

INTRODUCTION

The S1A0134A01 is a monolithic integrated circuit designed for use in low voltage and low power applications. It has various functions including those of a dual audio pre-power amplifier, DC volumecontrol and headphone drive circuits. It is suitable for portable tape recorders or headphone cassette recorders.

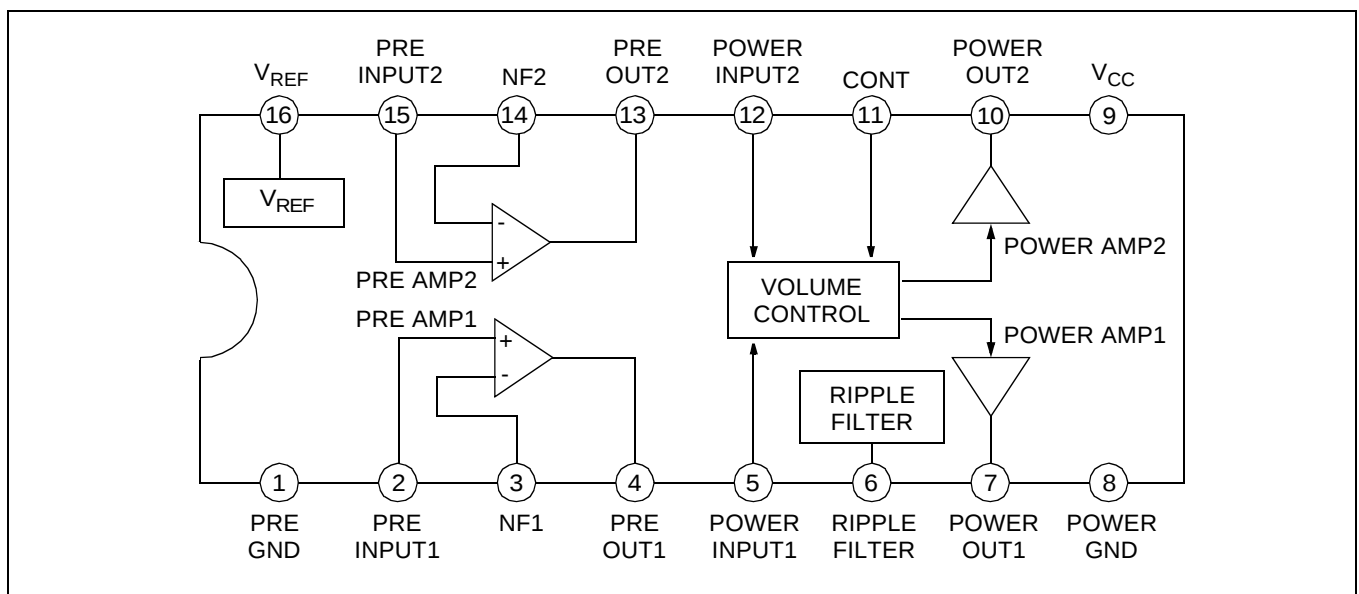
FEATURES

- Built-in DC volume control circuit
- Wide operation supply voltage: $V_{CC} = 1.8V \text{ — } 6V$
- Only a few components needed to build headphone cassette tape recorders
- Built-in ripple filter

ORDERING INFORMATION

Device	Package	Operating Temperature
S1A0134A01-D0B0	16-DIP-300A	$-20^{\circ}\text{C} \text{ — } +75^{\circ}\text{C}$

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Characteristic	Symbol	Value	Unit
Supply Voltage	V_{CC}	7	V
Power Dissipation	P_D	750	mW
Operating Temperature	T_{OPR}	- 20 — +75	°C
Storage Temperature	T_{STG}	- 40 — +125	°C

ELECTRICAL CHARACTERISTICS

($V_{CC} = 3V$, $T_a = 25^\circ C$, $f = 1kHz$, $R_{L1} = 10k\Omega$, unless otherwise specified)

Characteristic	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Quiescent Circuit Current	I_{CCQ1}	$V_I = 0$, $V_{OL} = MIN$	–	9	13	mA
	I_{CCQ2}	$V_I = 0$, $V_{OL} = MAX$	–	11	–	mA
Cross Talk	CT	$R_G = 2.2k\Omega$, $V_O = -10dBm$	34	40	–	dB

PRE-AMPLIFIER SECTION

($V_{CC} = 3V$, $T_a = 25^\circ C$, $f = 1kHz$, $R_{L1} = 10k\Omega$, unless otherwise specified)

