

Features

- It includes an internal VCO (Voltage-controlled oscillator) for the system clock and can be adjusted to the suitable frequency by using the external resistor and capacitor.
- It includes an A/D , D/A converter (adaptive delta modulation) , two low pass filters and a 32k bits SRAM .

Description

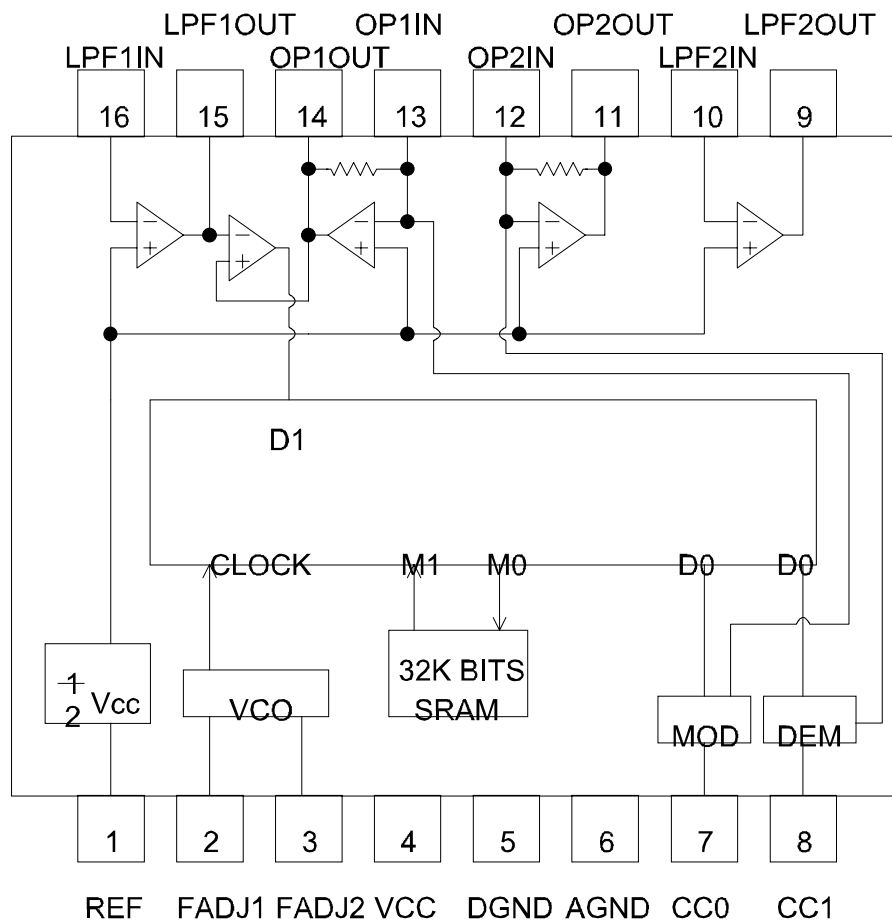
ES56033 is an echo effect generator IC . It has an internal VCO circuit to provide the system clock , and it is easily to adjust the suitable frequency with external variable resistor . It has an ADC , DAC and uses digital processing audio signal for the delay time .

ES56033 can be easily used in the karaoke , T.V. and other electronic instruments .

Application

- KARAOKE
- TV
- Video disc player

Function Block Diagram



Pad assignment



Pin description

Pin	Name	Type	Function
1	REF	I	Reference voltage (= 1/2 VCC) .
2	FADJ1		Frequency_adjust 1 .
3	FADJ2		Frequency_adjust 2 .
4	VCC	I	Supply voltage input .
5	DGND		Digital ground .
6	AGND		Analog ground .
7	CC0		Current control 0 .
8	CC1		Current control 1 .
9	LPF2OUT	O	Low pass filter 2 output .
10	LPF2IN	I	Low pass filter 2 input .
11	OP2OUT	O	It can be used as demodulated integrator by connected capacitor .
12	OP2IN	I	It can be used as demodulated integrator by connected capacitor .
13	OP1IN	I	It can be used as modulated integrator by connected capacitor .
14	OP1OUT	O	It can be used as modulated integrator by connected capacitor .
15	LPF1OUT	O	Low pass filter 1 output .
16	LPF1IN	I	Low pass filter 1 input .

