Ordering number : EN2248C

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 | 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 |




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**Electrical Characteristics** at Ta = 25°C, $R_L$ = 16Ω, Rg = 600Ω, See specified Test Circuit.

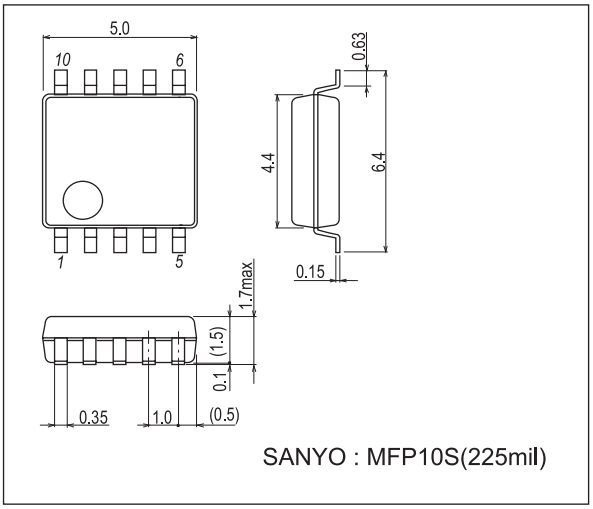
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Quiescent current | $I_{CCO}$(1) | $V_{CC}$ = 2.4V, quiescent | | 5.4 | 10 | mA |
| | $I_{CCO}$ (2) | $V_{CC}$ = 4.5V, pin 10 → GND | | 1.1 | 2.0 | mA |
| | $I_{CCO}$ (3) | $V_{CC}$ = 4.5V, pin 1 → GND | | | 1.0 | μA |
| Voltage gain | VG(1) | $V_{CC}$ = 2.4V, f = 1kHz, $V_O$ = –10dBm | 30 | 32 | 34 | dB |
| | VG(2) | $V_{CC}$ = 1.6V, f = 1kHz, $V_O$ = –20dBm | 29 | 32 | 34 | dB |
| Voltage gain difference | ΔVG(1) | $V_{CC}$ = 2.4V, f = 1kHz, $V_O$ = –10dBm | | | 1.0 | dB |
| | ΔVG(2) | $V_{CC}$ = 1.6V, f = 1kHz, $V_O$ = –20dBm | | | 1.0 | dB |
| 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.

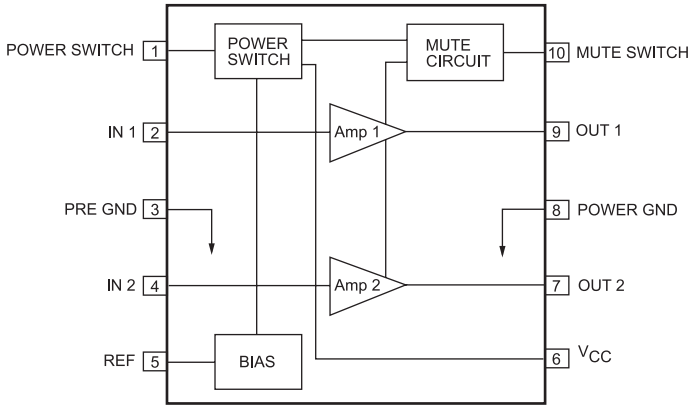
## Package Dimensions

unit : mm (typ)

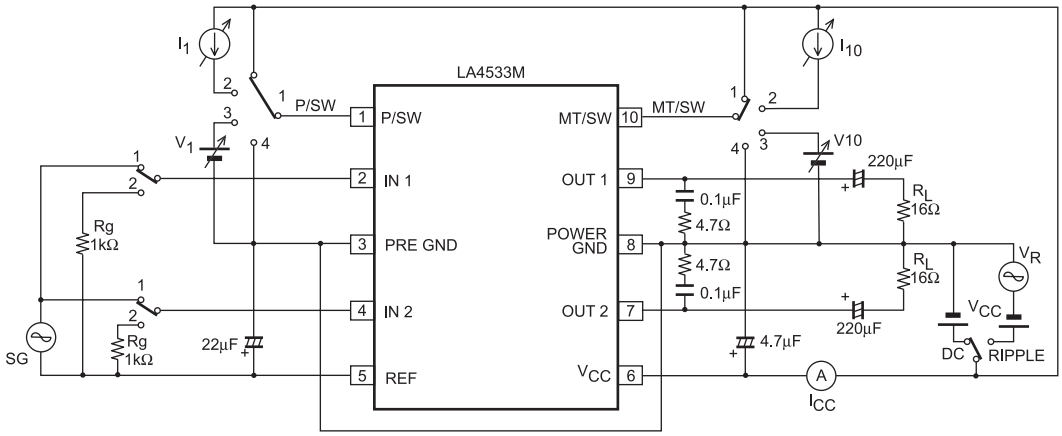
3086B



## Block Diagram




## Test Circcuit




## Sample Application Circuit