



三合微科技股份有限公司
SAMHOP Microelectronics Corp.

SM7181
ECHO

DESCRIPTIONS

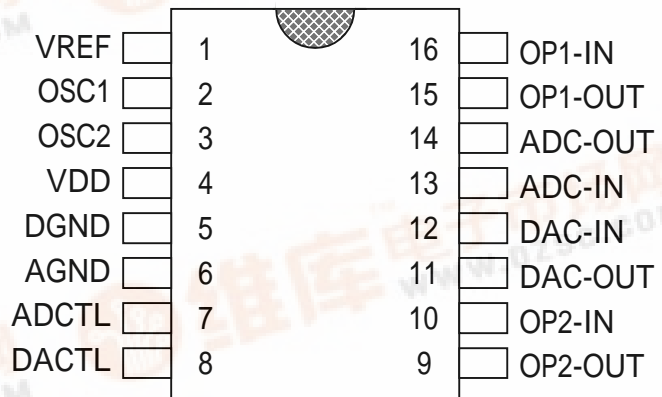
SM7181 is an Audio Echo Processor using CMOS Technology. It has buildin AD/DA and 8KBits SRAM for echo effect time delay.

FEATURE

- * Buildin adjustable OSC.
- * Buildin power on reset circuit.
- * Buildin 8KBits SRAM for delay control.
- * By change oscillator resistor to echo effect time.

APPLICATIONS

- * VCD
- * Karaoke
- * TV
- * Audio System
- * Car Stereo





PIN DESCRIPTION

PIN No.	PIN NAME	I/O	FUNCTION
1	VREF	AI/O	Analog referance voltage
2	OSC1	IN	Oscillator control Resistor
3	OSC2	OUT	
4	VDD	Power	Power
5	DGND	Power	Digital negative power supply
6	AGND	Power	Analog negative power supply
7	ADCTL	AIN	ADC control
8	DACTL	AIN	DAC control
9	OP2-OUT	AOUT	OP2 output
10	OP2-IN	AIN	OP2 input
11	DAC-OUT	AOUT	DAC OP output
12	DAC-IN	AIN	DAC OP input
13	ADC-IN	AIN	ADC OP input
14	ADC-OUT	AOUT	ADC OP output
15	OP1-OUT	AOUT	OP1 output
16	OP1-IN	AIN	OP1 input

