

2 Channel Surround

Description

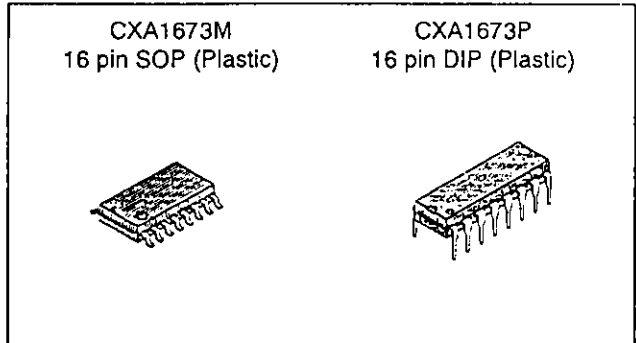
CXA1673M/P is a surround effect and bass boost IC designed for radio cassette, clock radio, car stereo and TV sets.

Feature

- Surround level control
- In response to signal level
- Small number of peripheral components
- Wide range of power supply voltage

Absolute Maximum Ratings (Ta=25°C)

| | | | |
|-------------------------------|----------------|-------------|--------|
| • Supply voltage | Vcc | 12 | V |
| • Operating temperature | Topr | -20 to +75 | °C |
| • Storage temperature | Tstg | -65 to +150 | °C |
| • Allowable power dissipation | | | |
| | P _D | DIP | 900 mW |
| | | SOP | 500 mW |



Application

Radio cassette, Car stereo, TV

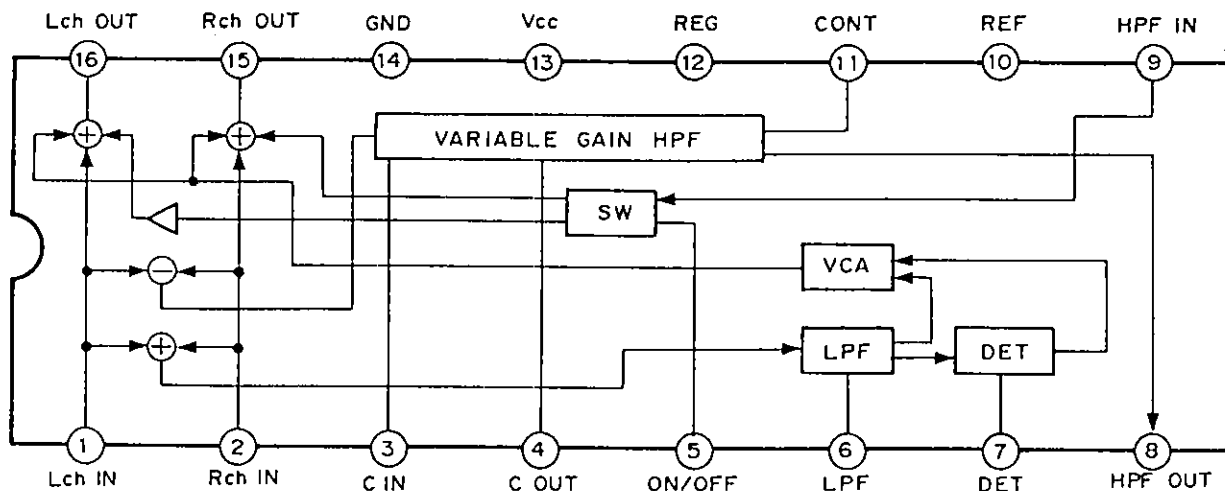
Structure

Bipolar silicon monolithic IC

Operating Condition

| | | | |
|----------------|-----|-------------|---|
| Supply voltage | Vcc | 1.8 to 10.0 | V |
|----------------|-----|-------------|---|

