



SANYO Semiconductors

DATA SHEET

LA4533M

Monolithic Linear IC

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

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	P _d max		300	mW
Operating temperature	T _{opr}		-20 to +75	°C
Storage temperature	T _{stg}		-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

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

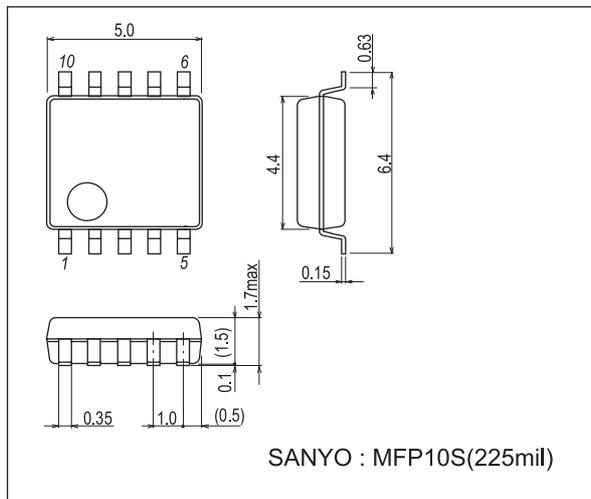
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current	$I_{CCO(1)}$	$V_{CC} = 2.4\text{V}$, quiescent		5.4	10	mA
	$I_{CCO(2)}$	$V_{CC} = 4.5\text{V}$, pin 10 \rightarrow GND		1.1	2.0	mA
	$I_{CCO(3)}$	$V_{CC} = 4.5\text{V}$, pin 1 \rightarrow GND			1.0	μA
Voltage gain	VG(1)	$V_{CC} = 2.4\text{V}$, $f = 1\text{kHz}$, $V_O = -10\text{dBm}$	30	32	34	dB
	VG(2)	$V_{CC} = 1.6\text{V}$, $f = 1\text{kHz}$, $V_O = -20\text{dBm}$	29	32	34	dB
Voltage gain difference	$\Delta\text{VG}(1)$	$V_{CC} = 2.4\text{V}$, $f = 1\text{kHz}$, $V_O = -10\text{dBm}$			1.0	dB
	$\Delta\text{VG}(2)$	$V_{CC} = 1.6\text{V}$, $f = 1\text{kHz}$, $V_O = -20\text{dBm}$			1.0	dB
Total harmonic distortion	THD	$V_{CC} = 2.0\text{V}$, $f = 1\text{kHz}$, $P_O = 1\text{mW}$		0.5	1.5	%
Output power	P_O	$V_{CC} = 3.0\text{V}$, $f = 1\text{kHz}$, THD = 10%	20	40		mW
Crosstalk	CT	$V_{CC} = 2.4\text{V}$, $f = 100\text{Hz}$, $R_g = 1\text{k}\Omega$, $V_O = -10\text{dB}$	40	50		dB
Ripple rejection	SVRR	$V_{CC} = 1.6\text{V}$, $f = 100\text{Hz}$, $R_g = 1\text{k}\Omega$, $V_R = -20\text{dBm}$, BPF = 100Hz	45	60		dB
Output noise voltage	V_{NO}	$V_{CC} = 4.5\text{V}$, $R_g = 1\text{k}\Omega$, BPF = 20Hz to 20kHz		62	100	μV
Power off effect	$V_{O(off)}$	$V_{CC} = 1.6\text{V}$, $f = 100\text{Hz}$, pin 1 \rightarrow GND, $V_{IN} = -10\text{dB}$			-80	dB
Muting effect	$V_{O(MT)}$	$V_{CC} = 1.6\text{V}$, $f = 100\text{Hz}$, pin 10 \rightarrow GND, $V_{IN} = -10\text{dB}$			-80	dB
Power on current sensitivity	$I_1(\text{on})$	$V_{CC} = 1.5\text{V}$, $V_5 \geq 0.85\text{V}$		0.05	1.0	μA
Power off voltage sensitivity	$V_1(\text{off})$	$V_{CC} = 1.5\text{V}$, $V_5 \leq 0.1\text{V}$	0.5	0.6		V
Muting off current sensitivity	$I_{10}(\text{off})$	$V_{CC} = 1.5\text{V}$, $V_5 \geq 0.85\text{V}$		0.2	1.0	μA
Muting on voltage sensitivity	$V_{10}(\text{on})$	$V_{CC} = 1.5\text{V}$, $V_5 \leq 0.1\text{V}$	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 $(\text{pin voltage} - 0.5) / 16 [\text{V} / \text{k}\Omega]$ and the total current increases by these current values.

