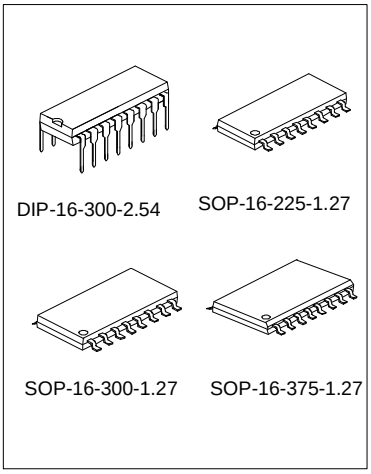
ECHO SOUND EFFECT PROCESSOR

DESCRIPTION

SC5399 is an echo audio processor IC utilizing CMOS technology which is equipped with ADC and DAC, high sampling frequency and internal memory of 44K digital processing is used to generate the delay time. It also features an internal VCO circuit in the system clock, thereby, making the frequency easily adjustable. SC5399 boast of very low distortion (THD<0.5%) and very low noise (N0<-90dBV), thus producing high quality audio output. The pin assignments and application circuit are optimized for easy PCB layout cost saving advantage.



FEATURES

* CMOS technology
* Least external components
* Auto reset function
* Low noise, No<-90dBV typical
* Low distortion, THD<0.5% typical
* External adjustable VCO
* Available in 16 pins, DIP or SO package.

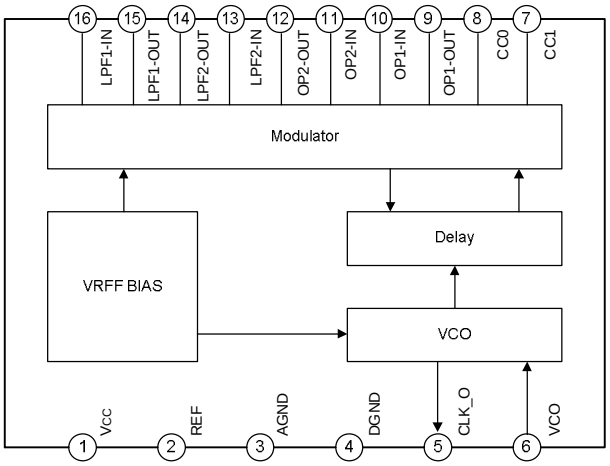
ORDERING INFORMATION

Part No.	Package
SC5399	DIP-16-300-2.54
SC5399S	SOP-16-225-1.27
SC5399A	SOP-16-300-1.27
SC5399B	SOP-16-375-1.27

APPLICATIONS

* Video tape recorder
* Video compact disk
* Television
* CD player
* Car stereo
* KARAOKE mixer
* Electronic musical instrument
* Audio Equipment with echo processor

BLOCK DIAGRAM



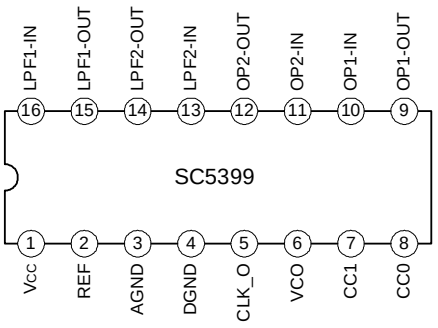
ABSOLUTE MAXIMUM RATINGS (Tamb=25°C)

Characteristics	Symbol	Value	Unit
Supply Voltage	V_{CC}	6.5	V
Supply Current	I_{CC}	100	mA
Power Dissipation	P_D	1.7	W
Operation Temperature	T_{opr}	-20~75	°C
Storage Temperature	T_{stor}	-25~125	°C

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Operating Supply Voltage	V_{CC}		4.5	5	7.5	V
Operating Supply Current	I_{CC}			18	30	mA
Voltage Gain	G_V	Load 47K		-0.5	2.5	dB
Power Supply Rejection Ratio	PSRR	ΔV_{CC}=0.1V_{CC} F=100Hz		-40	-30	dB
Output Distortion	THD	Filter=Audio		0.3	1.0	%

