


**SANYO Semiconductors**

# DATA SHEET

**Monolithic Linear IC**

## LA4537M — Power Amplifier For 1.5V Headphone Stereos

### 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

### 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 | P <sub>d</sub> max  |            | 300         | mW   |
| Operating temperature       | T <sub>opr</sub>    |            | −20 to +75  | °C   |
| Storage temperature         | T <sub>stg</sub>    |            | −40 to +125 | °C   |

**Operating Conditions** at Ta = 25°C

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

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## LA4537M

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

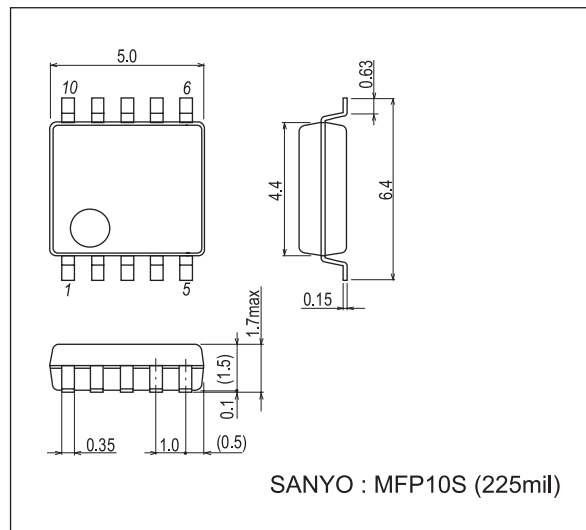
| Parameter                      | Symbol            | Conditions                                                                                                  | Ratings |      |      | Unit          |
|--------------------------------|-------------------|-------------------------------------------------------------------------------------------------------------|---------|------|------|---------------|
|                                |                   |                                                                                                             | min     | typ  | max  |               |
| Quiescent current              | $I_{CCO1}$        | $V_{CC} = 1.2\text{V}$ , quiescent                                                                          |         | 3.5  | 6.0  | mA            |
|                                | $I_{CCO2}$        | $V_{CC} = 2.5\text{V}$ , pin 10 $\rightarrow$ GND                                                           |         | 1.4  | 2.5  | mA            |
|                                | $I_{CCO3}$        | $V_{CC} = 2.5\text{V}$ , pin 1 $\rightarrow$ GND                                                            |         |      | 1.0  | $\mu\text{A}$ |
| Voltage gain                   | VG                | $V_{CC} = 1.2\text{V}$ , $f = 1\text{kHz}$ , $V_O = -20\text{dBm}$                                          | 28.5    | 30.0 | 31.5 | dB            |
| Voltage gain difference        | $\Delta\text{VG}$ | $V_{CC} = 1.2\text{V}$ , $f = 1\text{kHz}$ , $V_O = -20\text{dBm}$                                          |         |      | 1.0  | dB            |
| Total harmonic distortion      | THD               | $V_{CC} = 1.2\text{V}$ , $f = 1\text{kHz}$ , $P_O = 0.5\text{mW}$                                           |         | 0.5  | 1.5  | %             |
| Output power                   | $P_O$             | $V_{CC} = 1.5\text{V}$ , $f = 1\text{kHz}$ , THD = 10%                                                      | 5       | 8    |      | mW            |
| Crosstalk                      | CT                | $V_{CC} = 1.2\text{V}$ , $f = 100\text{Hz}$ , $R_g = 1\text{k}\Omega$ , $V_O = -20\text{dB}$                | 40      | 45   |      | dB            |
| Ripple rejection               | SVRR              | $V_{CC} = 1.0\text{V}$ , $f = 100\text{Hz}$ , $R_g = 1\text{k}\Omega$ , $V_R = -30\text{dBm}$ , BPF = 100Hz | 40      | 46   |      | dB            |
| Output noise voltage           | $V_{NO}$          | $V_{CC} = 2.5\text{V}$ , $R_g = 1\text{k}\Omega$ , BPF = 20Hz to 20kHz                                      |         | 55   | 80   | $\mu\text{V}$ |
| Power on current sensitivity   | $I_1$ (on)        | $V_{CC} = 0.85\text{V}$ , $V_5 \geq 0.5\text{V}$                                                            |         | 0.1  | 1.0  | $\mu\text{A}$ |
| Power off voltage sensitivity  | $V_1$ (off)       | $V_{CC} = 0.85\text{V}$ , $V_5 \leq 0.1\text{V}$                                                            | 0.5     | 0.6  |      | V             |
| Muting off current sensitivity | $I_{10}$ (off)    | $V_{CC} = 0.85\text{V}$ , $V_5 \geq 0.5\text{V}$                                                            |         | 0.1  | 1.0  | $\mu\text{A}$ |
| Muting on voltage sensitivity  | $V_{10}$ (on)     | $V_{CC} = 0.85\text{V}$ , $V_5 \leq 0.1\text{V}$                                                            | 0.5     | 0.6  |      | 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/k $\Omega$ ] and the total current increases by these current values.

