



SANYO Semiconductors

# DATA SHEET

Monolithic Linear IC

An ON Semiconductor Company

## LA4535MC — For 1.5V Headphone Stereo Power Amplifier

### 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		290	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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**SANYO Semiconductor Co., Ltd.**

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# LA4535MC

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

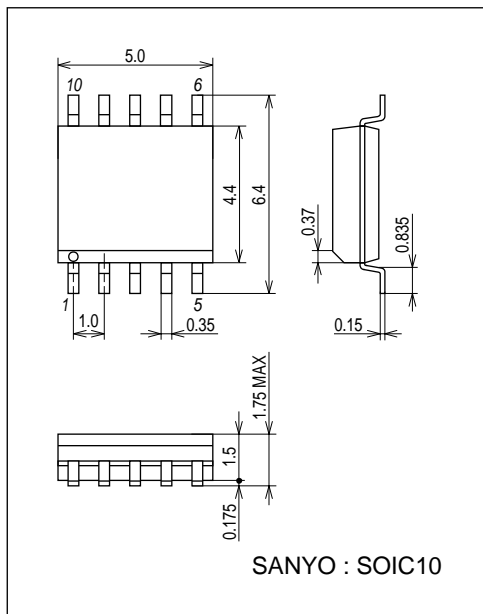
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current *1	$I_{CCO1}$	$V_{CC} = 1.2\text{V}$ , quiescent		3.5	6.0	mA
	$I_{CCO2}$	$V_{CC} = 2.5\text{V}$ , pin 10 $\rightarrow$ GND		1.5	2.5	mA
	$I_{CCO3}$	$V_{CC} = 2.5\text{V}$ , pin 1 $\rightarrow$ GND			1.0	$\mu\text{A}$
Voltage gain	VG1	$V_{CC} = 1.2\text{V}$ , $f = 1\text{kHz}$ , $V_O = -20\text{dBm}$	20.5	22	23	dB
	VG2	$V_{CC} = 0.9\text{V}$ , $f = 1\text{kHz}$ , $V_O = -20\text{dBm}$	19.5	22	23	dB
Voltage gain difference	$\Delta\text{VG1}$	$V_{CC} = 1.2\text{V}$ , $f = 1\text{kHz}$ , $V_O = -20\text{dBm}$			1.0	dB
	$\Delta\text{VG2}$	$V_{CC} = 0.9\text{V}$ , $f = 1\text{kHz}$ , $V_O = -20\text{dBm}$			1.0	dB
Total harmonic distortion	THD	$V_{CC} = 1.2\text{V}$ , $f = 1\text{kHz}$ , $P_O = 0.5\text{mW}$		0.8	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	45	50		dB
Output noise voltage	$V_{NO}$	$V_{CC} = 2.5\text{V}$ , $R_g = 1\text{k}\Omega$ , BPF = 20Hz to 20kHz		30	44	$\mu\text{V}$
Power off effect	$V_{O(\text{off})}$	$V_{CC} = 0.9\text{V}$ , $f = 100\text{Hz}$ , pin 1 $\rightarrow$ GND, $V_{IN} = -10\text{dB}$			-80	dBm
Muting effect	$V_{O(\text{MT})}$	$V_{CC} = 0.9\text{V}$ , $f = 100\text{Hz}$ , pin 10 $\rightarrow$ GND, $V_{IN} = -10\text{dB}$			-80	dBm
Power on current sensitivity	$I_1(\text{on})$	$V_{CC} = 0.85\text{V}$ , $V_5 \geq 0.5\text{V}$		0.1	1.0	$\mu\text{A}$
Power off voltage sensitivity	$V_1(\text{off})$	$V_{CC} = 0.85\text{V}$ , $V_5 \leq 0.1\text{V}$	0.5	0.65		V
Muting off current sensitivity	$I_{10(\text{off})}$	$V_{CC} = 0.85\text{V}$ , $V_5 \geq 0.5\text{V}$		0.3	1.0	$\mu\text{A}$
Muting on voltage sensitivity	$V_{10(\text{on})}$	$V_{CC} = 0.85\text{V}$ , $V_5 \leq 0.1\text{V}$	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  $(V_{\text{pin } -0.5} / 16 [V / \text{k}\Omega])$  and the total current increases by these current values.