PIN DIAGRAM



PIN FUNCTION

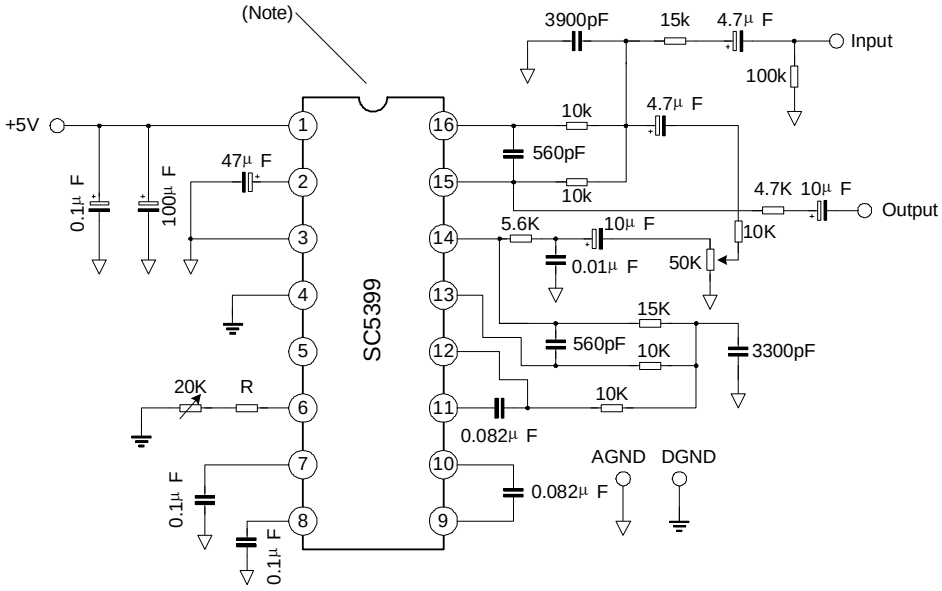
Pin No.	Symbol	Description
1	V_{CC}	Analog supply voltage
2	REF	Analog reference voltage
3	AGND	Analog ground
4	DGND	Digital ground
5	CLK_O	System clock test pin
6	VCO	Frequency adjustable pin
7	CC1	Current control
8	CC0	Current control
9	OP1-OUT	This pin can be used as modulated integrator
10	OP1-IN	This pin can be used as demodulated integrator

(To be continued)

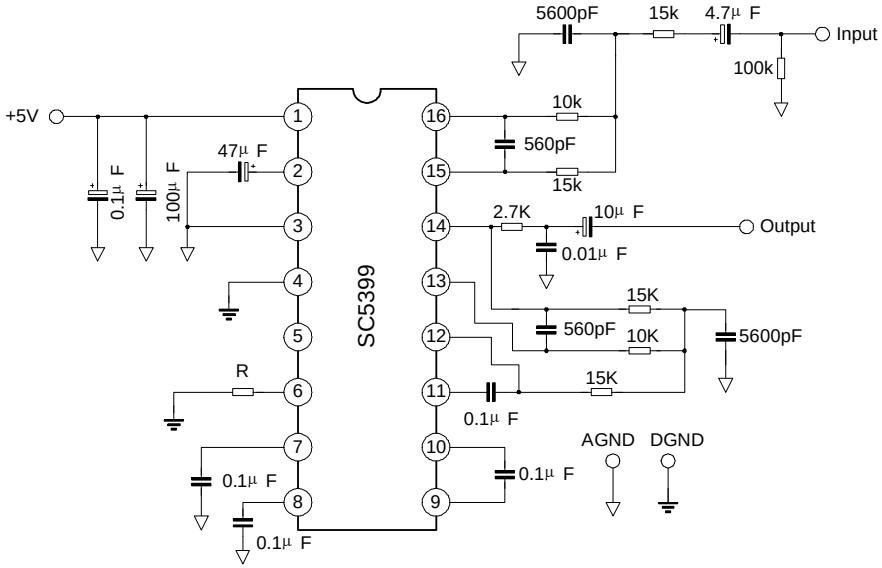
(Continued)

