



DESCRIPTION

The A34119 is a low-power audio IC optimized for speakerphone applications. It delivers differential outputs to maximize voltage swing from a minimum 2.0V supply without requiring output coupling capacitors. The device offers an 80 dB open-loop gain, with closed-loop gain configurable via external resistors. A Chip Disable function is included for power management and muting.

The A34119 is available in SOP8 and DIP8 packages.

ORDERING INFORMATION

Package Type	Part Number	
SOP8 SPQ: 3,000pcs/Reel	M8	A34119M8R
		A34119M8VR
DIP8 SPQ: 50pcs/Tube	P8	A34119P8U
		A34119P8VU
Note	V: Halogen free Package R: Tape & Reel U: Tube Package	
AiT provides all RoHS products		

FEATURES

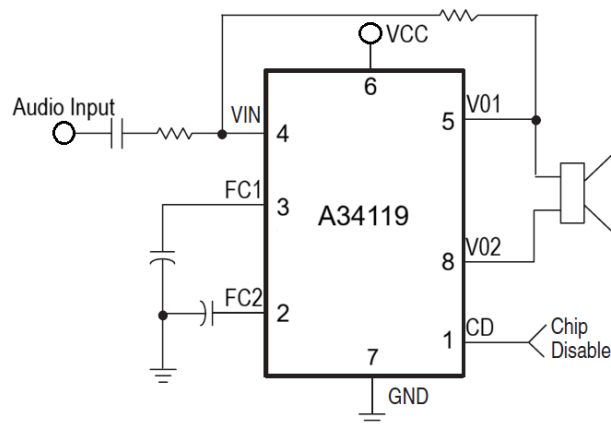
- Wide Operating Voltage Range: 2.0V to 16V, ideal for telephone line-powered applications.
- Low Power Consumption: 2.7mA (typ.) quiescent current; suitable for battery-operated devices.
- Power Management: Includes a Chip Disable input for ultra-low power-down current (65μA typ.).
- Versatile Speaker Driving: Supports a wide range of loads (8.0 Ω and above).
- High Output Performance: Delivers over 250mW into a 32Ω speaker.
- Superior Audio Quality: Low Total Harmonic Distortion (0.5% typ.).

Flexible Gain Control: Adjustable gain range from <0 dB to >46dB.

APPLICATION

- Mobile phone, PDA, MID
- MP3/4, PMP
- Portable electronic devices

TYPICAL APPLICATION





PIN DESCRIPTION

A34119 SOP8 SOP8, M8 Top View		A34119 DIP8 DIP8, P8 Top View	
Pin #		Symbol	Function
SOP8	DIP8		
1	1	CD	Chip Disable (CD): Digital control input. - Logic “0” ($\leq 0.8\text{ V}$): Normal operation mode. - Logic “1” ($\geq 2.0\text{ V}$): Power-down (Standby) mode.
2	2	FC2	Bypass Capacitor (FC2): An external capacitor connected to this pin improves the PSRR and influences the device's turn-on (start-up) time. This pin may be left floating (open) if the decoupling provided by the capacitor at FC1 is adequate for the application's noise requirements.
3	3	FC1	Provides an analog ground reference for the internal amplifiers. Achieving a typical 52 dB PSR requires a 1.0 μF capacitor at this pin, paired with a 5.0 μF capacitor at Pin 2. The capacitance value directly influences the device's turn-on time and also serves as an alternate signal input.
4	4	VIN -	Amplifier input. The input capacitor and resistor set low frequency rolloff and input impedance. The feedback resistor is connected to this pin and VO1.
5	5	VO1	Amplifier Output #1. The dc level is $\approx (VCC - 0.7\text{ V})/2$.
6	6	VCC	DC supply voltage (+2.0 V to +16 V) is applied to this pin.
7	7	GND	Ground pin for the entire circuit.
8	8	VO2	Provides an inverted signal relative to VO1, with identical amplitude. The quiescent DC output level is approximately $(VCC - 0.7\text{ V})/2$. Works in conjunction with VO1 to provide a differential drive, maximizing output power without coupling capacitors.



