

HK723

AUDIO CONTROLLER IC

AUDIO ECHO PROCESSOR (II)

Features

- * Built-in adjustable OSC.
- * Adjustable delay time setting: 30 ms ~ 700 ms
- * Built-in power on reset circuit.
- * Built-in 45KBits RAM for delay control.
- * Low operating current.

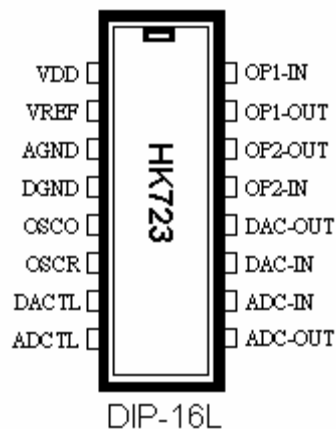
General Description

HK723 is an Audio Echo Processor using CMOS Technology. It has built-in AD/DA and 45KBits RAM for time delay. External Resister adjust large range oscillation frequency and control delay time. Many combination to fit your applications.

Application

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

PinOut Diagram



Pin Description

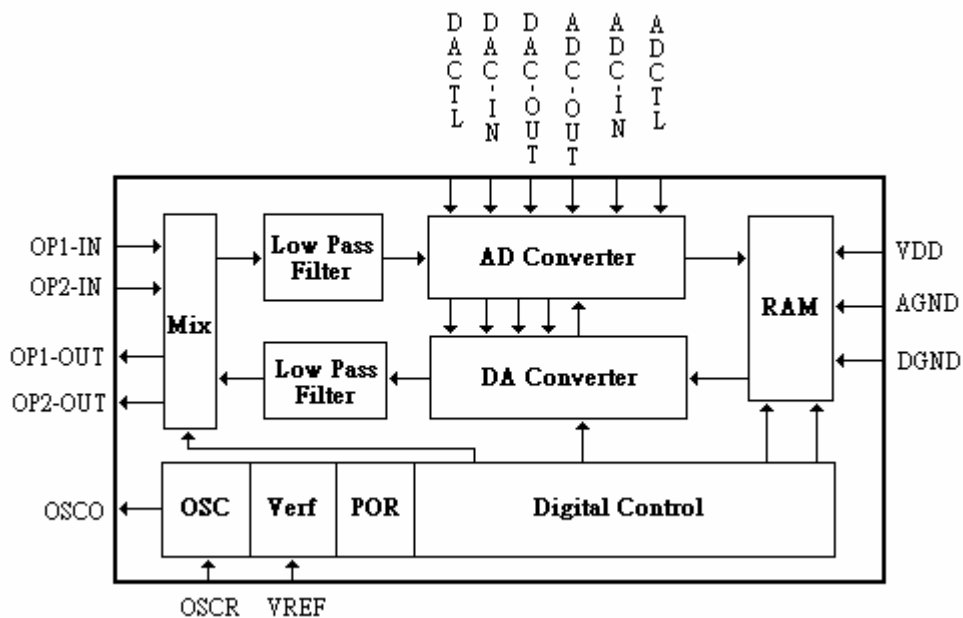
PIN NO	PIN NAME	DESCRIPTION	I/O
1	VDD	Positive power supply	Power
2	VREF	Analog reference voltage	AI/O
3	AGND	Analog negative power supply	Power
4	DGND	Digital negative power supply	Power
5	OSCO	System clock output	OSC
6	OSCR	Add resistor to modify internal OSC	OSC
7	DACTL	DAC control	AIN
8	ADCTL	ADC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