## Package Dimensions

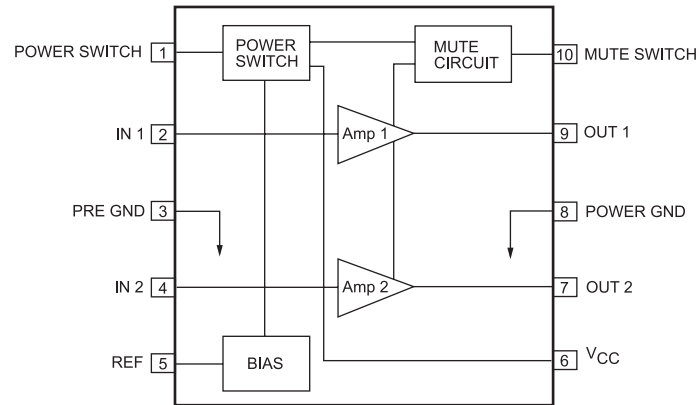
unit : mm (typ)

3086B

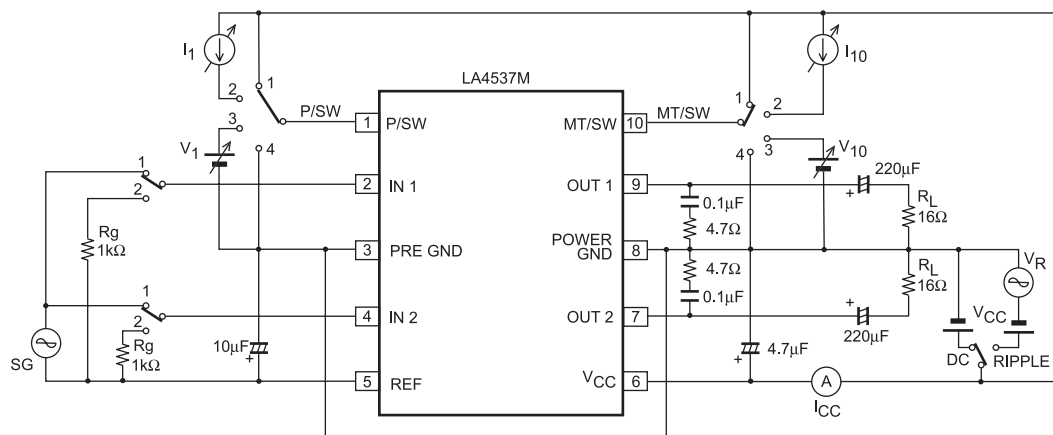


# LA4537M

## Block Diagram

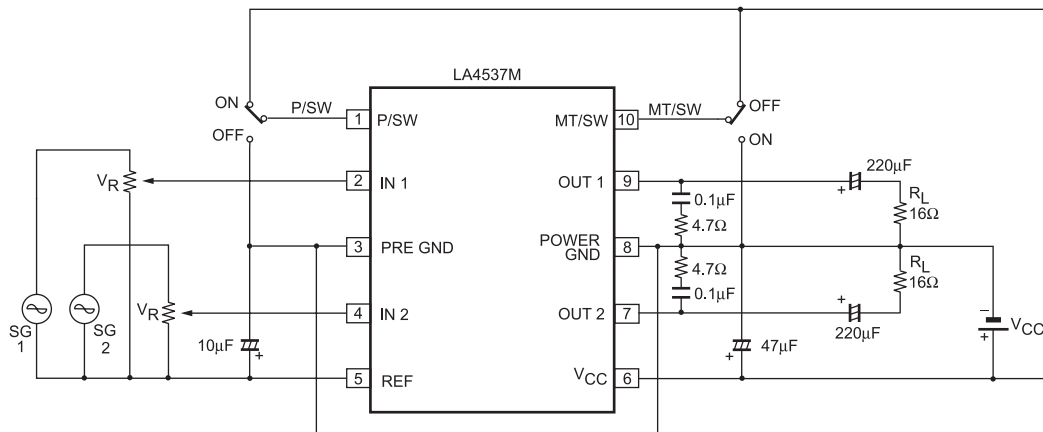


## Test Circuit



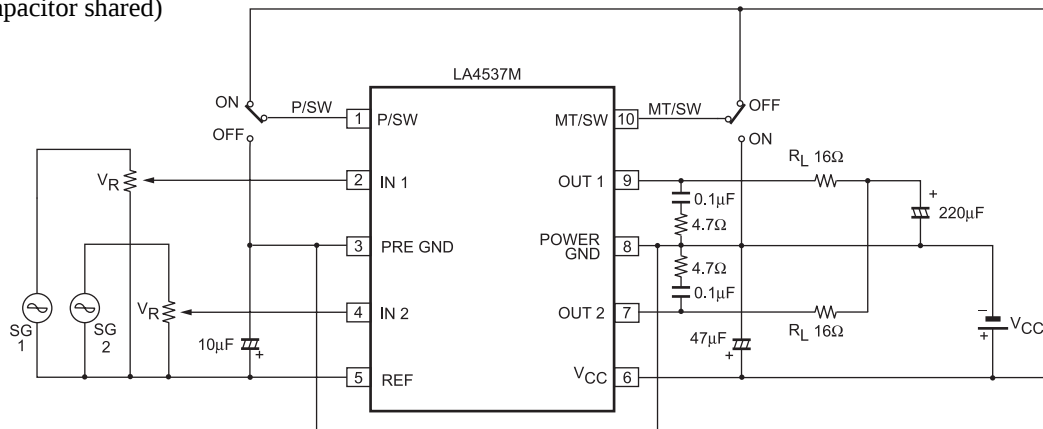
## Sample Application Circuit 1

(Standard)



## Sample Application Circuit 2

(Output capacitor shared)



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