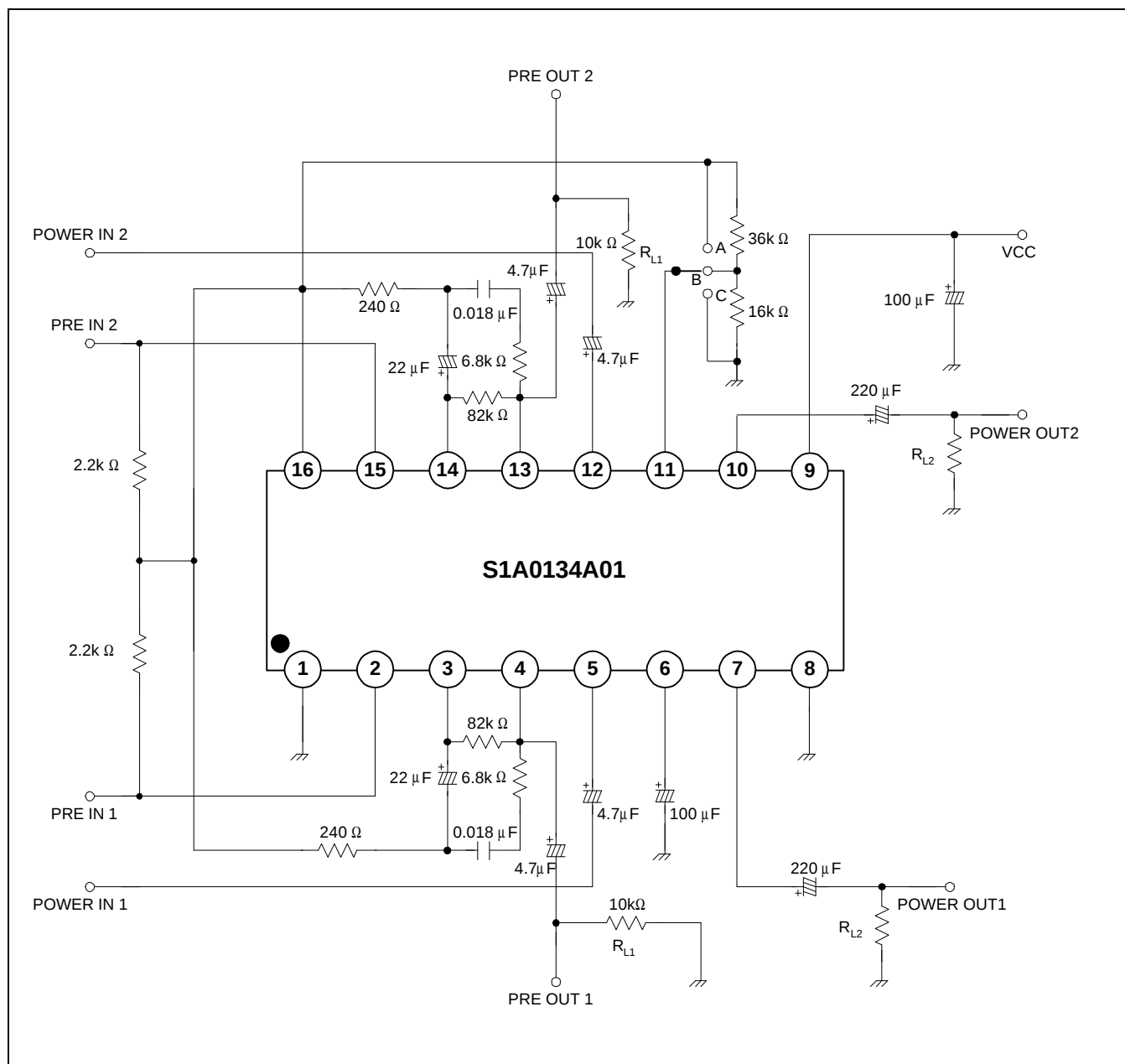
Characteristic	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Open Loop Voltage Gain	G_{VO}	$V_I = 0.2mV$	55	62	–	dB
Closed Loop Voltage Gain	G_{VC1}	$V_O = -10dBm$, NAB 1kHz	–	33	–	dB
Output Voltage	V_O	THD = 1%	600	720	–	mV
Total Harmonic Distortion	THD ₁	$V_O = -10dBm$	–	0.04	0.1	%
Ripple Rejection Ratio	RR ₁	$R_G = 2.2k\Omega$ $V_R = -20dBm$, $f_R = 100Hz$	–	46	–	dB
Equivalent Input Noise Voltage	V_{NI}	$R_G = 2.2k\Omega$, BW = 30 – 20kHz Gain for NAB 1kHz	–	1.2	2.0	μV