Absolute Maximum Ratings

($T_a = 25^{\circ}\text{C}$, unless otherwise noted)

Symbol	Description	Limits	Unit
Vcc	Supply voltage	6.5	V
Topr	Operation temperature	-20~75	$^{\circ}\text{C}$
Tstg	Storage temperature	-25~125	$^{\circ}\text{C}$
Pd	Power dissipation	0.9	W

Recommended Operating Conditions

Supply voltage range 4.5 ~ 5.5 V

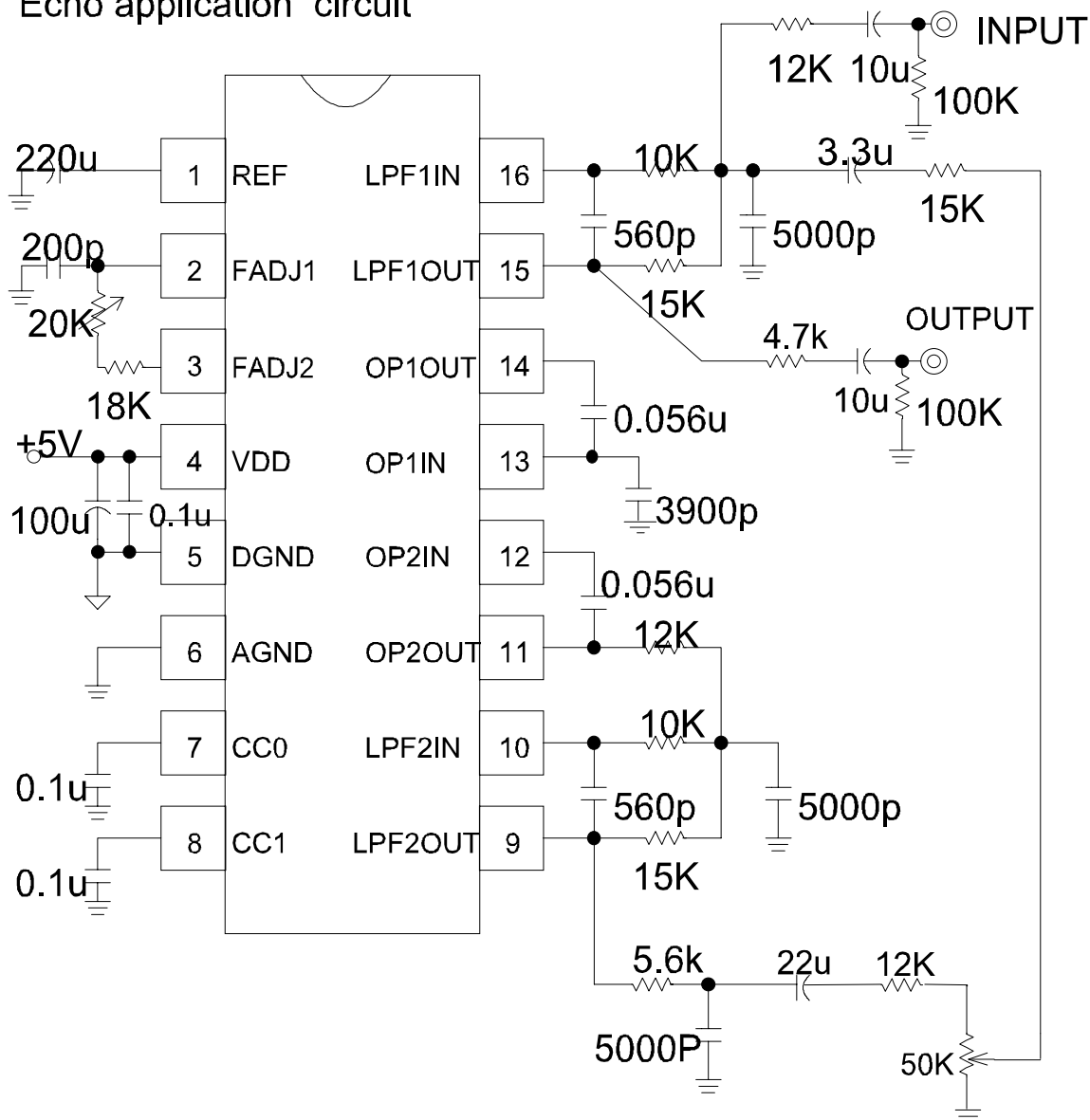
Rated supply voltage 5 V

Electrical Characteristics

($V_{CC} = 5.0\text{ V}$, $f_{ck}=500\text{KHz}$, $f_{in} = 1\text{ KHz}$, $V_i = 100\text{ mVrms}$,
 $T_a = 25^\circ\text{ C}$, unless otherwise noted)