ABSOLUTE MAXIMUM RATINGS

V _{CC} , Supply Voltage	-1.0V ~ 18V
I _O , VO1,VO2 Maximum Output Current	-250 ~ 250mA
V _{MAX} , CD, FC2, FC1, and VIN- Pin Maximum Input Voltage	-1.0V~V _{CC} +1V
VO1and VO2 Output Voltage when Disabled	-1.0V ~V _{CC} +1V
Junction Temperature	-55°C~140°C
Operating Temperature Range	0°C ~ +70°C

Stress beyond above listed "Absolute Maximum Ratings" may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

ELECTRICAL CHARACTERISTICS

The following specifications apply for the circuit shown in Fig1.

T_A = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Supply Voltage	V _{CC}		2.0		16	V
Power Supply Current	I _{CC3}	V _{CC} = 3.0 V, R _L = ∞, V _{CD} = 0.8 V	-	2.7	4.0	mA
	I _{CC16}	V _{CC} = 16 V, R _L = ∞, V _{CD} = 0.8 V	-	3.3	5.0	mA
	I _{CCD}	V _{CC} = 3.0 V, R _L = ∞, V _{CD} = 2.0 V	-	65	100	μA
CD Pin Voltage	V _{CD}		0		V _{CC}	V
Load Impedance	R _L		8.0		100	Ω
Peak Load Current	I _L		-200		200	mA
Differential Gain (5.0 kHz Bandwidth)	A _{VD}		0		46	dB
Ambient Temperature	T _A		0.0		70	°C



ELECTRICAL CHARACTERISTICS (conti...)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
AC Parameters						
AC Input Resistance	R _i			>30		MΩ
Open Loop Gain	A _{VOP1}	#1 Amplifier, f< 100Hz	80			dB
Close Loop Gain	A _{VOP2}	#2 Amplifier, V _{CC} =6V, f=1Khz, R _L =32Ω	-0.35	0	0.35	dB
Gain Bandwidth Product	GBW			1.5		MHz
Output Power	P _{out}	V _{CC} =3.0V, R _L =16 Ω, THD≤10%	55			mW
		V _{CC} =6.0V, R _L =32 Ω, THD≤10%	240			
		V _{CC} =12.0V, R _L =100 Ω, THD≤10%, f = 1.0 kHz	490			
Total Harmonic Distortion	THD	V _{CC} ≥3.0V, R _L =8.0Ω, P _{OUT} =20mW		0.5		%
		V _{CC} =6.0V, R _L =32 Ω, P _{OUT} =125mW, f = 1.0 kHz	0.5	1.0		
		V _{CC} ≥12.0V, R _L =32 Ω, P _{OUT} =200mW, f = 1.0 kHz		0.6		
Power Supply Rejection	PSRR	V _{CC} = 6.0 V, ΔV _{CC} = 3.0 V C1 = ∞, C2 = 0.01 μF	50			dB
		V _{CC} = 6.0 V, ΔV _{CC} = 3.0 V C1 = 0.1uF, C2 = 0, f=1KHz	-	12		
		V _{CC} = 6.0 V, ΔV _{CC} = 3.0 V C1 = 0.1uF, C2 = 5.0uF f=1KHz	-	52		
Differential Muting	GMT	V _{CC} = 6.0 V, 1.0 kHz ≤ f ≤ 20 kHz, C _D = 2.0 V		>70		dB



ELECTRICAL CHARACTERISTICS (conti...)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
DC Parameters						
Output DC Level	$V_{O(3)}$	$V_{O1}, V_{O2}, V_{CC} = 3.0 \text{ V}, R_L = 16\Omega, R_F = 75 \text{ k}\Omega$	1.0	1.15	1.25	V
	$V_{O(6)}$		-	2.65	-	
	$V_{O(12)}$		-	5.65	-	
Output High Voltage Level	V_{OH}	$I_{OUT} = -75 \text{ mA}, 2.0 \text{ V} \leq V_{CC} \leq 16 \text{ V}$	-	$V_{CC} - 1$	-	V
Output Low Voltage Level	V_{OL}	$I_{OUT} = 75 \text{ mA}, 2.0 \text{ V} \leq V_{CC} \leq 16 \text{ V}$	-	0.16	-	V
Output DC Offset Voltage VO1-VO2	ΔV_O	$V_{CC} = 6.0 \text{ V}, R_F = 75 \text{ k}\Omega, R_L = 32\Omega$	-30	0.0	30	mV
Input Bias Current	I_{IB}	$V_{CC} = 6.0 \text{ V}$		-100	-200	nA
Equivalent Resistance	R_{FC1}	$V_{CC} = 6.0 \text{ V}$	100	150	220	K Ω
	R_{FC2}	$V_{CC} = 6.0 \text{ V}$	18	25	40	
CD Pin Input Low Voltage	V_{IL}				0.8	V
CD Pin Input High Voltage	V_{IH}		2.0			
CD input Resistance	R_{CD}	$V_{CC}=V_{CD}=16\text{V}$	50	90	175	K Ω
Typical Temperature Performance (-20°C < TA < 70°C)						
Input Bias Current	I_{IN}	@ V_{IN} side		± 40		pA/°C
Total Harmonic Distortion	T_{HD}	$V_{CC} = 6.0 \text{ V}, R_L = 32\Omega, P_{OUT} = 125 \text{ mW}, f = 1.0 \text{ kHz}$		± 0.003		%/°C
Power Supply Current	I_{CC}	$V_{CC} = 3.0\text{V}, R_L = \infty, V_{CD} = 0 \text{ V}$		-2.5		$\mu\text{A}/^\circ\text{C}$
		$V_{CC} = 3.0\text{V}, R_L = \infty, V_{CD} = 2.0 \text{ V}$		-0.03		