POWER AMPLIFIER SECTION

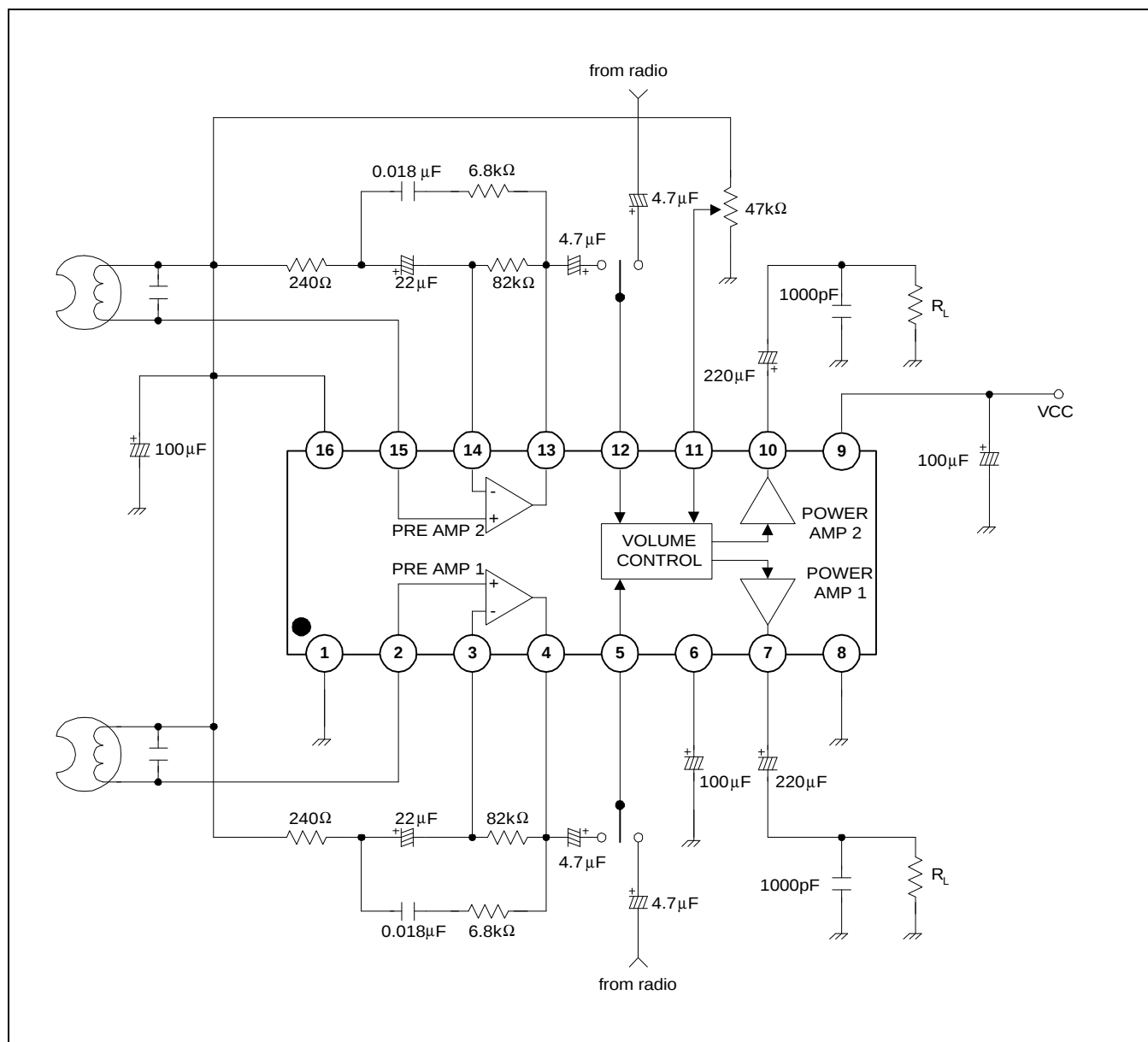
($V_{CC} = 3V$, $T_a = 25^\circ C$, $f = 1kHz$, $R_{L2} = 32\Omega$, unless otherwise specified)

Characteristic	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Output Power	P_{O1}	THD2 = 10%	20	27	–	mW
	P_{O2}	THD2 = 10%, $R_L = 16\Omega$	–	39	–	mW
Total Harmonic Distortion	THD ₂	$P_O = 10mW$, Volume: 100%	–	0.5	1.2	%
	THD ₃	$P_O = 10mW$, Volume: 50%	–	0.3	–	%
Closed Loop Voltage Gain	G_{VC2}	$V_O = -0dBm$, Volume: 100%	28	30	32	dB
	G_{VC3}	$V_O = -10dBm$, Volume: 50%	–	15	–	dB
Channel Balance	CB	$V_O = -10dBm$	– 1.5	0	1.5	dB
Volume Rejection Ratio	VOL_{REJ}	$V_O = -10dBm$ Volume: 100% to 0%	66	72	–	dB
Output Noise Voltage	V_{NO}	$BW = 30 - 20kHz$, $R_G = 600\Omega$	–	250	320	μV
Ripple Rejection Ratio	RR_2	$R_G = 600\Omega$, $f_r = 100Hz$ $V_r = -20dBm$	–	46	–	dB

TEST CIRCUIT



APPLICATION CIRCUIT



NOTES