



## DESCRIPTIONS:

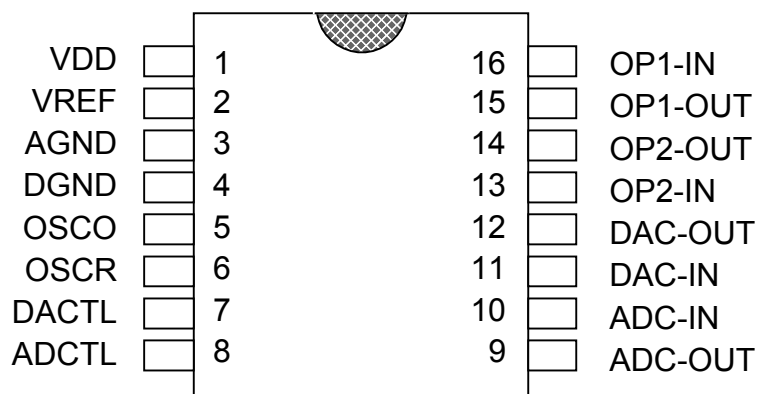
SM7186 is an Audio Echo Processor using CMOS Technology. It has built-in AD/DA and 48KBits SRAM for time delay. External Resister adjust large range oscillation frequency and control delay time. Many combination to fit your applications.

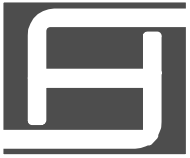
## FEATURE:

- \* Built-in adjustable OSC.
- \* Built-in power on reset circuit.
- \* Built-in 48KBits SRAM for delay control.
- \* Adjustable delay time setting:  
30ms ~ 700ms
- \* Low operating current.