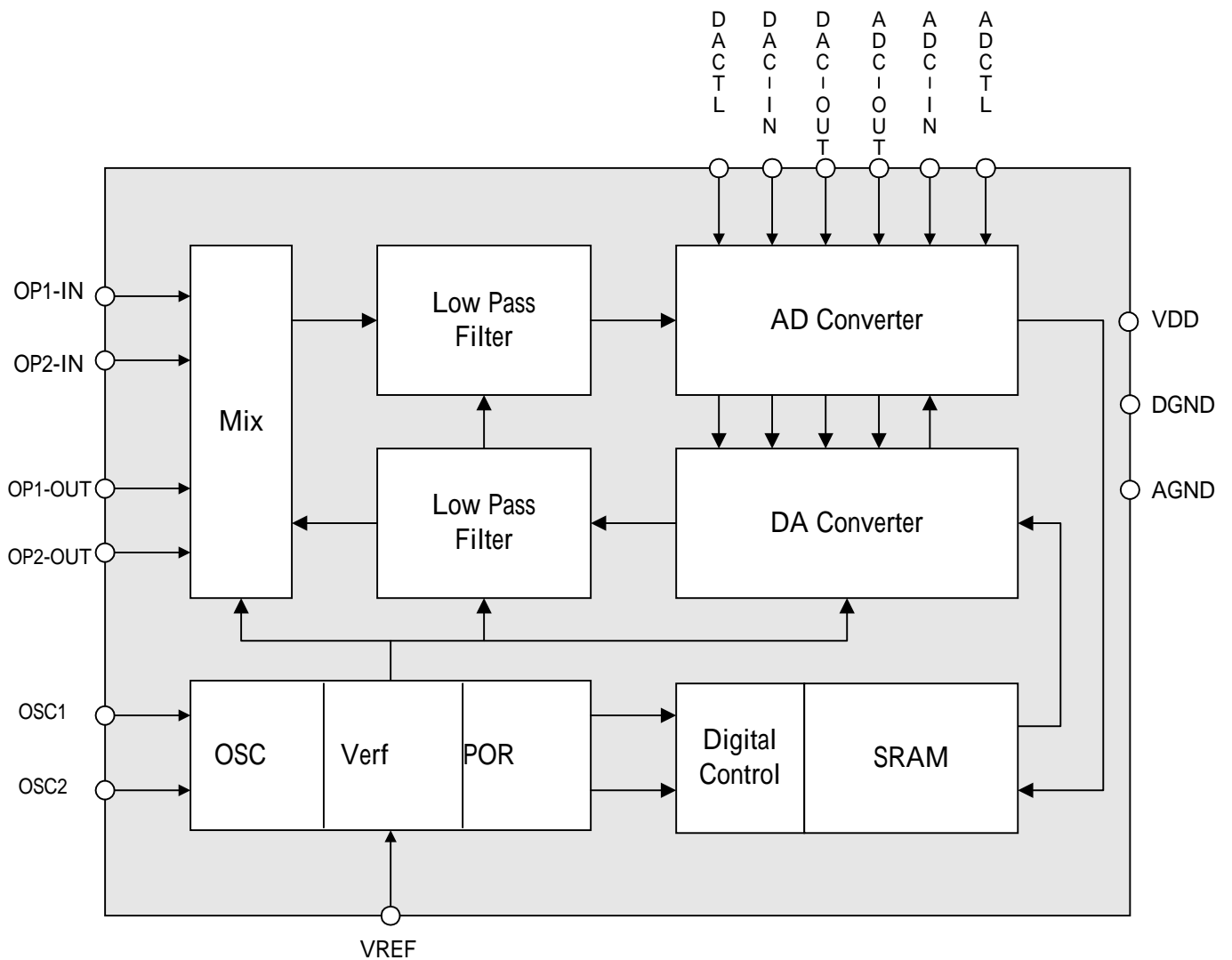
AIO: Analog input/output

AIN: Analog input

AOUT: Analog output



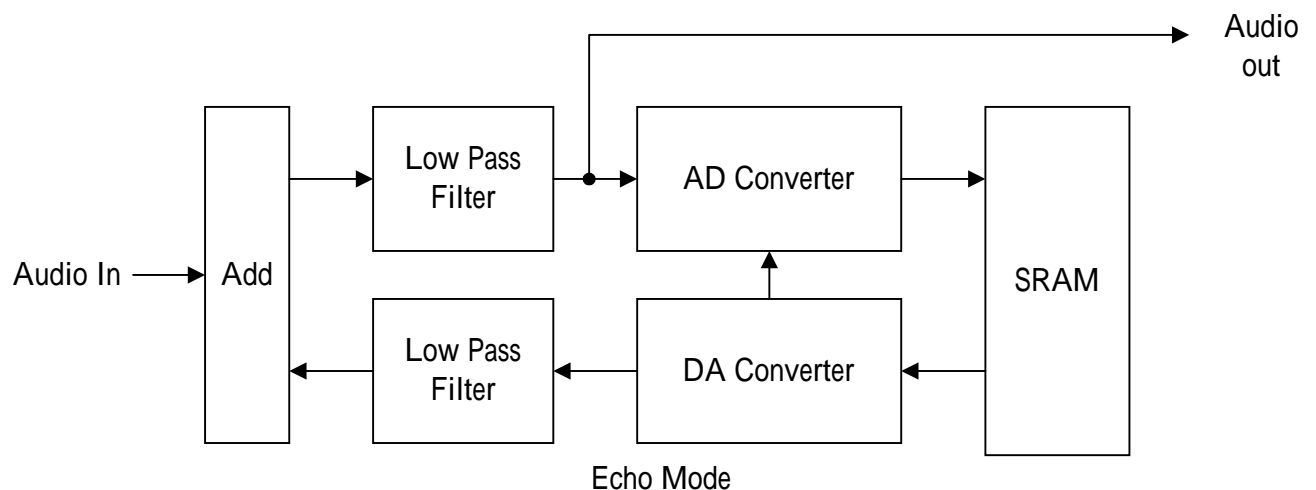
BLOCK DIAGRAM





Echo Mode & Surround Mode

SM7181 digitize the audio signal through A/D converter and store the value in a First-in- First-out 8Kbits SRAM. After 3.2RCms of delay time the value store in the SRAM will be read out and reconstruct by D/A converter then add with the present sound to become an echo signal output. The echo delay is control by the RC of Pin 2, Pin 3.



