Ordering number:ENN2248B

Monolithic Linear IC

LA4533M

Power Amplifier for 3V Headphone Stereos

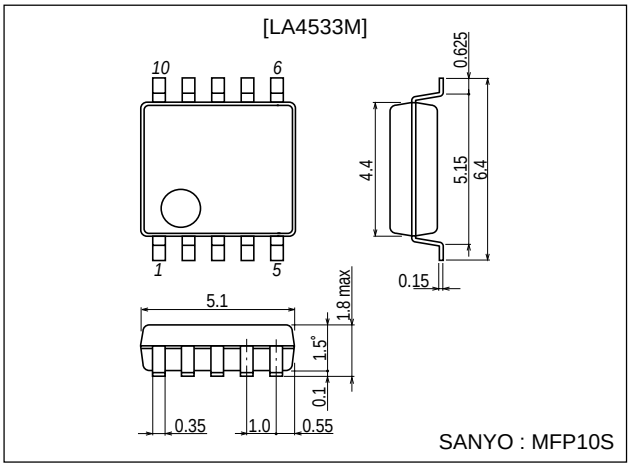
Features

- Low current consumption.
- 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).
- Applicable to radio sets because of high voltage gain.
- 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}		3.0	V
Operating voltage range	V_{CC} op		1.6 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}=2.4V, quiescent		5.4	10	mA
	Icco2	V_{CC}=4.5V, pin 10 →GND		1.1	2.0	mA
	Icco3	V_{CC}=4.5V, pin 1 →GND			1.0	μA
Voltage gain	VG1	V_{CC}=2.4V, f=1kHz, V_O=–10dBm	30	32	34	dB
	VG2	V_{CC}=1.6V, f=1kHz, V_O=–20dBm	29	32	34	dB
Voltage gain difference	ΔVG1	V_{CC}=2.4V, f=1kHz, V_O=–10dBm			1.0	dB
	ΔVG2	V_{CC}=1.6V, f=1kHz, V_O=–20dBm			1.0	dB