HK723

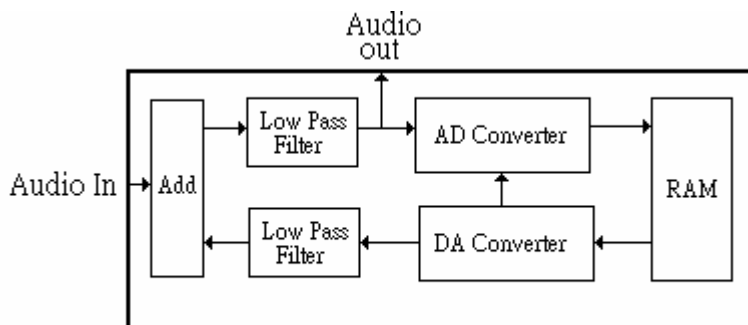
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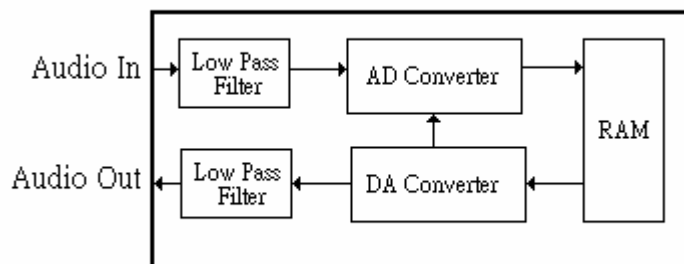
Block Diagram



Echo Mode & Surround Mode



Echo Mode



Surround Mode

HK723

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Delay Time Table

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

AC Characteristics

(V_{cc} = 5.0V, f_{in} = 1KHz, V_i = 100mVrms, f_{ck} = 4.608MHz, T_a = 25°C , unless otherwise noted)

Symbol	Parameter	Test condition	Min	Typ	Max	Unit
I _{cco}	Supply current			10	20	mA
G _v	Voltage gain	RL = 47K Ω		-0.5	2.5	dB
V _{omax}	Maximum output voltage	THD = 10%	0.8	1.4		Vrms
THD	Output distortion			0.38	0.9	%
N _o	Output noise voltage			-85	-70	dBV
PSRR	Power supply rejection ratio	Δ V _{cc} = -20 dBV f = 100 Hz		-40	-25	dB
T _{mute}	Mute time		560	600	640	msec

DC Characteristics

Symbol	Parameter	Limits			Unit
		Min	Typ	Max	
V _{cc}	Supply voltage	4.5	5	5.5	V
I _{cc}	Supply current		10	20	mA
V _{IH}	"H" input voltage	0.7V			V
V _{IL}	"L" input voltage			0.3V	V

HK723

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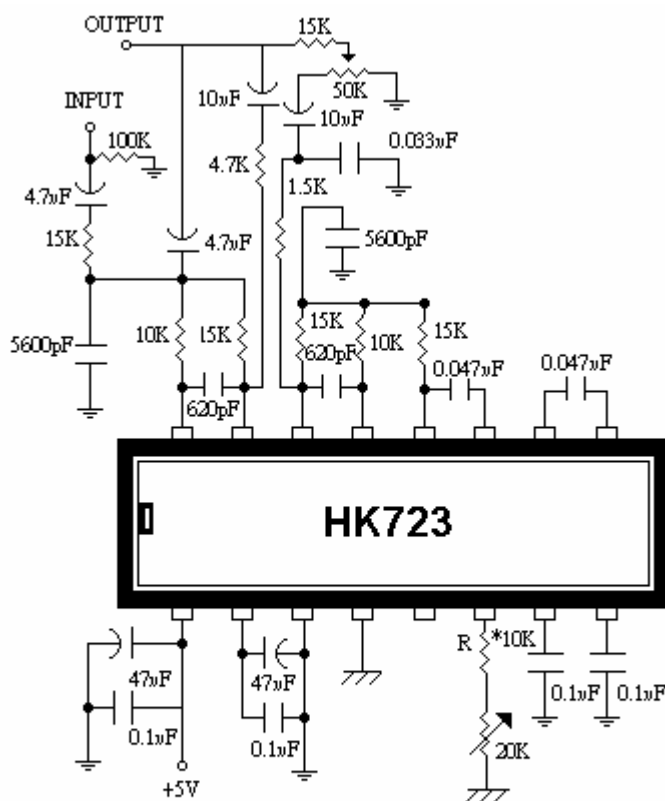
Absolute Maximum Ratings

