Echo Processor IC **PT2399**

DESCRIPTION

PT2399 is an echo audio processor IC utilizing CMOS Technology which is equipped with ADC and DAC, high sampling frequency and an 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. PT2399 boast of very low distortion (THD<0.5%) and very low noise (No<-90dBV), thus producing high quality audio output. The pin assignments and application circuit are optimized for easy PCB layout and 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

APPLICATIONS

❏ Video Tape Recorder
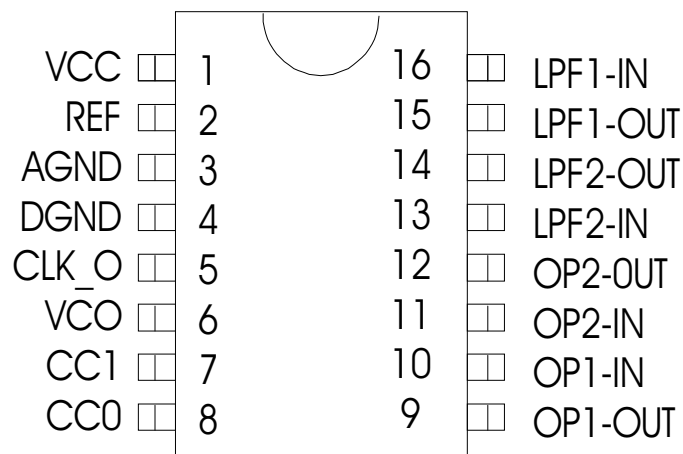❏ Video Compact Disk
❏ Television
❏ CD Player
❏ Car Stereo
❏ KARAOKE Mixer
❏ Electronic Musical Instrument
❏ Audio Equipment with Echo Processor

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Princeton Technology Corp.

Echo Processor IC
PT2399

PIN CONFIGURATION

```
         ┌──────⌒──────┐
  VCC ──┤ 1        16 ├── LPF1-IN
  REF ──┤ 2        15 ├── LPF1-OUT
 AGND ──┤ 3        14 ├── LPF2-OUT
 DGND ──┤ 4        13 ├── LPF2-IN
CLK_O ──┤ 5        12 ├── OP2-OUT
  VCO ──┤ 6        11 ├── OP2-IN
  CC1 ──┤ 7        10 ├── OP1-IN
  CC0 ──┤ 8         9 ├── OP1-OUT
         └─────────────┘
              PT2399
```

ORDER INFORMATION

| Part Number	Package
PT2399	16 Pins, DIP Package (300 mil)
PT2399S	16 Pins, SO Package (300 mil)

PT2399 ECHO APPLICATION CIRCUIT
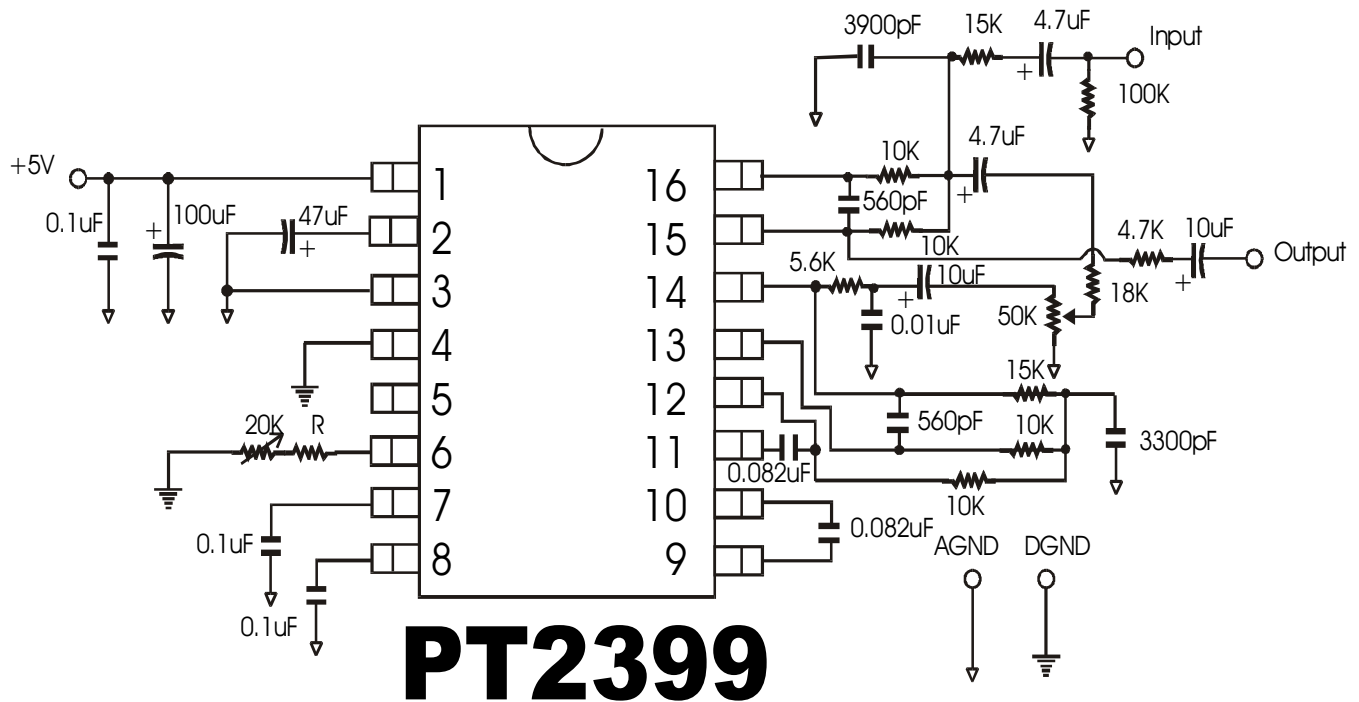
Note: External Resistor having a value of 10 K Ohms to 50 K Ohms may be
used. The recommended Resistor Value (R) is 10 K Ohms. When the value of
the Resistor (R) increases, the range of the Delay Time also increases.

