



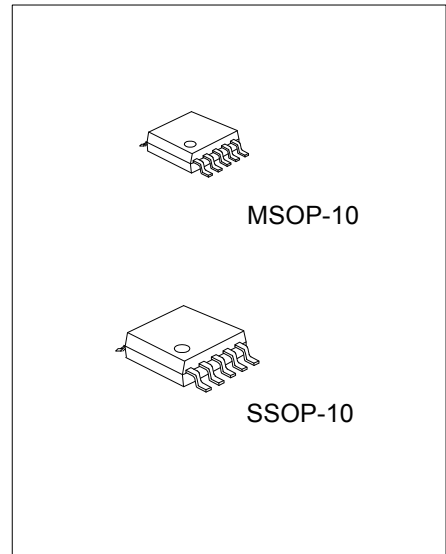
A4533

LINEAR INTEGRATED CIRCUIT

LOW POWER AMPLIFIER FOR HEADPHONE STEREOS

FEATURES

- * Low current consumption.
- * 16Ω load drive capability.
- * Excellent reduced voltage characteristics.
- * High power supply ripple rejection.
- * Fewer external components required.
- * High voltage gain.
- * Less harmonic interference in radio band.
- * Built in power switch and muting function.

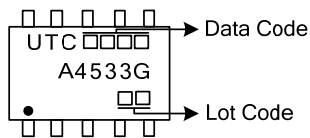


ORDERING INFORMATION

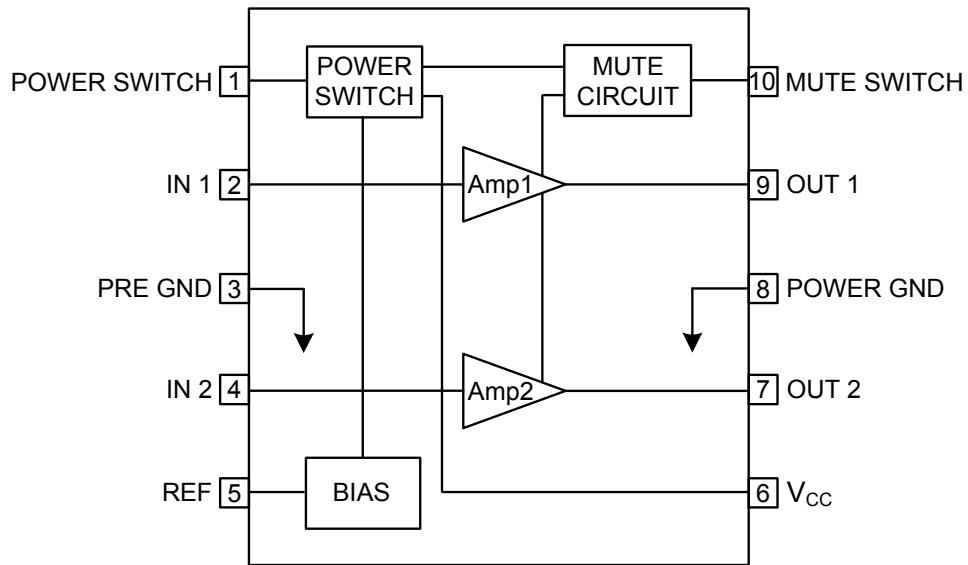
Order Number	Package	Packing
A4533G-SM2-R	MSOP-10	Tape Reel
A4533G-SM2-T	MSOP-10	Tube
A4533G-R10-R	SSOP-10	Tape Reel
A4533G-R10-T	SSOP-10	Tube

<p>A4533G-SM2-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) SM2: MSOP-10, R10: SSOP-10</p> <p>(3) G: Halogen Free and Lead Free</p>
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MARKING



■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$, unless Otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Power Supply Voltage	V_{CC}	4.5	V
Power Dissipation	P_D	300	mW
Junction Temperature	T_J	125	$^\circ\text{C}$
Operating Temperature	T_{OPR}	-20 ~ +85	$^\circ\text{C}$
Storage Temperature	T_{STG}	-40 ~ +150	$^\circ\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ RECOMMENDED OPERATING CONDITIONS