($T_a = 25^\circ\text{C}$, 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	$^\circ\text{C}$
Tstg	Storage temperature	-25 ~ 125	$^\circ\text{C}$

Application Circuit

Echo Mode



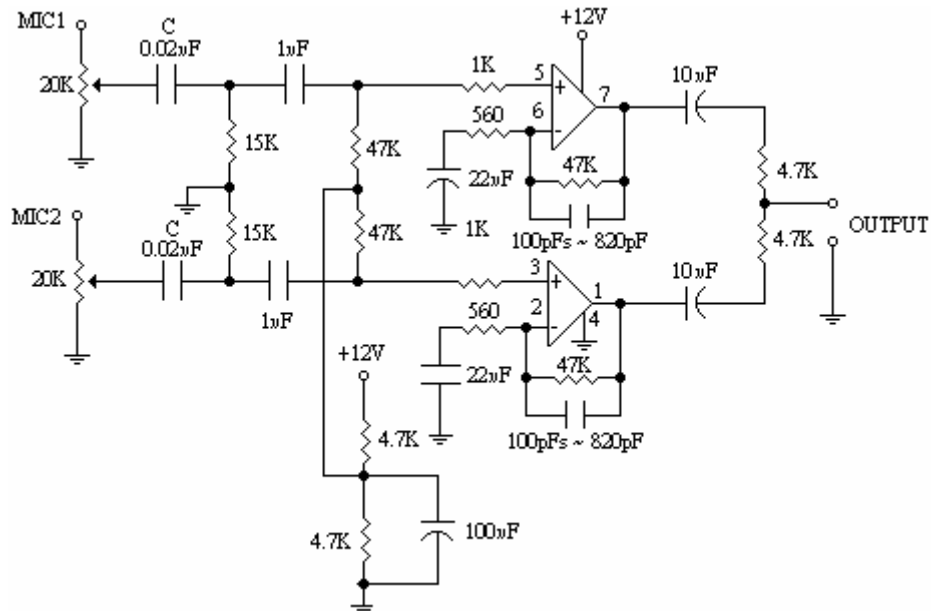
1. Pin 6, R is approximate 1K ~ 160K
2. \perp Represent Analog Ground
3. /// Represent Digital Ground

HK723

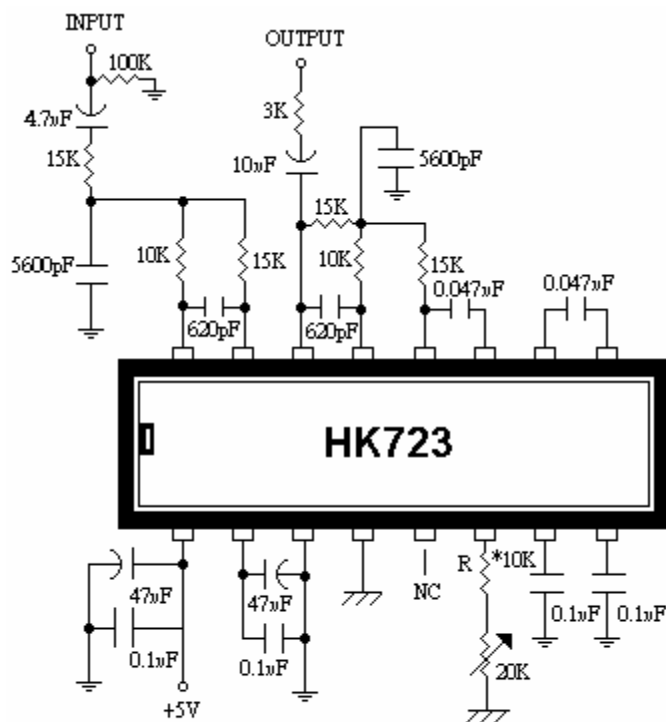
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AUDIO ECHO PROCESSOR (II)

Mic Pre-Amp Circuit



Surround Mode



1. Pin 6, R is approximate 1K ~ 160K
2. \perp Represent Analog Ground
3. /// Represent Digital Ground