Package Dimensions

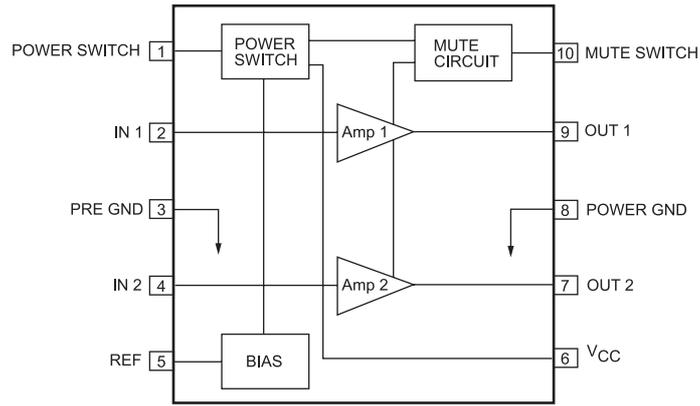
unit : mm (typ)

3086B

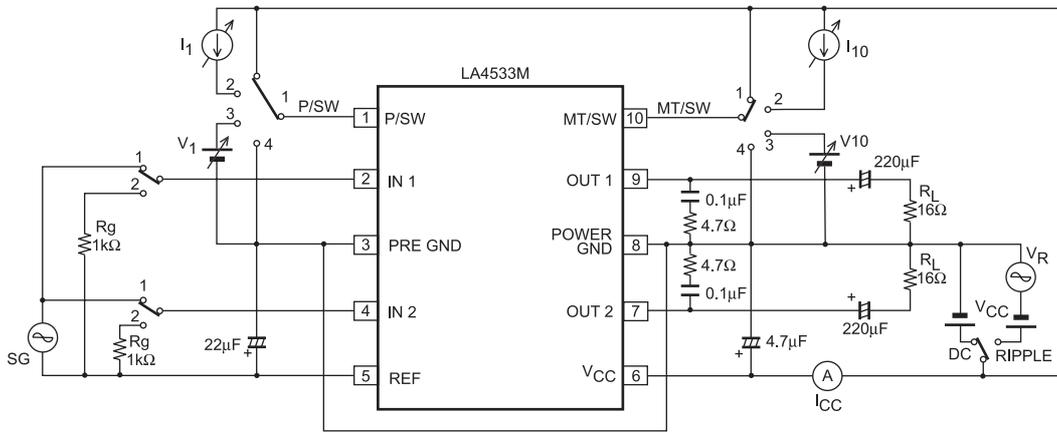


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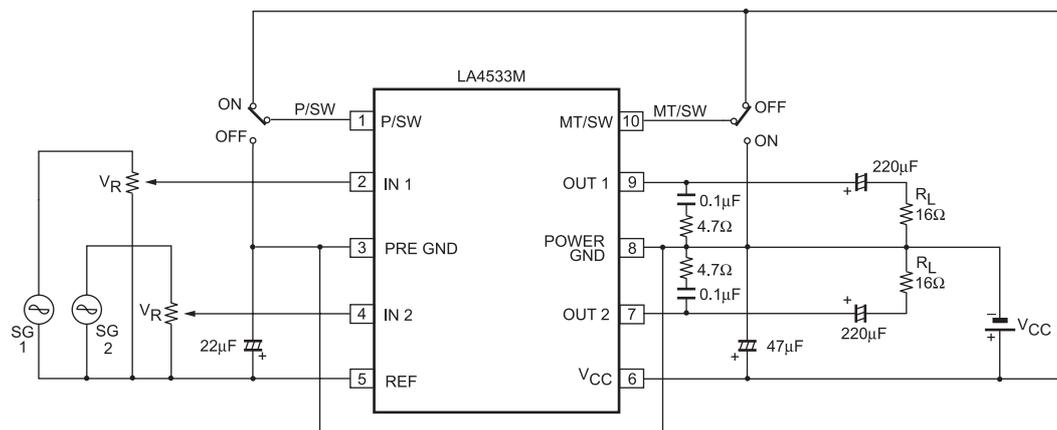
Block Diagram



Test Circuit



Sample Application Circuit



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