Block Diagram and Pin Configuration

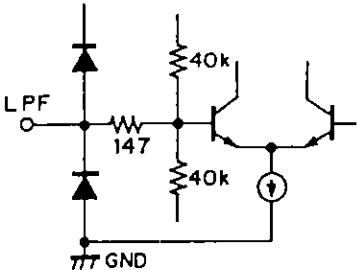
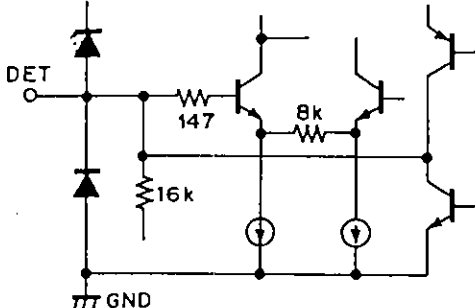
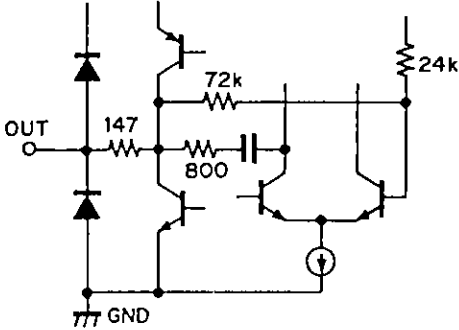
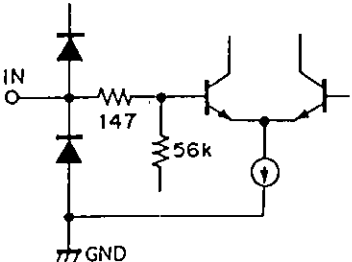


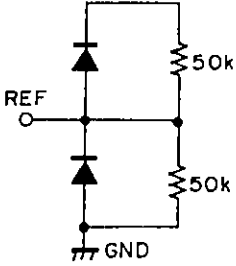
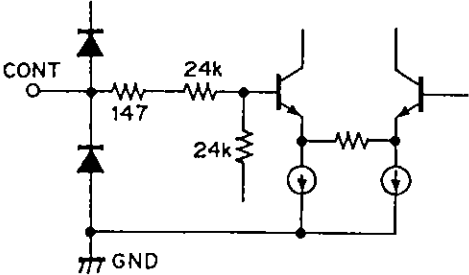
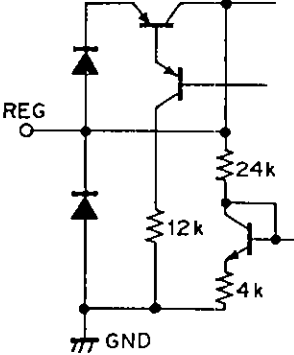
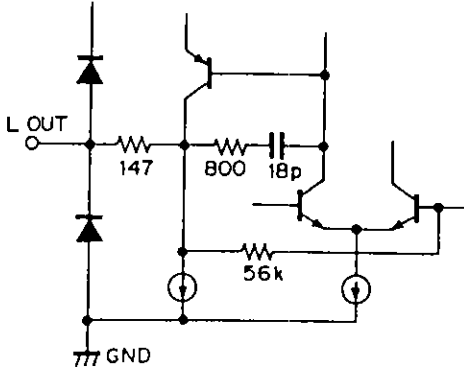
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Pin Description

(Vcc=6V, Ta=25°C)

| No. | Symbol | Pin voltage | Equivalent Circuit | Description |
|--------|--------------|-------------|--------------------|-------------------------------------------------------------------|
| 1 2 | L IN R IN | 3V | | Channel L input pin Channel R input pin |
| 3 | C IN | 3V | | The pin to be connected with a capacitor for variable gain H.P.F. |
| 4 | C OUT | 3V | | The pin to be connected with a capacitor for variable gain H.P.F. |
| 5 | SW | — | | Surround effect ON/OFF |

| No. | Symbol | Pin voltage | Equivalent Circuit | Description |
|-----|--------|-------------|-------------------------------------------------------------------------------------|----------------------------------------|
| 6 | LPF | 3V |  | Time constants for L.P.F. (bass boost) |
| 7 | DET | 3V |  | Low frequency level detector |
| 8 | OUT | 3V |  | H.P.F. output pin |
| 9 | IN | 3V |  | Surround signal input pin |

| No. | Symbol | Pin voltage | Equivalent Circuit | Description |
|----------|----------------|-------------|-------------------------------------------------------------------------------------|----------------------------------------------|
| 10 | REF | 3V |  | Reference voltage (1/2 Vcc) |
| 11 | CONT | — |  | H.P.F. gain control |
| 12 | REG | 1.25V |  | Filter of power supply |
| 13 | Vcc | 6V | | Power supply |
| 14 | GND | 0V | | GND pin |
| 15 16 | R OUT L OUT | 3V |  | Channel R output pin Channel L output pin |