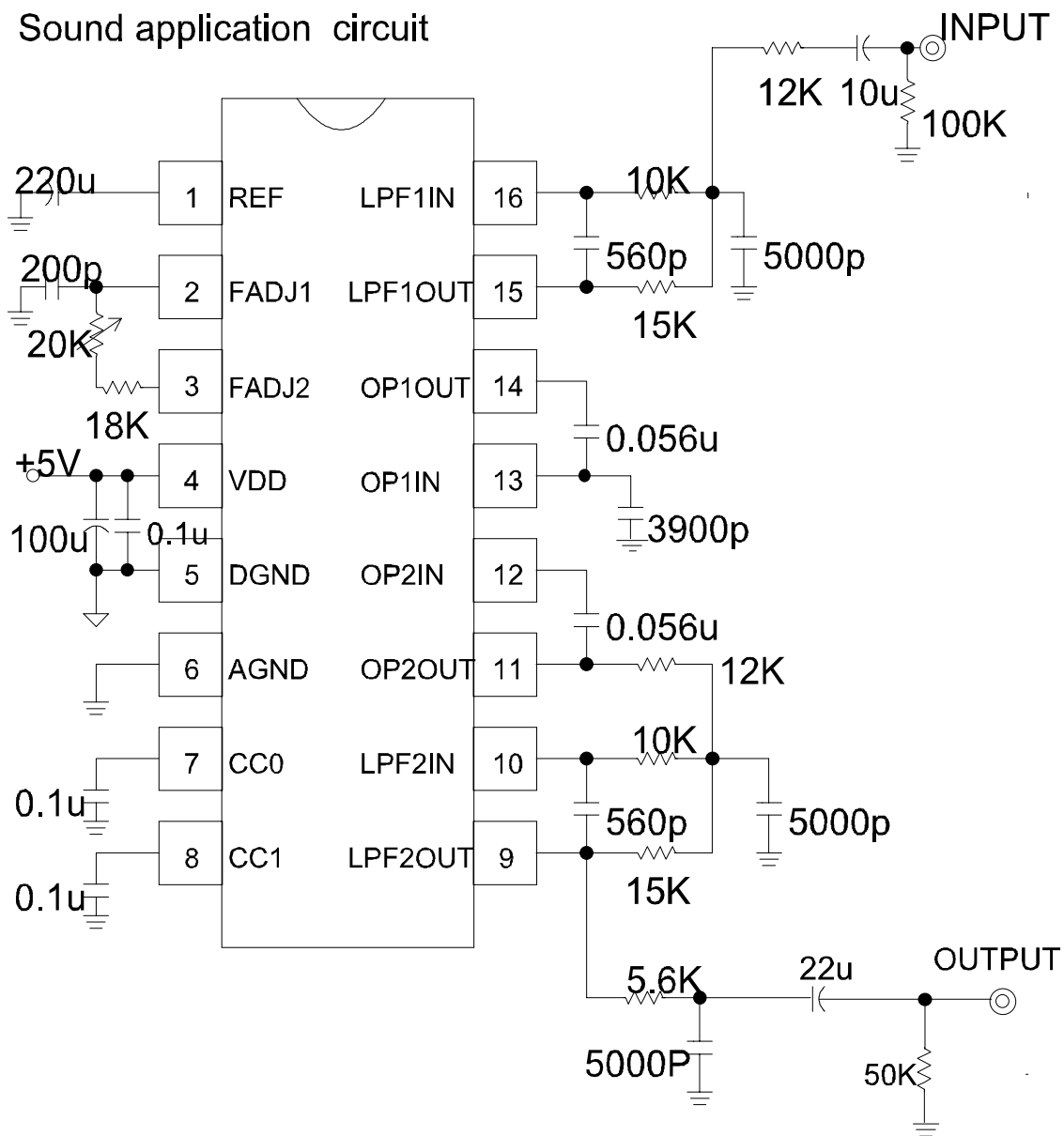
Symbol	Parameter	Test condition	Min	Typ	Max	Unit
I _{cc}	Supply current			10	12	mA
G _v	Gain	R _{load} =50 K Ω	-2.5	0	2.5	dB
THD	Total harmonic distortion			0.5	1.5	%
No	Noise			-75	-65	dBV