Pin No.	Symbol	Description
11	OP2-IN	This pin can be used as demodulated integrator
12	OP2-OUT	This pin can be used as modulated integrator
13	LPF2-IN	Second low pass filter input pin
14	LPF2-OUT	Second low pass filter out pin
15	LPF1-OUT	First low pass filter output pin
16	LPF1-IN	First low pass filter input pin

TYPICAL APPLICATION CIRCUIT



Note: External resistor having a value of 10KΩ~50 KΩ may be used. The recommended resistor value (R) is 10 KΩ. When the value of the resistor (R) increases, the range of the delay time also increases.



Note: Please refer to table1 for the resistor/Delay time value.

Table 1 External resistor /delay time value

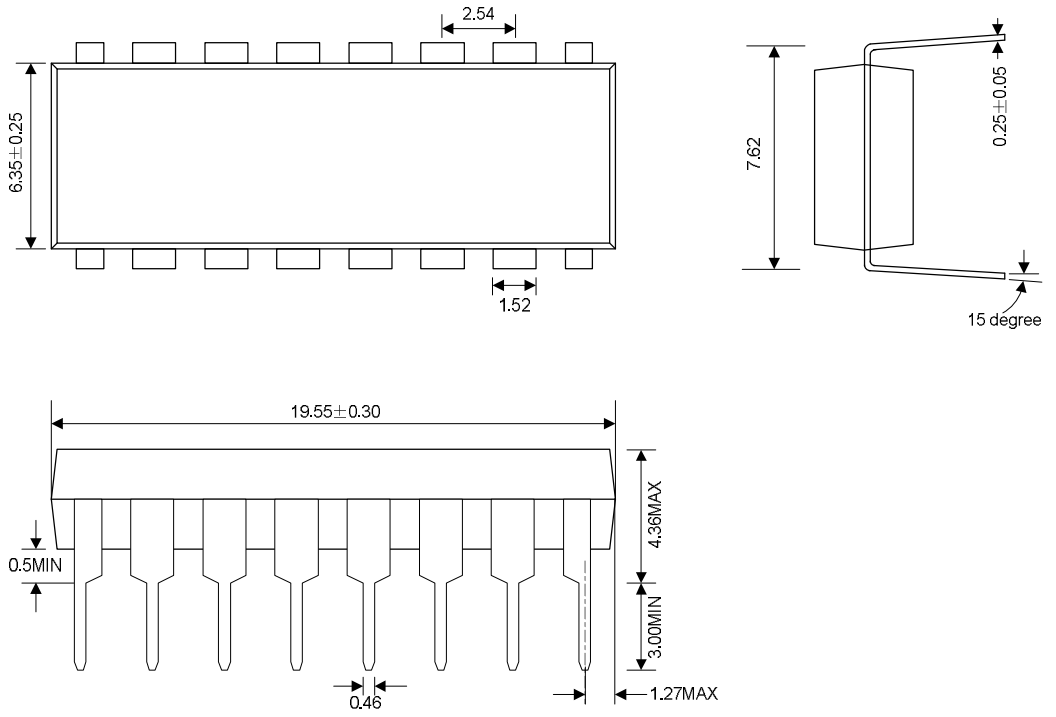
R	16.17K	12.74K	10.37K	8.71K	7.45K	6.47K	5.72K	5.05K
FCK	2M	2.5M	3.0M	3.5M	4.0M	4.5M	5.0M	5.5M
TD	340ms	270ms	228ms	196ms	168ms	152ms	140ms	124ms
THD	1.0%	0.8%	0.63%	0.53%	0.46%	0.41%	0.36%	0.33%