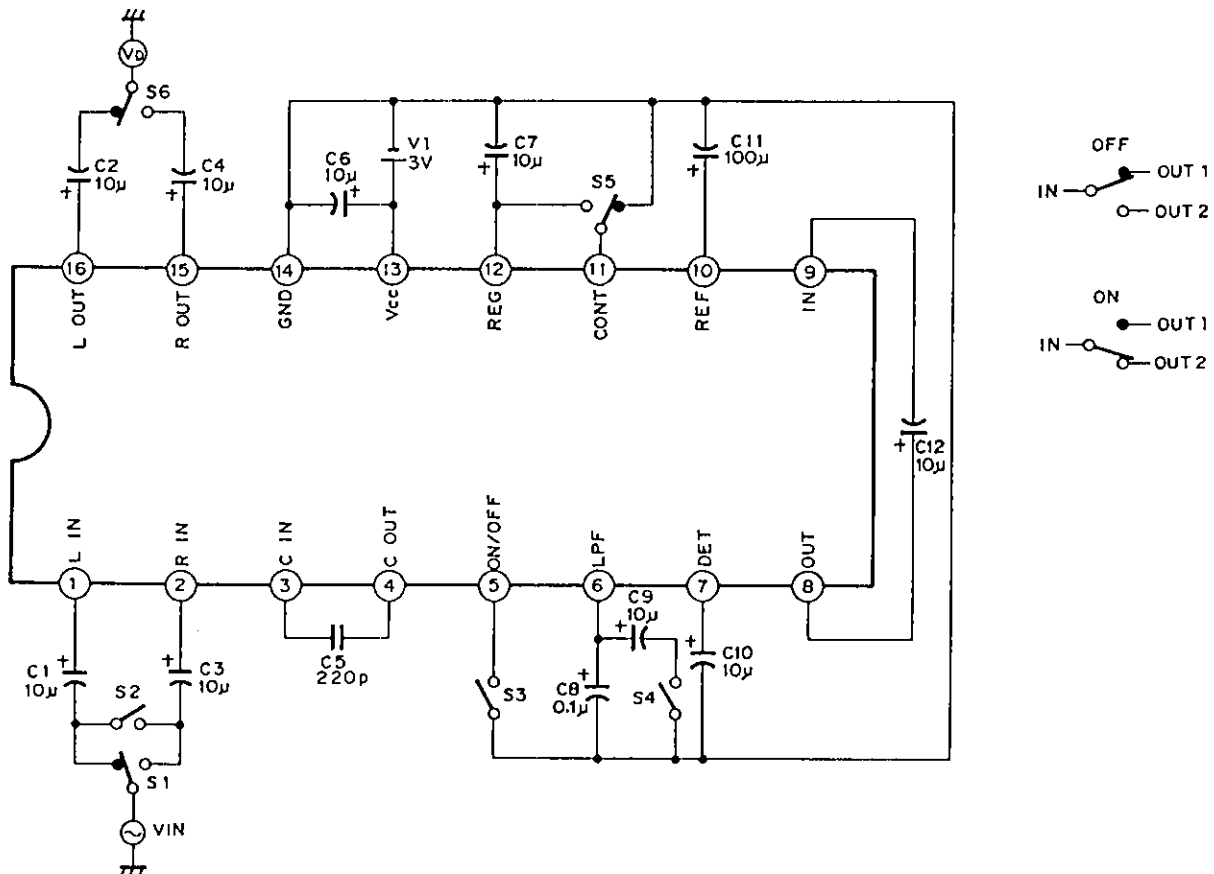
Electrical Characteristics

(Vcc=6V, Ta=25°C)