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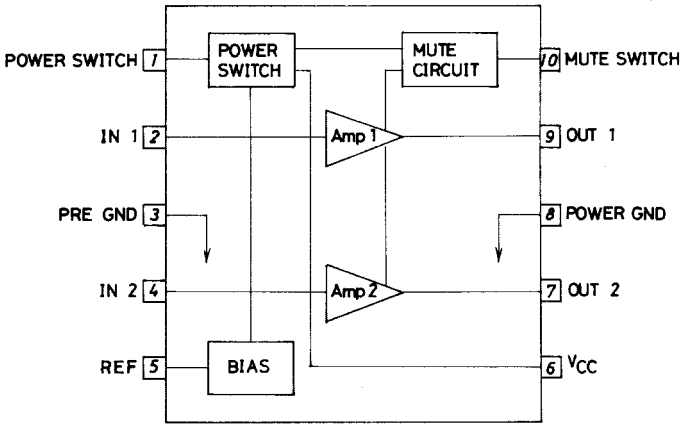
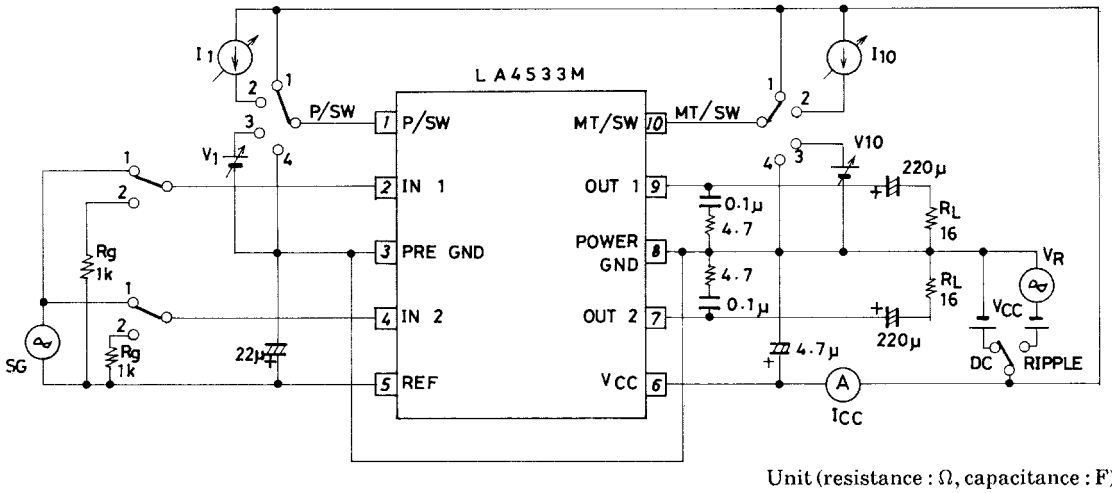
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Total harmonic distortion	THD	V_{CC}=2.0V, f=1kHz, P_O=1mW		0.5	1.5	%
Output power	P_O	V_{CC}=3.0V, f=1kHz, THD=10%	20	40		mW
Crosstalk	CT	V_{CC}=2.4V, f=100Hz, Rg=1kΩ, V_O=–10dB	40	50		dB
Ripple rejection	SVRR	V_{CC}=1.6V, f=100Hz, Rg=1kΩ, V_R=–20dBm, BPF=100Hz	45	60		dB
Output noise voltage	V_{NO}	V_{CC}=4.5V, Rg=1kΩ, BPF=20Hz to 20kHz		62	100	μV
Power off effect	V_O (off)	V_{CC}=1.6V, f=100Hz, pin 1 →GND, V_{IN}=–10dB			–80	dB
Muting effect	V_O (MT)	V_{CC}=1.6V, f=100Hz, pin 10 →GND, V_{IN}=–10dB			–80	dB
Power on current sensitivity	I_1 (on)	V_{CC}=1.5V, V5 ≥0.85V		0.05	1.0	μA
Power off voltage sensitivity	V_1 (off)	V_{CC}=1.5V, V5 ≤ 0.1V	0.5	0.6		V
Muting off current sensitivity	I_{10} (off)	V_{CC}=1.5V, V5 ≥0.85V		0.2	1.0	μA
Muting on voltage sensitivity	V_{10} (on)	V_{CC}=1.5V, 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 (pin voltage –0.5) / 16 [V/kΩ] and the total current increases by these current values.

Equivalent Circuit Block Diagram and Application Circuit

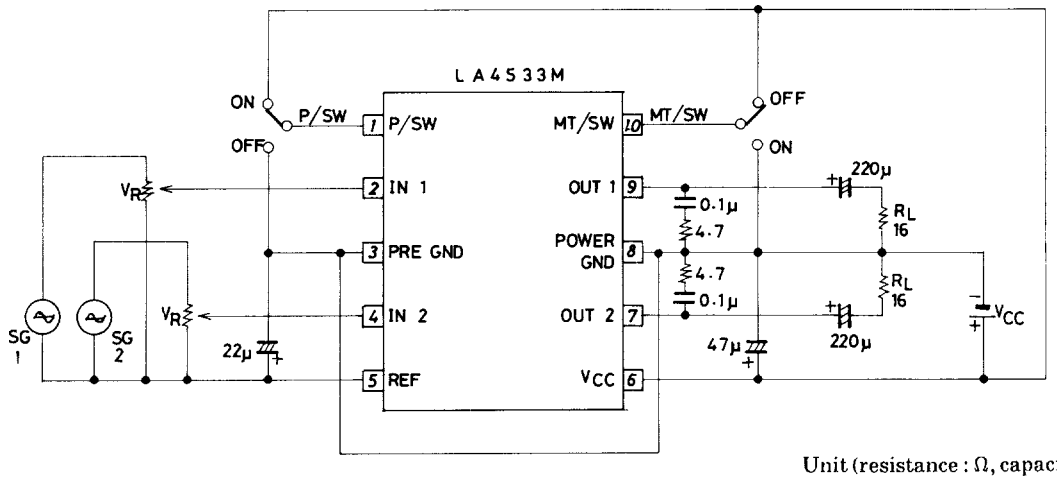


Test Circuit



Unit (resistance : Ω, capacitance : F)

Sample Application Circuit



Unit (resistance : Ω, capacitance : F)