R	4.54K	4.11K	3.7K	3.35K	3.07K	2.82K	2.61K	2.39K
FCK	6.0M	6.5M	7.0M	7.5M	8.0M	8.5M	9.0M	9.5M
TD	112ms	104ms	98ms	90ms	84ms	80ms	76ms	71ms
THD	0.29%	0.27%	0.25%	0.25%	0.23%	0.22%	0.21%	0.20%

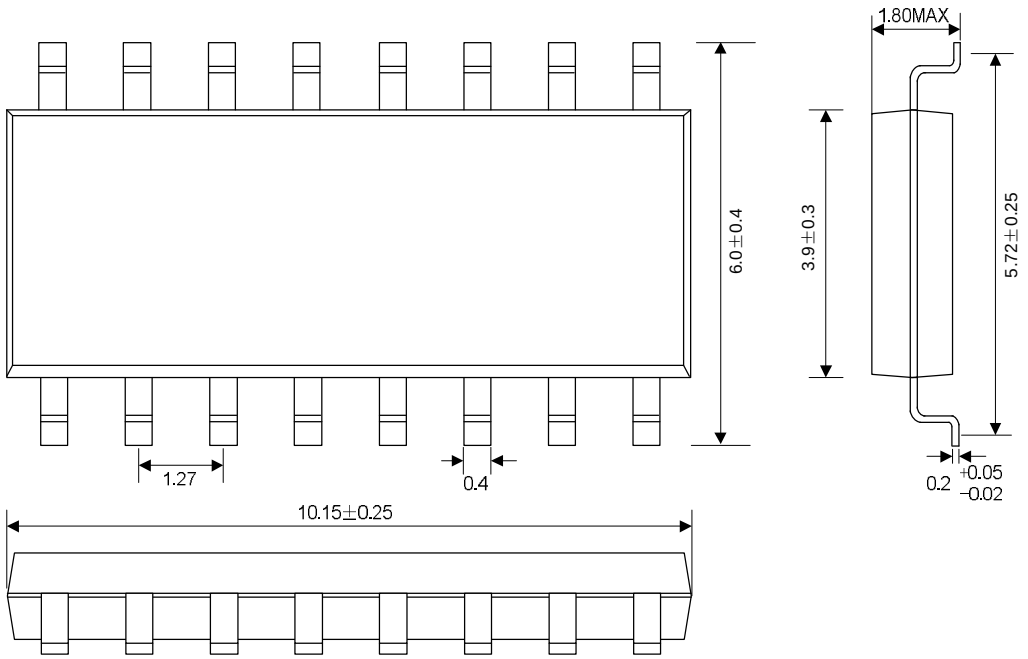
R	2.19K	1.91K	1.67K	1.42K	1.23K	1.04K	0.85K	0.75K
FCK	10M	11M	12M	13M	14M	15M	16M	17M
TD	68ms	62ms	55ms	52ms	48ms	46ms	43ms	40ms
THD	0.19%	0.18%	0.16%	0.15%	0.15%	0.15%	0.15%	0.14%