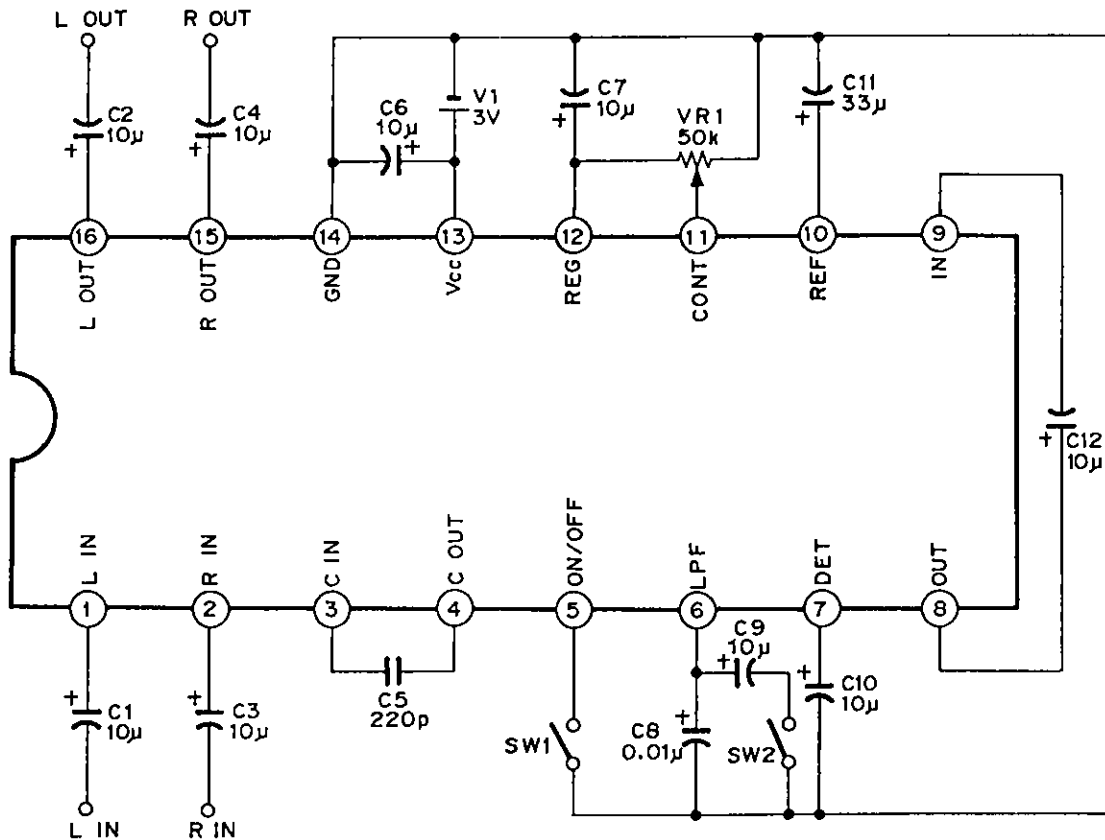
| Item | Condition | SW condition | | | | | | Min. | Typ. | Max. | Unit |
|--------------------------------------|-------------------------------------|--------------|----|----|----|----|----|------|------|------|------|
| | | S1 | S2 | S3 | S4 | S5 | S6 | | | | |
| No signal current | No signal (VIN=GND) | | | | | ○ | | — | 4 | 6 | mA |
| Lch voltage gain | VIN=-20dBm, f=1kHz | | | | | ○ | | -3 | 0 | 3 | dB |
| Rch voltage gain | VIN=-20dBm, f=1kHz | ○ | | | | ○ | ○ | -3 | 0 | 3 | dB |
| Channel Balance | Lch Voltage gain - Rch Voltage gain | — | — | — | — | — | — | -3 | 0 | 3 | dB |
| Lch total harmonic distortion factor | VIN=-20dBm, f=1kHz | | | | | ○ | | | 0.2 | 1 | % |
| Rch total harmonic distortion factor | VIN=-20dBm, f=1kHz | ○ | | | | ○ | ○ | | 0.2 | 1 | % |
| Lch output noise level | No signal (VIN=GND) | | ○ | | | ○ | | | -74 | -66 | dBm |
| Rch output noise level | No signal (VIN=GND) | | ○ | | | ○ | ○ | | -74 | -66 | dBm |
| Bass boost level | VIN=-60dBm, f=50Hz, Lch=Rch | | ○ | | | ○ | | | 11 | 19 | dB |
| High boost level (Max.) | VIN=-20dBm, f=10kHz (CONT=GND) | ○ | | ○ | ○ | | | | 3.5 | 6 | dB |
| High boost level (Min.) | VIN=-20dBm, f=10kHz (CONT=REG) | ○ | | ○ | ○ | ○ | | | -1 | 1 | dB |