## APPLICATIONS:

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



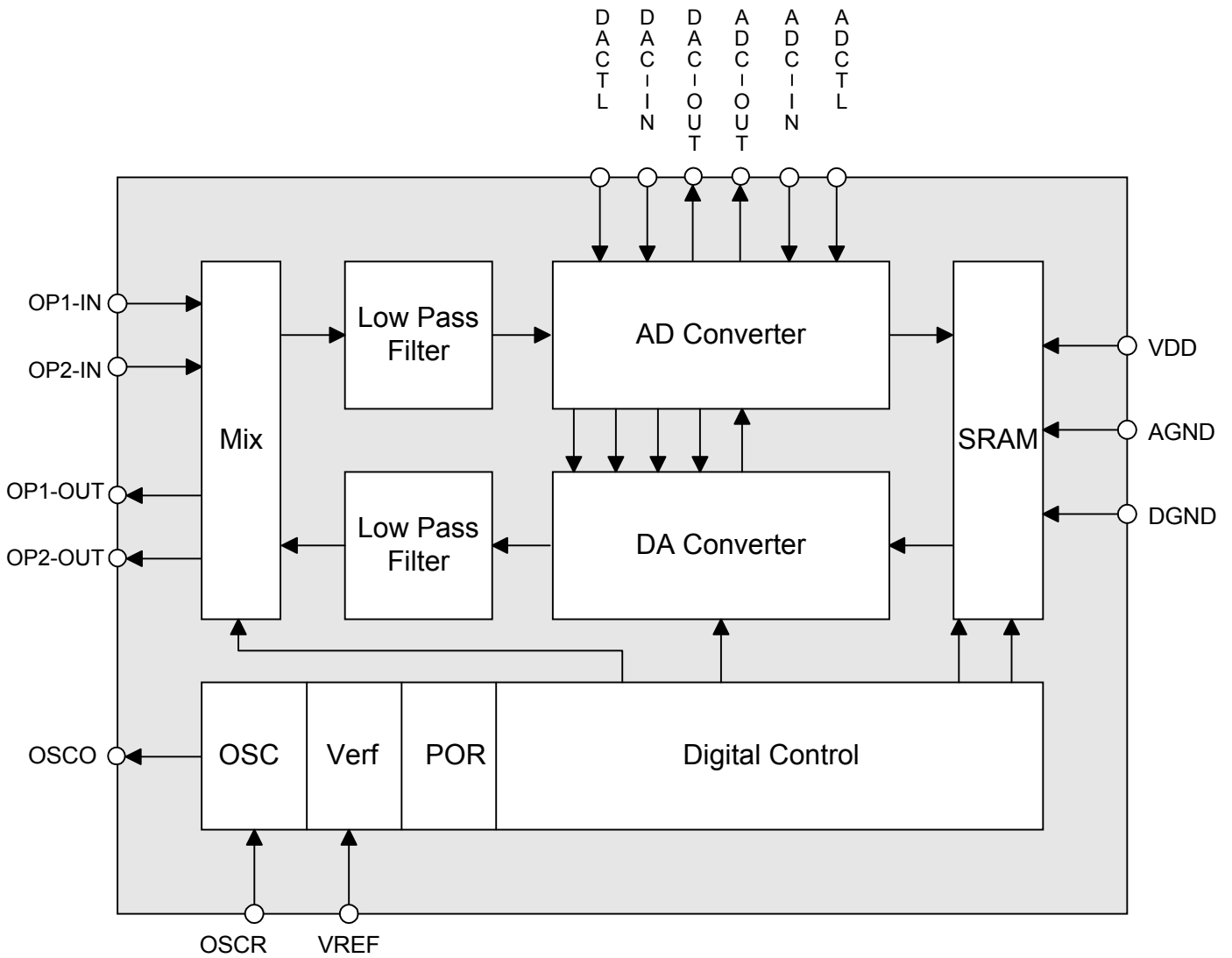


## PIN DESCRIPTION

PIN No.	PIN NAME	I/O	FUNCTION
1	VDD	Power	Positive power supply
2	VREF	A/I/O	Analog reference voltage
3	AGND	Power	Analog negative power supply
4	DGND	Power	Digital negative power supply
5	OSCO	OSC	System clock output
6	OSCR	OSC	Add resistor to modify internal OSC
7	DACTL	AIN	DAC control
8	ADCTL	AIN	ADC control
9	ADC-OUT	AOUT	ADC OP output
10	ADC-IN	AIN	ADC OP input
11	DAC-IN	AIN	DAC OP input
12	DAC-OUT	AOUT	DAC OP output
13	OP2-IN	AIN	OP2 input
14	OP2-OUT	AOUT	OP2 output
15	OP1-OUT	AOUT	OP1 output
16	OP1-IN	AIN	OP1 input