PACKAGE OUTLINE

DIP-16-300-2.54 UNIT: mm

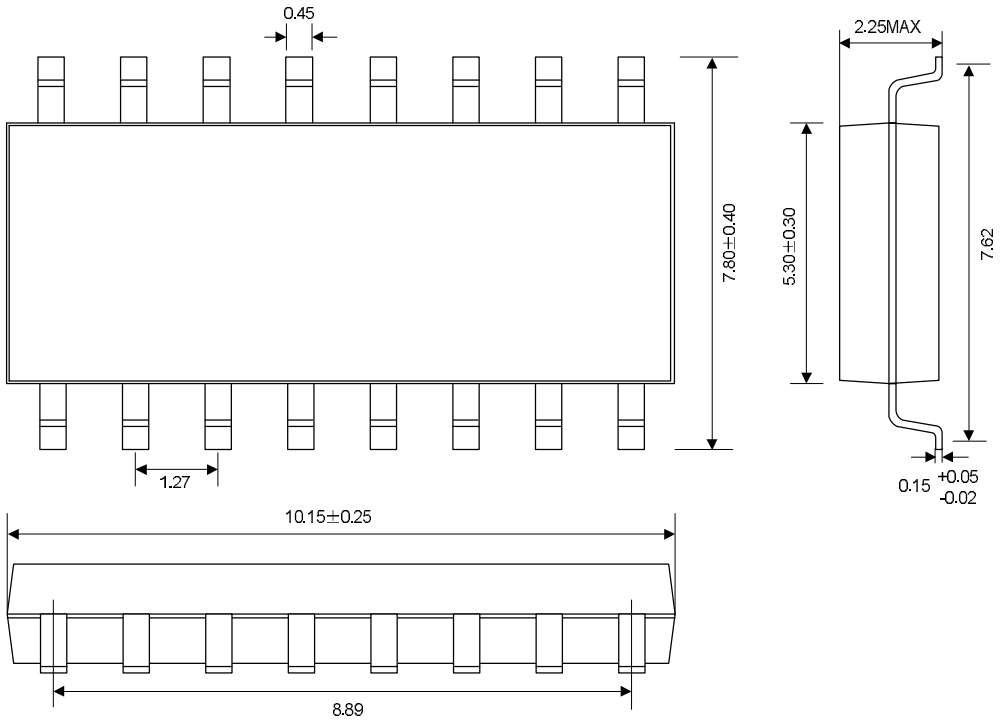


SOP-16-225-1.27 UNIT: mm

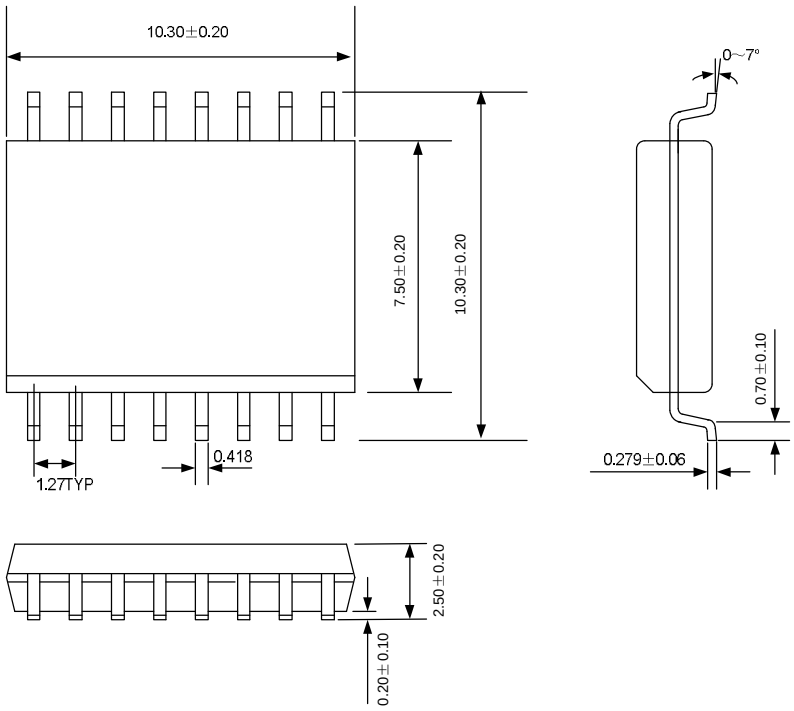


PACKAGE OUTLINE (Continued)

SOP-16-300-1.27 UNIT: mm



SOP-16-375-1.27 UNIT: mm





HANDLING MOS DEVICES:

Electrostatic charges can exist in many things. All of our MOS devices are internally protected against electrostatic discharge but they can be damaged if the following precautions are not taken:

- Persons at a work bench should be earthed via a wrist strap.
- Equipment cases should be earthed.
- All tools used during assembly, including soldering tools and solder baths, must be earthed.
- MOS devices should be packed for dispatch in antistatic/conductive containers.