, $V_{IN}=-10dB$			-80	dBm
Muting effect	V_O (MT)	$V_{CC}=0.9V$, $f=100Hz$, pin 10 \rightarrow GND, $V_{IN}=-10dB$			-80	dBm
Power on current sensitivity	I_1 (on)	$V_{CC}=0.85V$, $V_5 \geq 0.5V$		0.1	1.0	μA
Power off voltage sensitivity	V_1 (off)	$V_{CC}=0.85V$, $V_5 \leq 0.1V$	0.5	0.65		V
Muting off current sensitivity	I_{10} (off)	$V_{CC}=0.85V$, $V_5 \geq 0.5V$		0.3	1.0	μA
Muting on voltage sensitivity	V_{10} (on)	$V_{CC}=0.85V$, $V_5 \leq 0.1V$	0.5	0.65		V

Note) The quiescent current is respresented by the current flowing into pin 6. The respective maximum currents flowing into pin 1 and pin 10 are calculated by $(V_{pin} - 0.5) / 16 [V/k\Omega]$ and the total current increases by these current values.

Equivalent Circuit Block Diagram



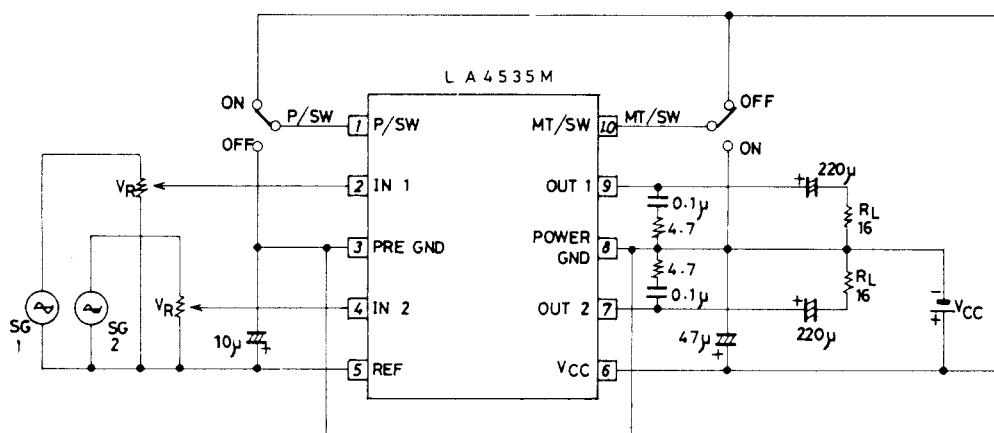
Test Circuit



Unit (resistance: Ω , capacitance: F)

Sample Application Circuit

Unit (resistance: Ω , capacitance: F)



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