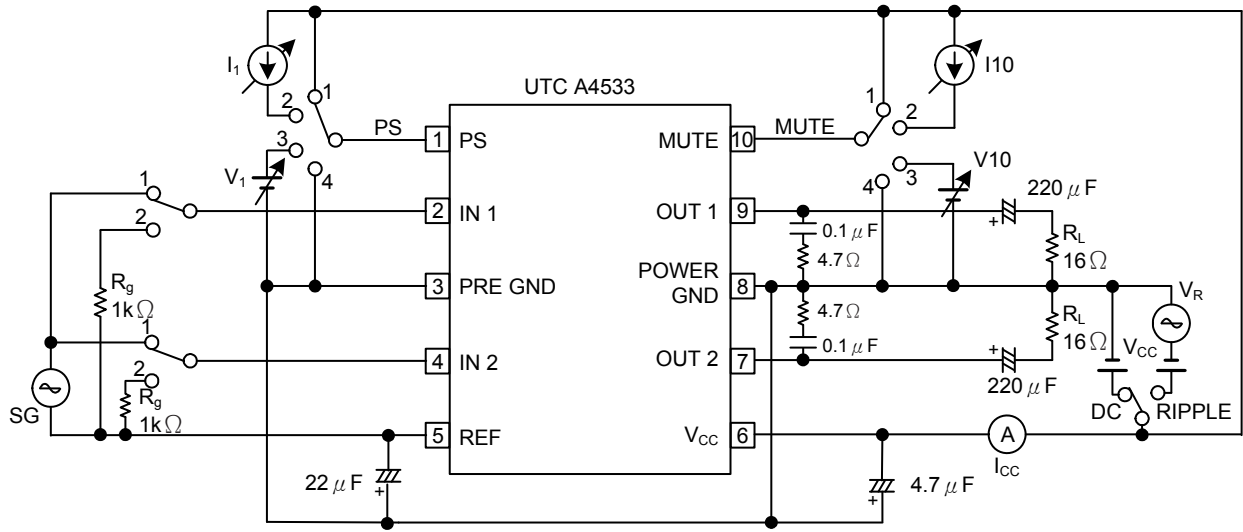
PARAMETER	SYMBOL	RATINGS	UNIT
Recommended Supply Voltage	V_{CC}	3	V
Operating Voltage Range	V_{OPR}	1.6 ~ 4	V
Load Resistance	R_L	16 ~ 32	Ω

■ ELECTRICAL CHARACTERIS ($T_A = 25^\circ\text{C}$, $R_L=16\Omega$, $R_g=600\Omega$, unless Otherwise specified)