TYPICAL APPLICATION CIRCUIT

Fig 1. A34119 Small Signal Response

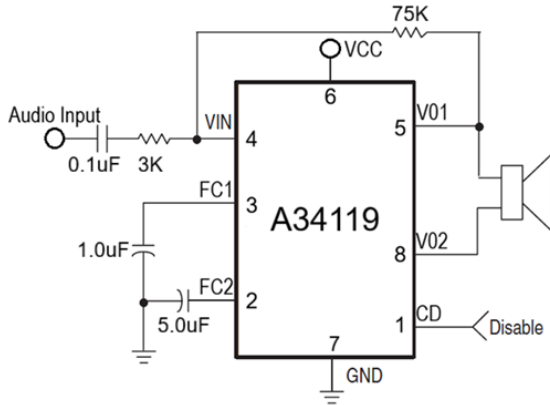


Fig 2. A34119 Small Signal Response

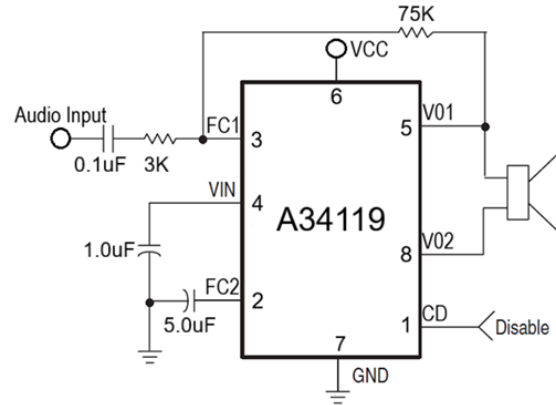


Fig 3. Audio Amplifier with Bass Suppression