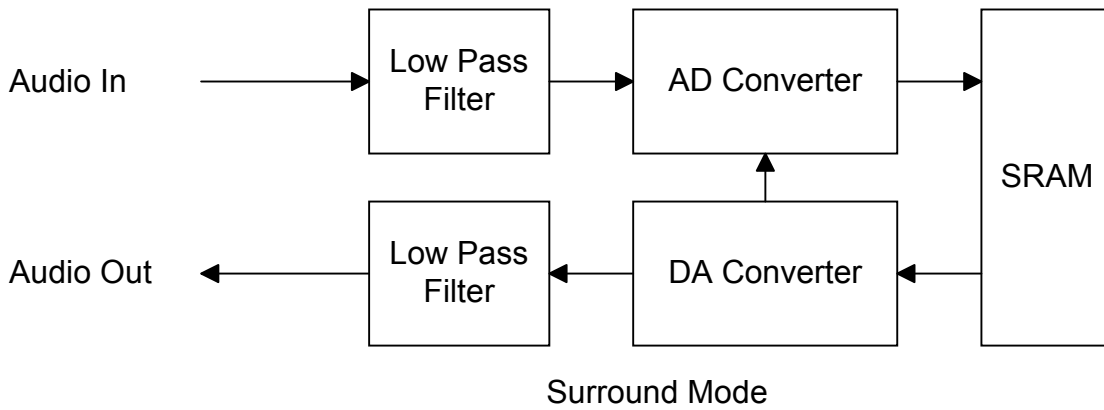
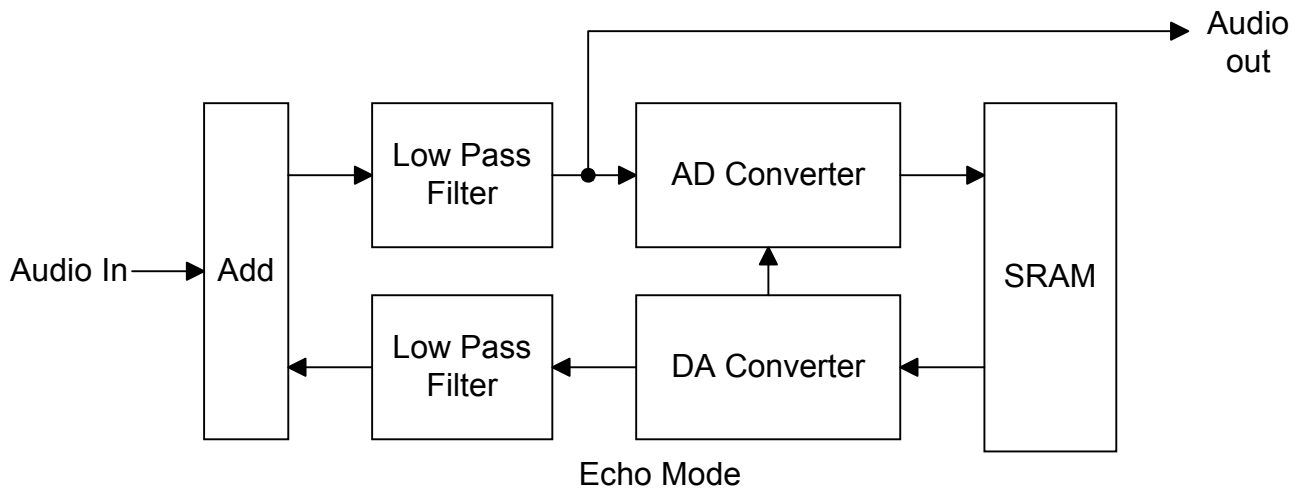


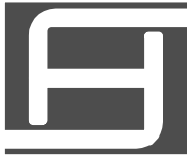
## BLOCK DIAGRAM





## Echo Mode & Surround Mode





## DELAY TIME TABLE

OSCR	Fosc (MHz)	Delay Time ms
160K $\Omega$	1.047	737.28
75K $\Omega$	1.989	368.64
33K $\Omega$	3.935	184.32
24K $\Omega$	4.893	160.00
18K $\Omega$	5.974	122.88
11K $\Omega$	7.977	92.16
6.8K $\Omega$	9.99	73.73
4.7K $\Omega$	11.84	61.44
3.3K $\Omega$	13.72	52.66
2.4K $\Omega$	15.94	46.08
1.8K $\Omega$	18.18	40.96
1.5K $\Omega$	19.68	36.86
1.1K $\Omega$	22.05	33.51
820 $\Omega$	23.87	30.72



## AC CHARACTERISTICS

(  $V_{CC} = 5.0V$ ,  $f_{in} = 1KHz$ ,  $V_i = 100mV_{rms}$ ,  $f_{ck} = 4.608MHz$ ,  $T_a = 25^{\circ}C$ , unless otherwise noted )

SYMBOL	PARAMETER	Test condition	Min	Typ	Max	Unit
I <sub>cco</sub>	Supply current			10	20	mA
G <sub>v</sub>	Voltage gain	$R_L = 47K\Omega$		-0.5	2.5	dB
V <sub>omax</sub>	Maximum output voltage	THD = 10%	0.8	1.4		V <sub>rms</sub>
THD	Output distortion			0.38	0.9	%
No	Output noise voltage			-85	-70	dBV
PSRR	Power supply rejection ratio	$\Delta V_{CC} = -20dBV$ $f = 100Hz$		-40	-25	dB
T <sub>mute</sub>	Mute time		560	600	640	msec

## DC CHARACTERISTICS

Symbol	Parameter	Limits			Unit
		Min	Typ	Max	
V <sub>CC</sub>	Supply voltage	4.5	5	5.5	V
I <sub>CC</sub>	Supply current		10	20	mA
V <sub>IH</sub>	"H" input voltage	0.7V			V
V <sub>IL</sub>	"L" input voltage			0.3V	V