○ ... ON

Electrical Characteristics Test Circuit



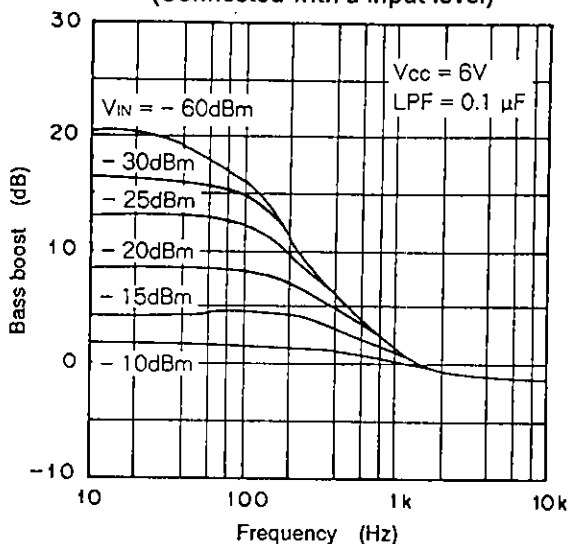
Application Circuit



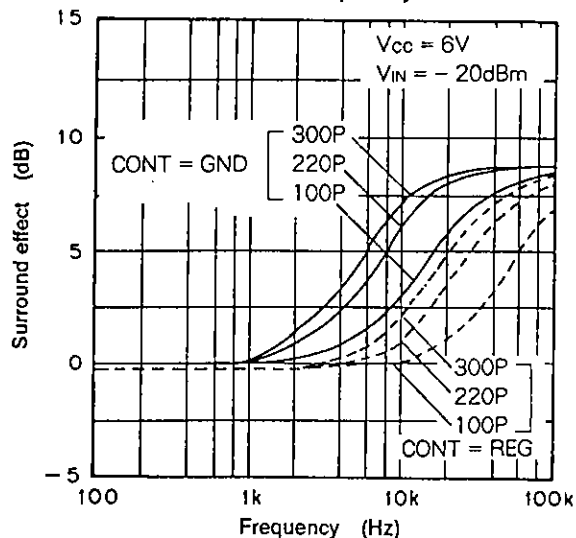
- SW1 : Surround ON/OFF
(Surround effect is turned ON when Pin 5 is connected to GND.)
- SW2 : Bass boost ON/OFF
(Bass boost function is turned OFF when SW2 is turned ON and the cut off frequency of the LPF is lowered.)
- VR1 : Surround effect control
Surround effect is variable by the voltage at Pin 11.
Surround effect is maximum when VR1 is connected to GND and minimum when VR1 is connected to REG.

Application circuits shown are typical examples illustrating the operation of the devices. Sony cannot assume responsibility for any problems arising out of the use of these circuits or for any infringement of third party patent and other right due to same.

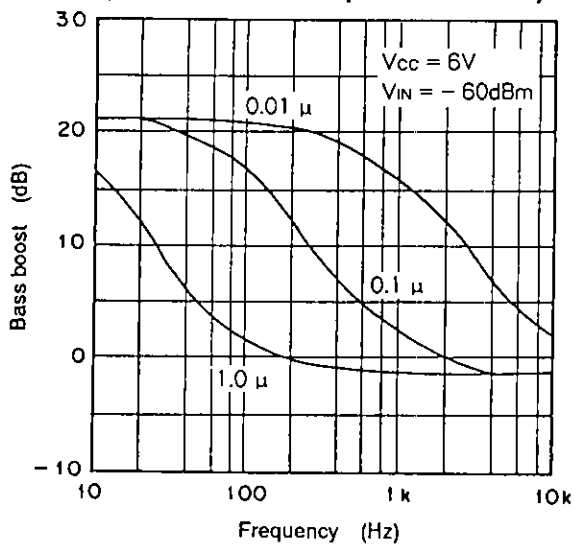
**Bass boost vs. Frequency characteristics
(Connected with a Input level)**