Echo application circuit



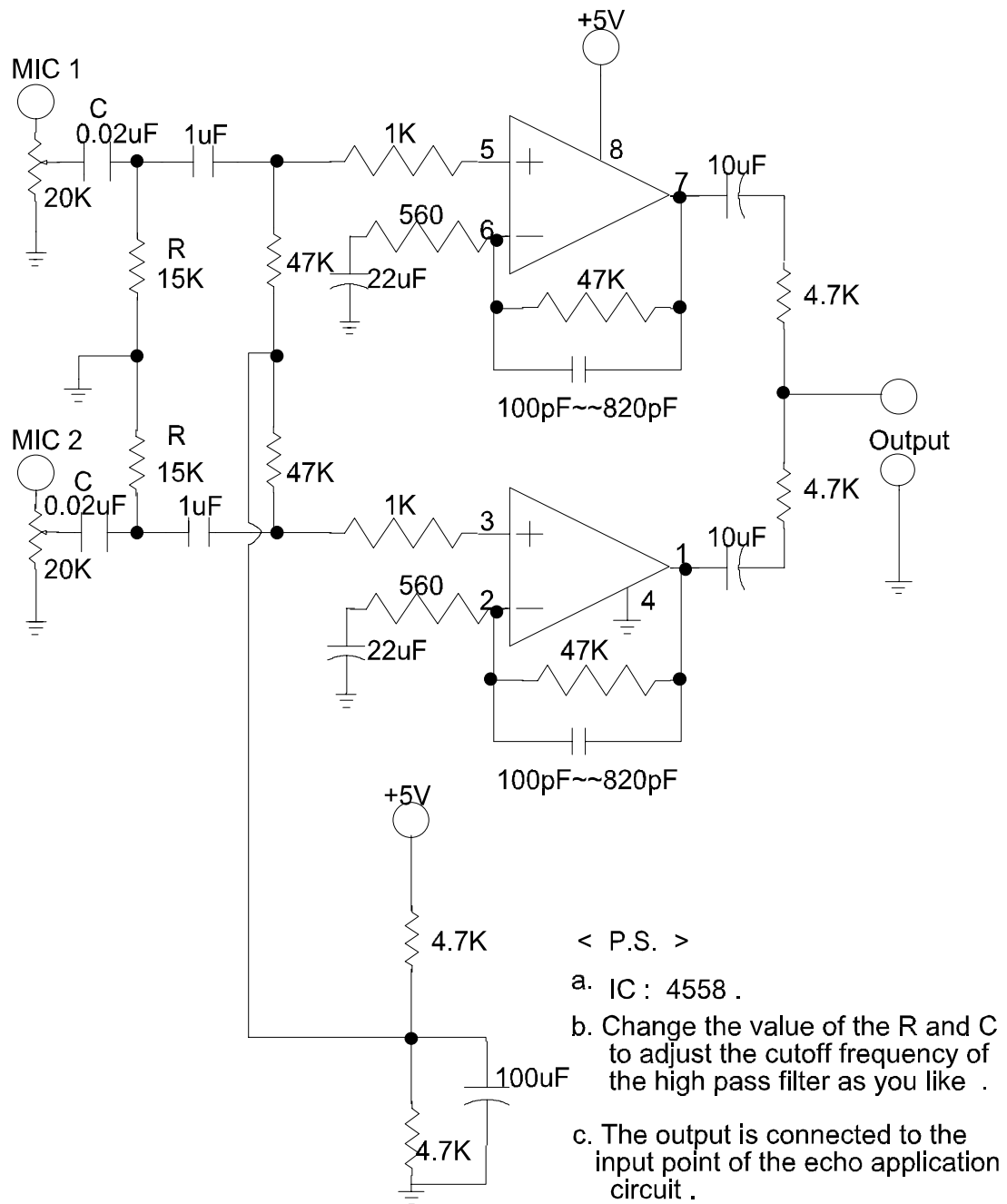
*Note : ES56033's working frequency (Fw) can be measured from the Pin 3 .
And advise ES56033's Fw from 230KHz to 400KHz .

