



# **Power Amplifier for 1.5V Headphone Stereo**

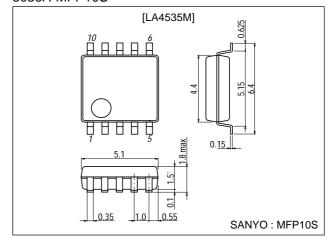
#### **Features**

- Low current drain.
- $16\Omega$  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 <sub>CC</sub> 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 $Ta = 25^{\circ}C$

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	VCC		1.5	V
Operating voltage range	V <sub>CC</sub> op		0.9 to 4.0	V
Recommended load resistance	RL		16 to 32	Ω

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	Oill
Quiescent current *1	Icco1	V <sub>CC</sub> =1.2V, quiescent		3.5	6.0	mA
	Icco2	$V_{CC}$ =2.5V, pin 10 $\rightarrow$ GND		1.5	2.5	mA
	Icco3	$V_{CC}$ =2.5V, pin 1 $\rightarrow$ GND			1.0	μΑ
Voltage gain	VG1	$V_{CC}$ =1.2V, f=1kHz, $V_{O}$ =-20dBm	20.5	22	23	dB
	VG2	V <sub>CC</sub> =0.9V, f=1kHz, V <sub>O</sub> =-20dBm	19.5	22	23	dB
Voltage gain difference	ΔVG1	V <sub>CC</sub> =1.2V, f=1kHz, V <sub>O</sub> =-20dBm			1.0	dB
	ΔVG2	V <sub>CC</sub> =0.9V, f=1kHz, V <sub>O</sub> =-20dBm			1.0	dB

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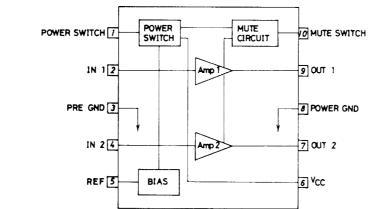
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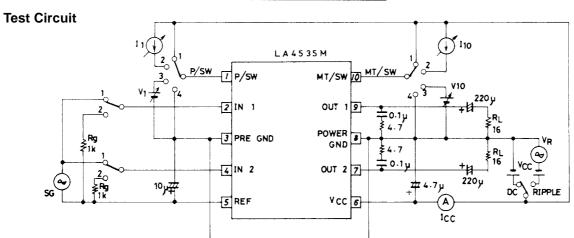
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	Oill
Total harmonic distortion	THD	V <sub>CC</sub> =1.2V, f=1kHz, P <sub>O</sub> =0.5mW		0.8	1.5	%
Output power	PO	V <sub>CC</sub> =1.5V, f=1kHz, THD=10%	5	8		mW
Crosstalk	CT	$V_{CC}$ =1.2V, f=100Hz, Rg=1k $\Omega$ , $V_{O}$ =-20dB	40	45		dB
Ripple rejection	SVRR	$V_{CC}$ =1.0V, f=100Hz, Rg=1k $\Omega$ , $V_{R}$ =-30dBm, BPF=100Hz	45	50		dB
Output noise voltage	$V_{NO}$	$V_{CC}$ =2.5V, Rg=1kΩ, BPF=20Hz to 20kHz		30	44	μV
Power off effect	V <sub>O</sub> (off)	$V_{CC}$ =0.9V, f=100Hz, pin 1 $\rightarrow$ GND, $V_{IN}$ =-10dB			-80	dBm
Muting effect	V <sub>O</sub> (MT)	$V_{CC}$ =0.9V, f=100Hz, pin 10 $\rightarrow$ GND, $V_{IN}$ =-10dB			-80	dBm
Power on current sensitivity	I <sub>1</sub> (on)	V <sub>CC</sub> =0.85V, V5≥0.5V		0.1	1.0	μA
Power off voltage sensitivity	V <sub>1</sub> (off)	V <sub>CC</sub> =0.85V, V5≤0.1V	0.5	0.65		٧
Muting off current sensitivity	I <sub>10</sub> (off)	V <sub>CC</sub> =0.85V, V5≥0.5V		0.3	1.0	μA
Muting on voltage sensitivity	V <sub>10</sub> (on)	V <sub>CC</sub> =0.85V, V5≤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**

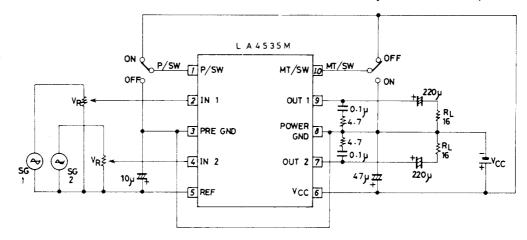




Unit (resistance:  $\Omega$ , capacitance: F)

#### **Sample Application Circuit**

Unit (resistance:  $\Omega$ , capacitance: F)



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