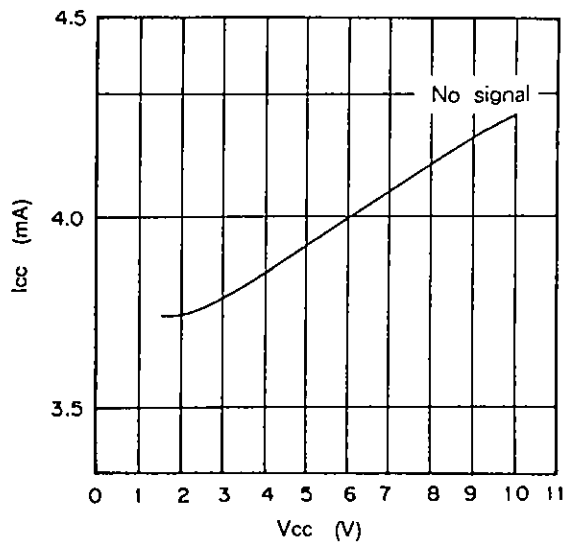
Surround effect vs. Frequency characteristics



**Bass boost vs. Frequency characteristics
(Connected with a capacitor for L.P.F.)**

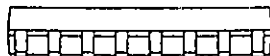
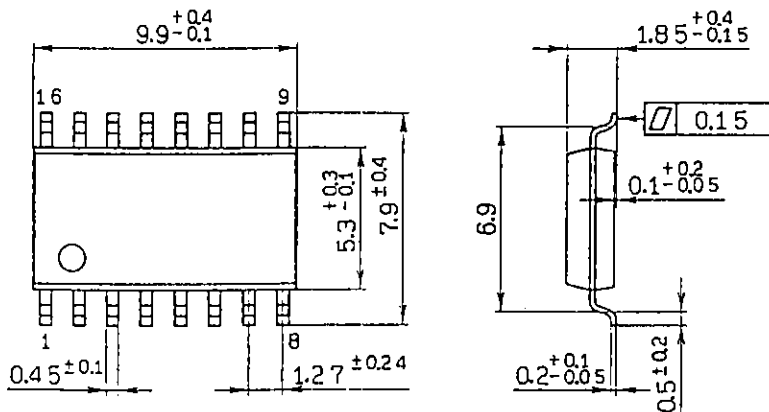


V_{CC} vs. I_{CC} characteristics



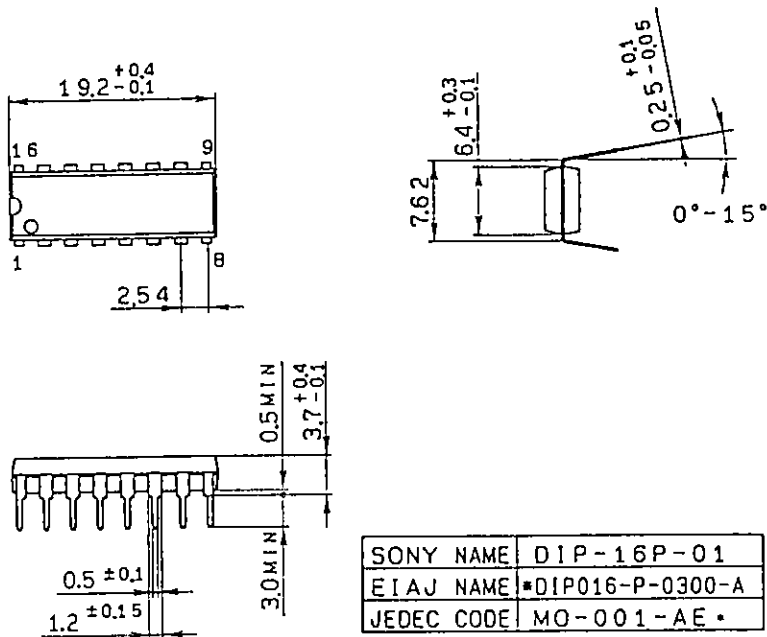
Package Outline Unit : mm

CXA1673M 16pin SOP (Plastic) 300mil 0.2g



| | |
|------------|------------------|
| SONY NAME | SOP-16P-L01 |
| EIAJ NAME | *SOP016-P-0300-A |
| JEDEC CODE | _____ |

CXA1673P 16pin DIP (Plastic) 300mil 1.0g



| | |
|------------|------------------|
| SONY NAME | DIP-16P-01 |
| EIAJ NAME | *DIP016-P-0300-A |
| JEDEC CODE | MO-001-AE* |

* (Similar)