ABSOLUTE MAXIMUM RATINGS

(Ta = 25 °C, unless otherwise noted)

Symbol	Description	Limits	Unit
Vcc	Supply voltage	6.5	V
Icc	Supply current	100	mA
Pd	Power dissipation	1.7	W
Topr	Operation temperature	-20 ~ 75	° C
Tstg	Storage temperature	-25 ~ 125	° C



AC CHARACTERISTICS

($V_{cc} = 5.0V$, $f_{in} = 1KHz$, $V_i = 100mV_{rms}$, $f_{ck} = 4MHz$, $T_a = 25\text{ }^{\circ}C$, unless otherwise noted)

SYMBOL	PARAMETER	Test condition		Min	Typ	Max	Unit
I _{cco}	Supply current				60	100	mA
G _v	Voltage gain	R _L = 47K Ω			-0.5	2.5	dB
V _{omax}	Maximum output voltage	THD = 10%		0.7	1.2		V _{rms}
THD	Output distortion	30KHz L.P.F.	Echo mode		1.5	3.0	%
			Surround mode		0.3	1.0	%
N _o	Output noise voltage	DIN Audio	Echo mode		-85	-60	dBV
			Surround mode		-90	-70	dBV
PSRR	Power supply rejection ratio	$\Delta V_{cc} = -20dBV$ $f = 100Hz$			-40	-25	dB
T _{mute}	Mute time	Echo mode		515	520	525	msec
		Surround mode		122	127	132	msec

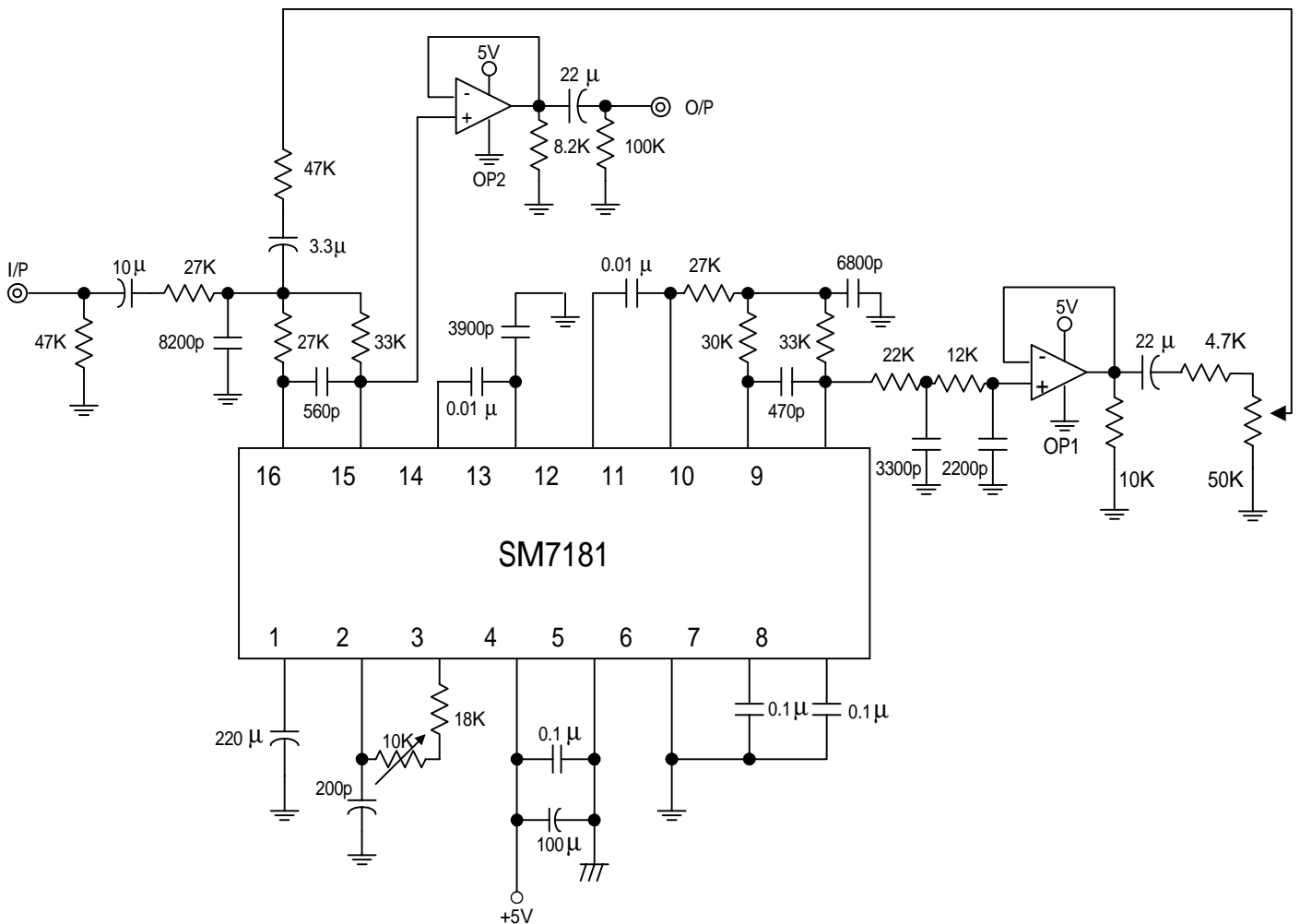
DC CHARACTERISTICS



Symbol	Parameter	Limits			Unit
		Min	Typ	Max	
V _{cc}	Supply voltage	4.5	5	5.5	V
I _{cc}	Supply current		60	100	mA
V _{IH}	"H" input voltage	3V			V
V _{IL}	"L" input voltage			1.5V	V