PT2399 SURROUND/DELAY APPLICATION CIRCUIT
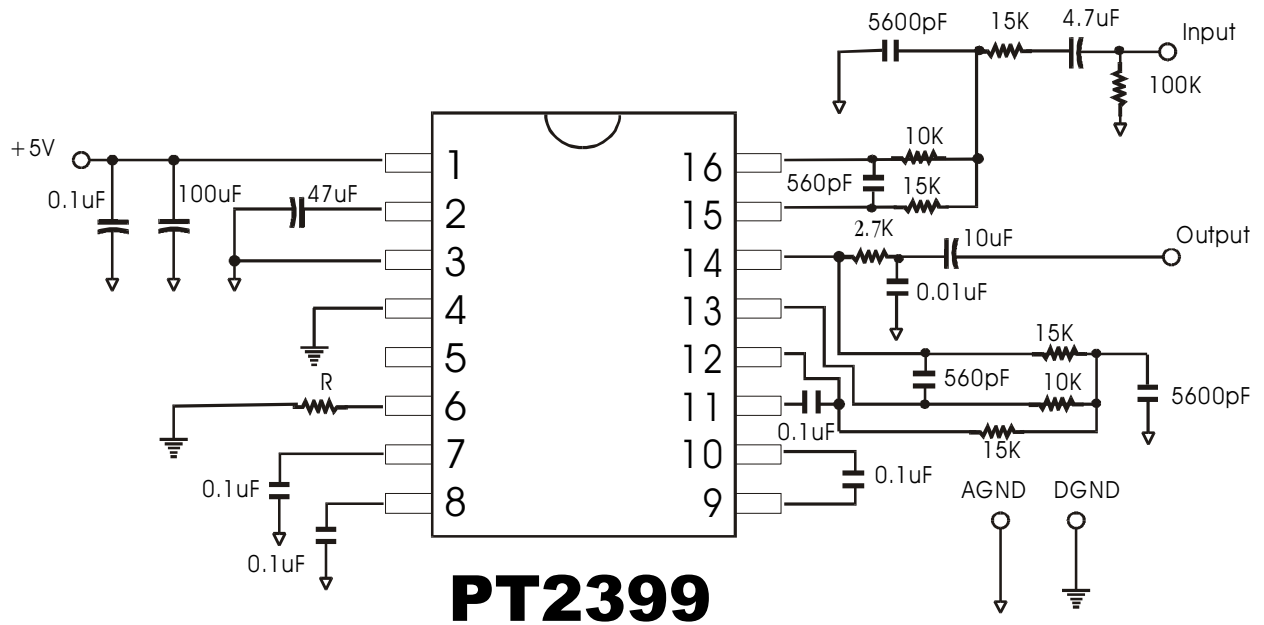
Note: Please refer to Table 1 for the Resistor/Delay Time values

TABLE 1: RESISTOR/DELAY TIME VALUES

R	27.6K	21.3K	17.2K	14.3K	12.1K	10.5K	9.2K	8.2K
fck	2.0M	2.5M	3.0M	3.5M	4.0M	4.5M	5.0M	5.5M
td	342ms	273ms	228ms	196ms	171ms	151ms	136.6ms	124.1ms
THD	1.0%	0.8%	0.63%	0.53%	0.46%	0.41%	0.36%	0.33%

R	7.2K	6.4K	5.8K	5.4K	4.9K	4.5K	4K	3.4K
fck	6.0M	6.5M	7.0M	7.5M	8.0M	8.5M	9.0M	10M
td	113.7ms	104.3ms	97.1ms	92.2ms	86.3ms	81ms	75.9ms	68.1ms
THD	0.29%	0.27%	0.25%	0.25%	0.23%	0.22%	0.21%	0.19%

R	2.8K	2.4K	2K	1.67K	1.47K	1.28K	1.08K	894
fck	11M	12M	13M	14M	15M	16M	17M	18M
td	61.6ms	56.6ms	52.3ms	48.1ms	45.8ms	43ms	40.6ms	38.5ms
THD	0.18%	0.16%	0.15%	0.15%	0.15%	0.15%	0.14%	0.14%

R	723	519	288	0.5
fck	19M	20M	21M	22M
td	36.6ms	34.4ms	32.6ms	31.3ms
THD	0.14%	0.13%	0.13%	0.13%

Note: R = External Resistor (Ohms), please refer to PT2399 Surround/Delay Time Application Circuit
        fck = Clock Frequency (Hz)
        td = Delay Time
        THD = Total Harmonic Distortion