Sound application circuit

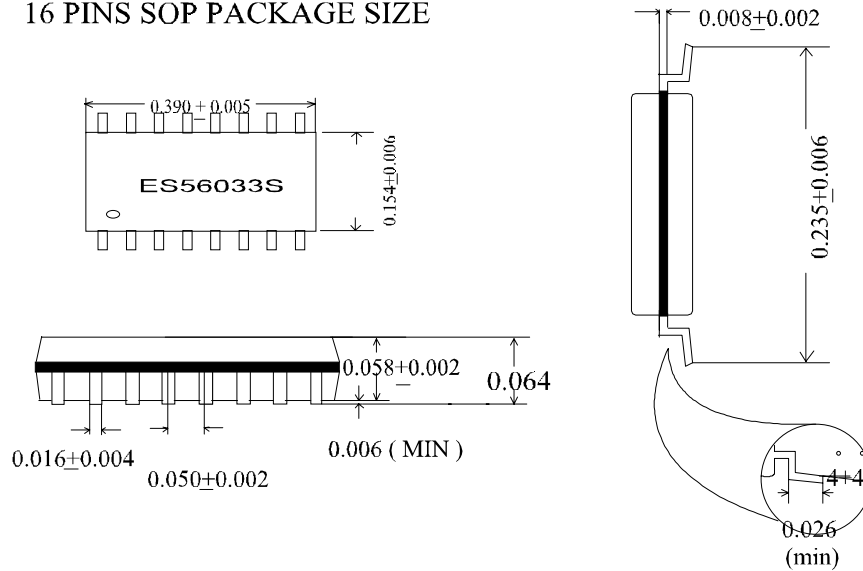


* ECHO application circuit (continued)

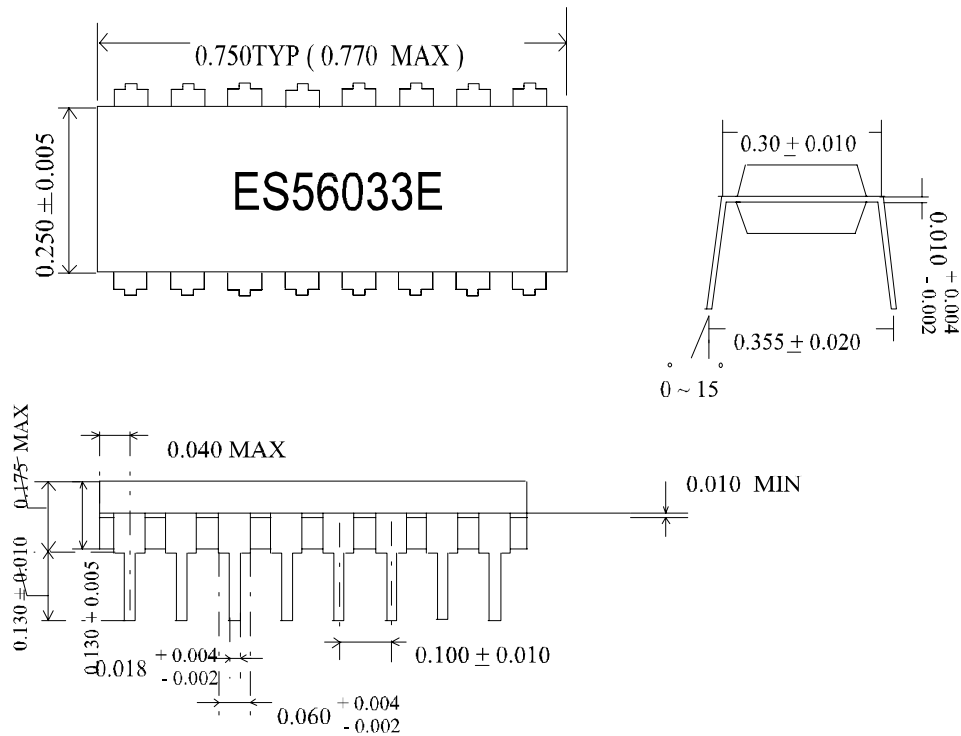
MIC Pre-Amp Application circuit



16 PINS SOP PACKAGE SIZE



16 PINS DIP PACKAGE SIZE



unit : inch