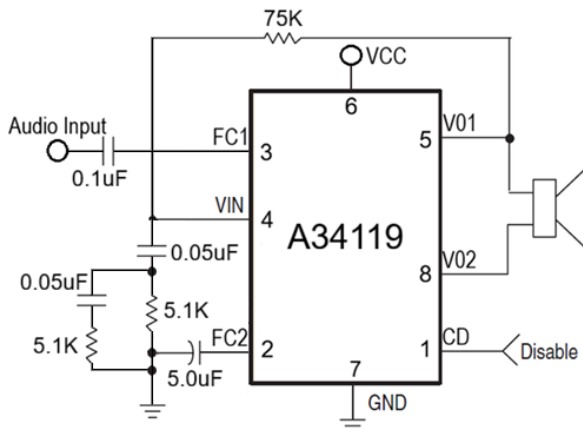


Fig 4. Audio Amplifier with Bandpass

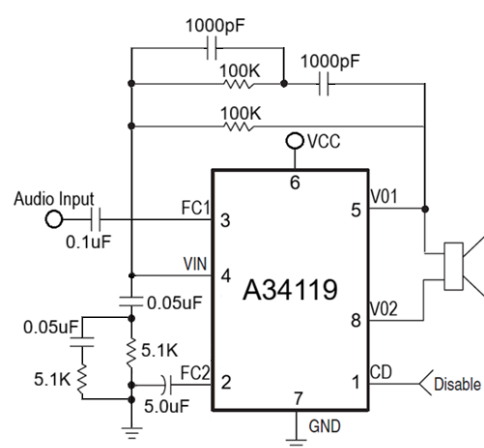
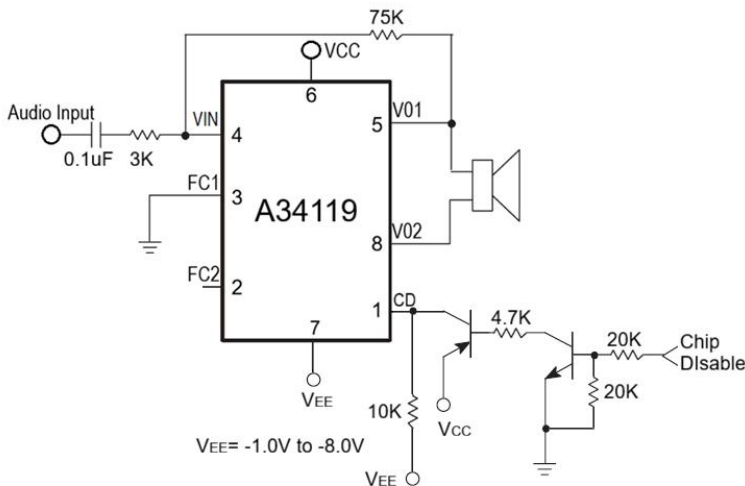
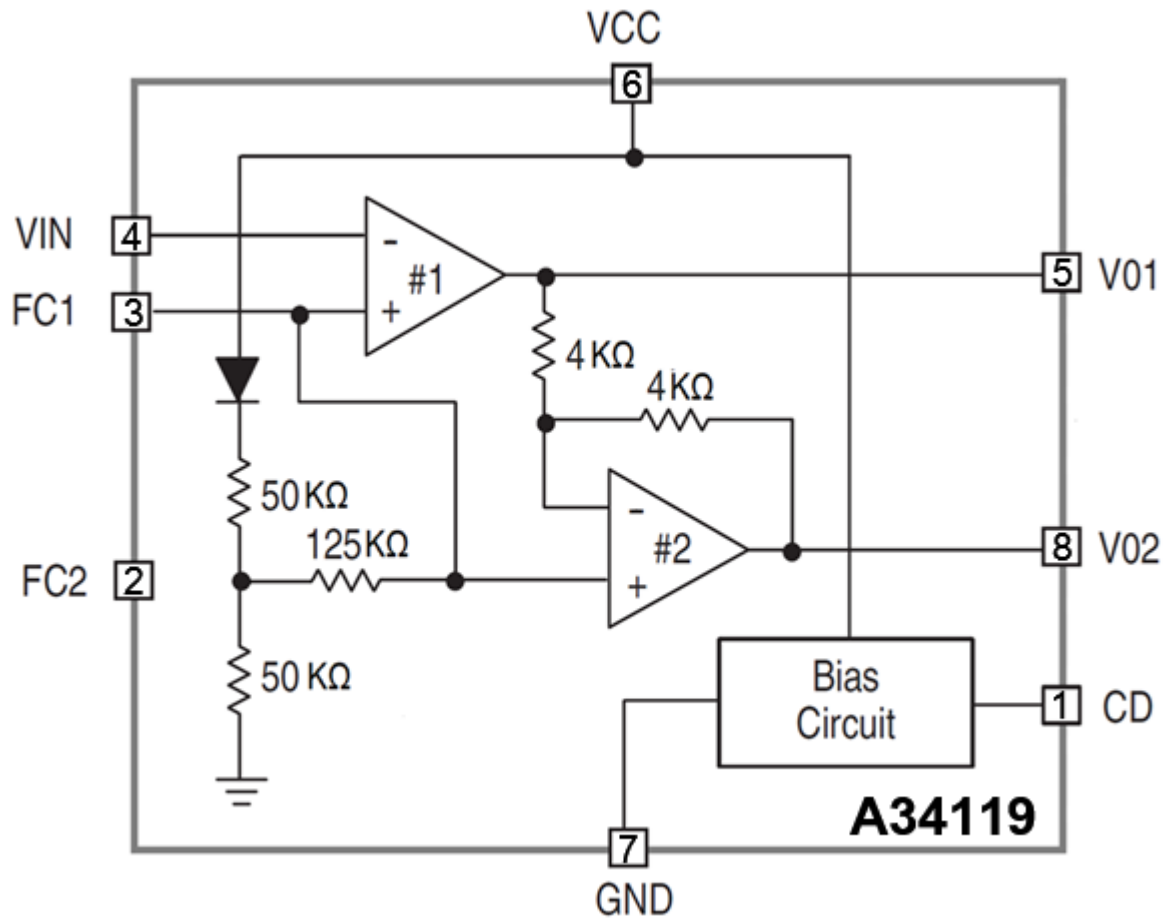