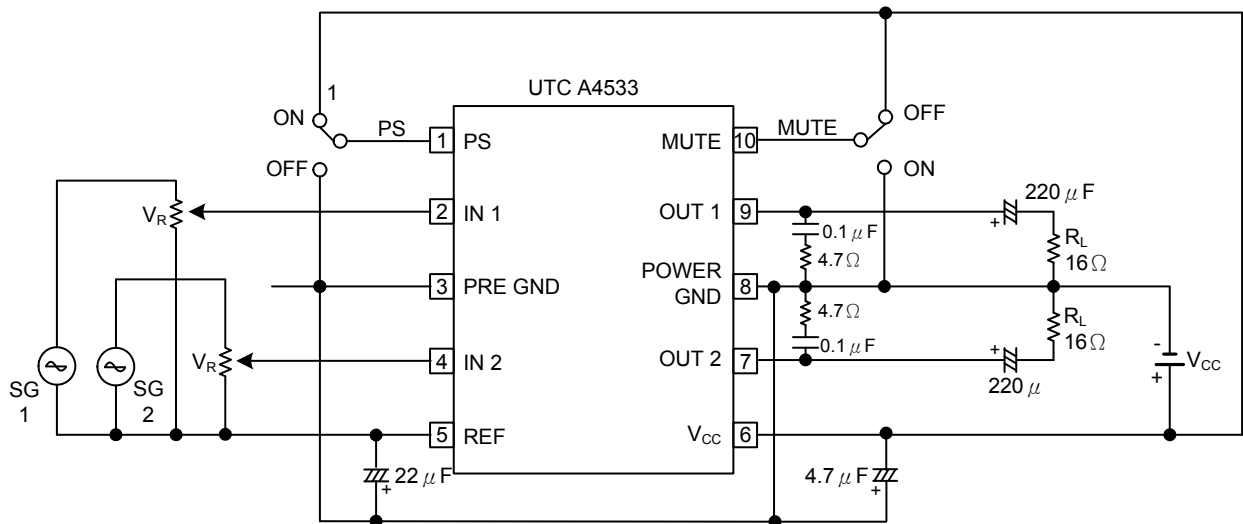
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Quiescent Current	I_{Q1}	$V_{CC}=2.4V$		5.4	10	mA
	I_{Q2}	$V_{CC}=4.5V$, Mute =GND		1.1	2.0	mA
	I_{Q3}	$V_{CC}=4.5V$, PS = GND			1.0	μA
Voltage Gain	G_{V1}	$V_{CC}=2.4V$, $f=1\text{kHz}$, $V_{OUT}=-10\text{dBm}$	30	32	34	dB
	G_{V2}	$V_{CC}=1.6V$, $f=1\text{kHz}$, $V_{OUT}=-20\text{dBm}$	29	32	34	dB
Voltage Gain Difference	ΔG_{V1}	$V_{CC}=2.4V$, $f=1\text{kHz}$, $V_{OUT}=-10\text{dBm}$			1.0	dB
	ΔG_{V2}	$V_{CC}=1.6V$, $f=1\text{kHz}$, $V_{OUT}=-20\text{dBm}$			1.0	dB
Total Harmonic Distortion	THD	$V_{CC}=2.0V$, $f=1\text{kHz}$, $P_{OUT}=1\text{mW}$		0.5	1.5	%
Output Power	P_{OUT}	$V_{CC}=3.0V$, $f=1\text{kHz}$, THD=10%	20	40		mW
Cross Talk	CT	$V_{CC}=2.4V$, $f=100\text{Hz}$, $R_g=1\text{k}\Omega$, $V_{OUT}=-10\text{dB}$	40	50		dB
Ripple Rejection	RR	$V_{CC}=1.6V$, $f=100\text{Hz}$, $R_g=1\text{k}\Omega$, $V_R=-20\text{dBm}$, BPF=100Hz	45	60		dB
Output Noise Voltage	eN	$V_{CC}=4.5V$, $R_g=1\text{k}\Omega$, BPF=20Hz ~ 20kHz		62	100	μV
Power Off Effect	$V_{O(OFF)}$	$V_{CC}=1.6V$, $f=100\text{Hz}$, PS = GND, $V_{IN}=-10\text{dB}$			-80	dB
Muting Effect	$V_{O(MT)}$	$V_{CC}=1.6V$, $f=100\text{Hz}$, Mute = GND, $V_{IN}=-10\text{dB}$			-80	dB
Power On Current Sensitivity	$I_{PS(ON)}$	$V_{CC}=1.5V$, $V_{REF}\geq 0.85V$		0.05	1.0	μA
Power Off Voltage Sensitivity	$V_{PS(OFF)}$	$V_{CC}=1.5V$, $V_{REF}\leq 0.1V$	0.5	0.6		V
Muting Off Current Sensitivity	$I_{MUTE(OFF)}$	$V_{CC}=1.5V$, $V_{REF}\geq 0.85V$		0.2	1.0	μA
Muting On Voltage Sensitivity	$V_{MUTE(ON)}$	$V_{CC}=1.5V$, $V_{REF}\leq 0.1V$	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/k Ω] and the total current increases by these current values.

■ TEST CIRCUIT



■ TYPICAL APPLICATION CIRCUIT



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