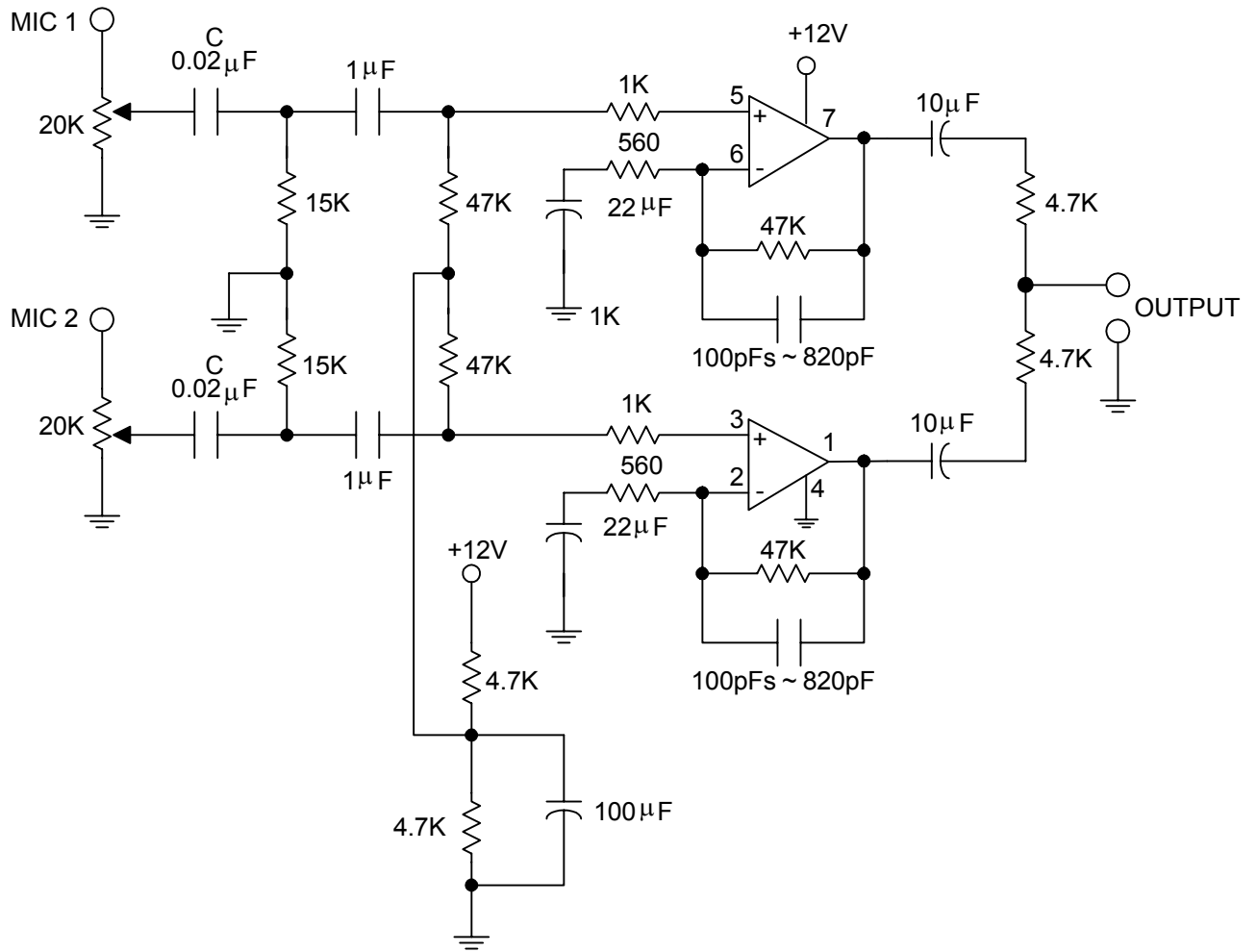
### ABSOLUTE MAXIMUM RATINGS

( 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



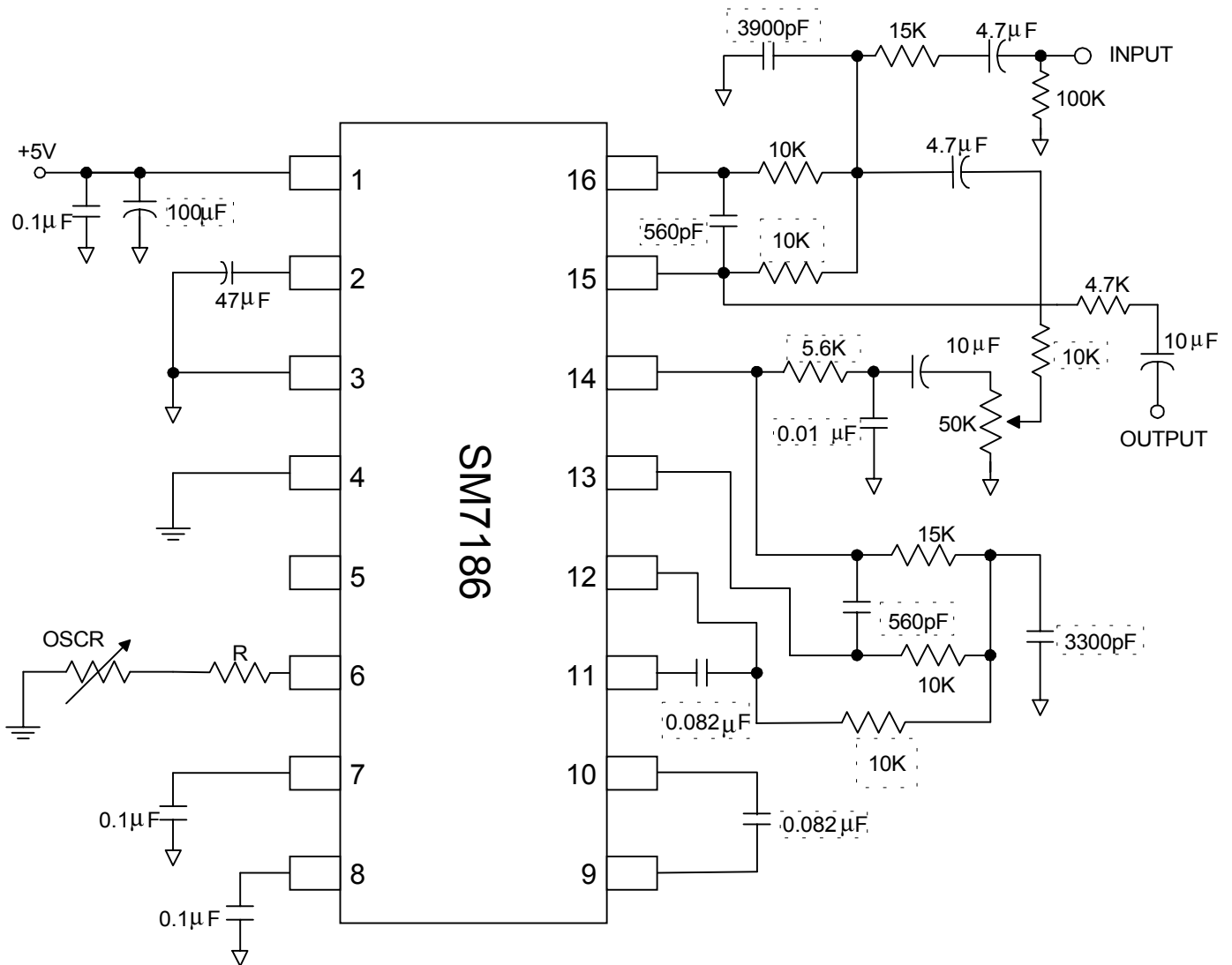
### MIC PRE-AMP CIRCUIT







ECHO MODE APPLICATION CIRCUIT(MODIFIED)



1. Pin 6 R is approximate 1K~160kΩ .
2. ↓ Represent Analog Ground.
3. ≡ Represent Digital Ground.



## SURROUND MODE APPLICATION CIRCUIT