Fig 5. Split Supply Operation





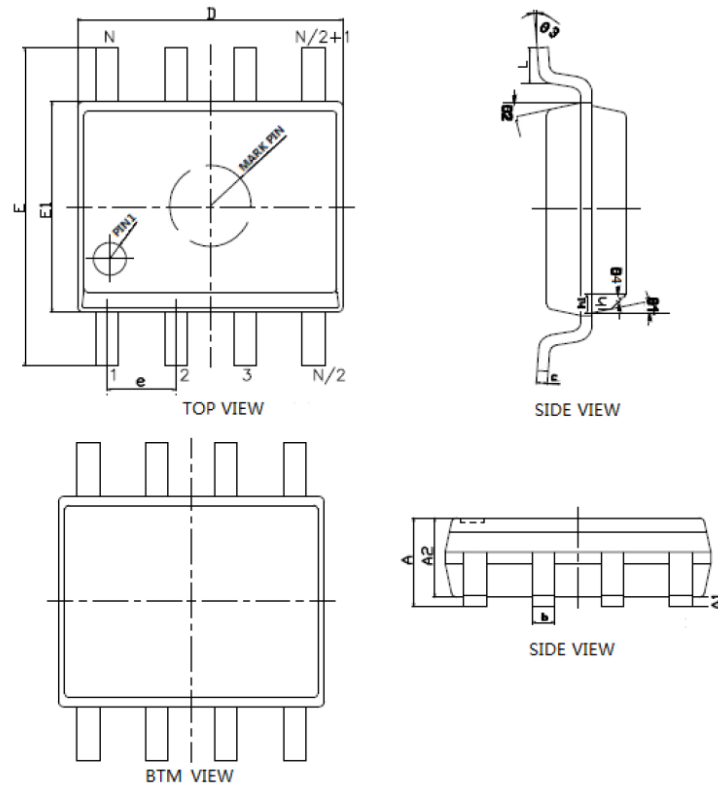
BLOCK DIAGRAM





PACKAGE INFORMATION

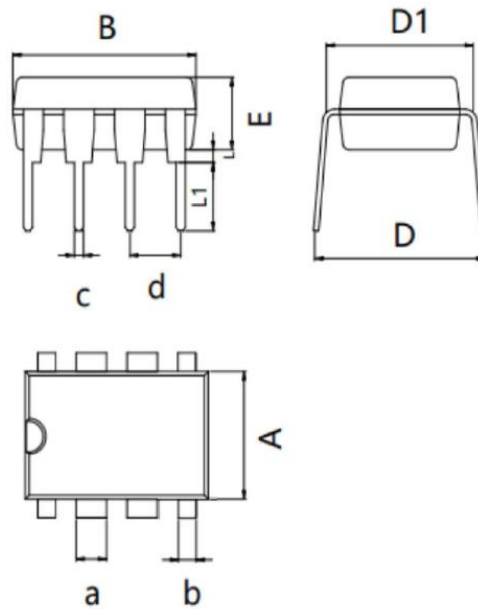
Dimension in SOP8 (Unit: mm)



Symbol	Min.	Max.
A	1.499	1.750
A1	0.102	0.249
A2	1.397	-
b	0.406TYP	
c	0.2TYP	
D	4.852	4.952
E	5.852	6.198
E1	3.877	3.997
e	1.27TYP	
h	-	-
h1	0.254	0.457
L	0.406	0.889
θ1	12°TYP	
θ2	12°TYP	
θ3	0°	8°
θ4	45	



Dimension in DIP8 (Unit: mm)



Symbol	Min	Max
A	6.10	6.68
B	9.00	9.50
D	8.40	9.00
D1	7.42	7.82
E	3.10	3.55
L	0.50	0.70
L1	3.00	3.60
a	1.50	1.55
b	0.85	0.90
c	0.40	0.50
d	2.54 BSC	



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