## Package Dimensions

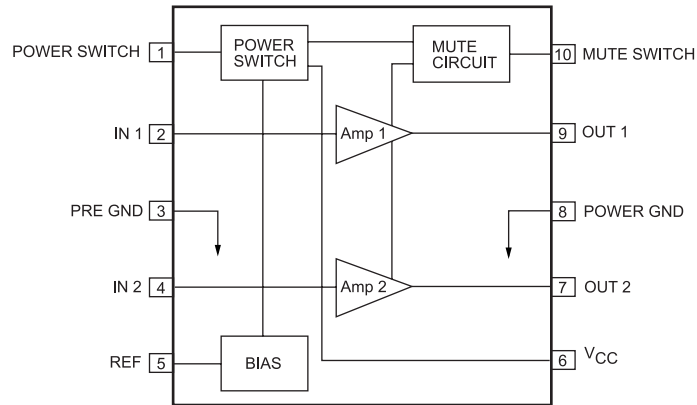
unit : mm (typ)

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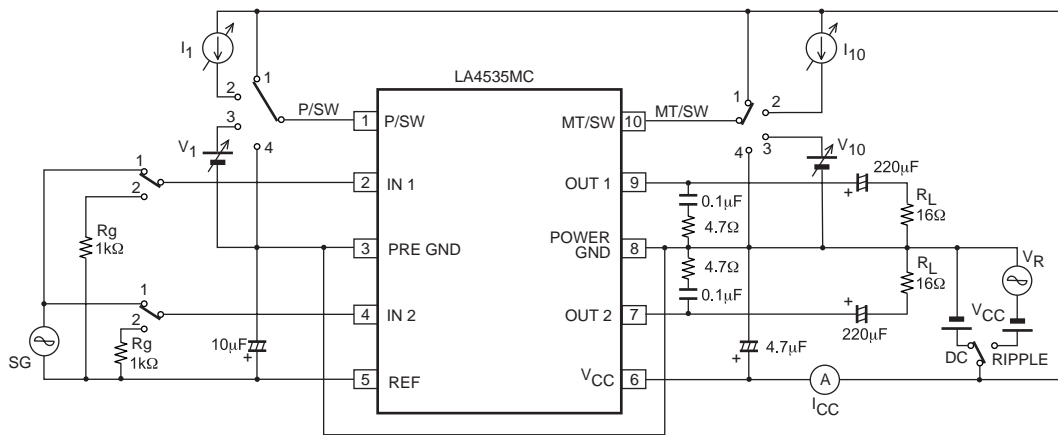


# LA4535MC

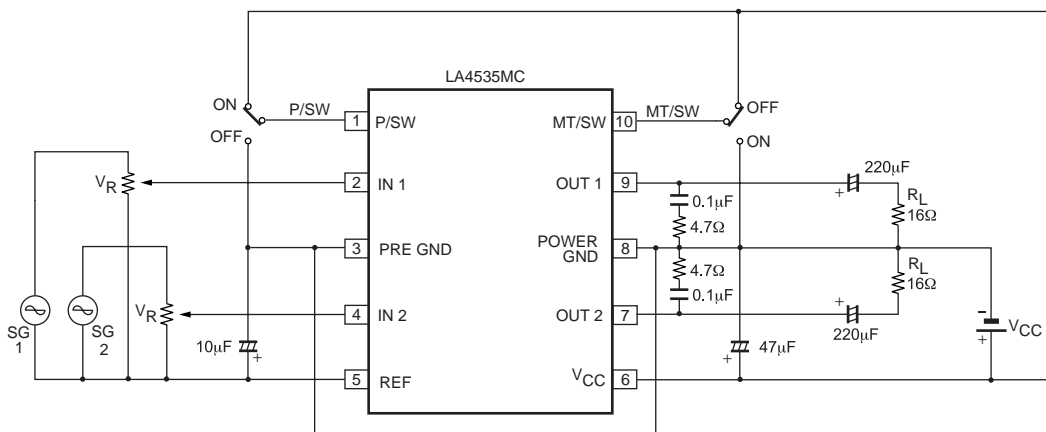
## Block Diagram



## Test Circuit



## Sample Application Circuit



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