ECHO MODE APPLICATION CIRCUIT

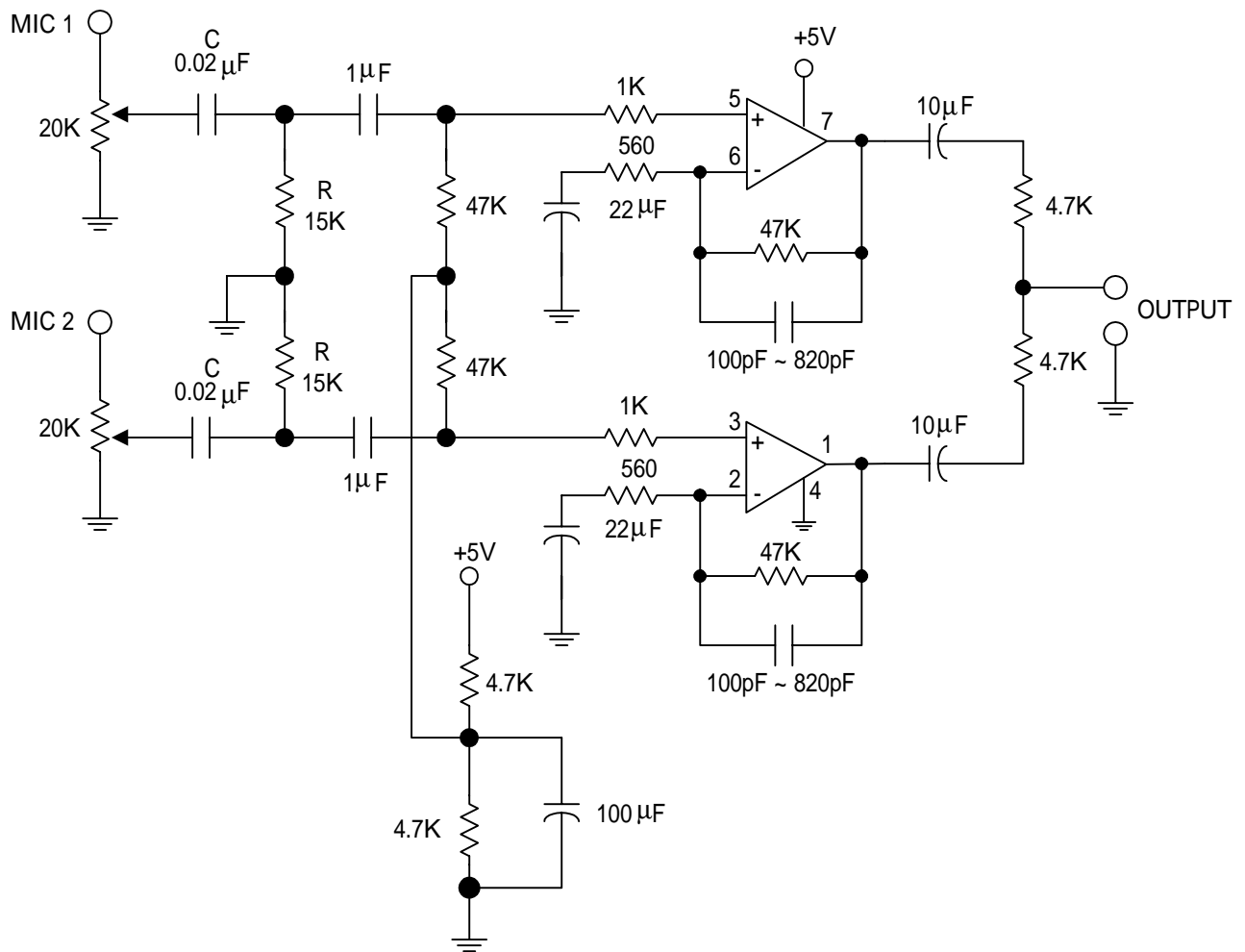
Echo Mode



- 1  Represent Analog Ground.
- 2  Represent Digital Ground.



MIC PRE-AMP CIRCUIT





SURROUND MODE APPLICATION CIRCUIT

