Any and all SANYO products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your SANYO representative nearest you before using any SANYO products described or contained herein.

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Equivalent Circuit Block Diagram

Sample Application Circuit 1
(Recommended circuit)

Sample Application Circuit 2
(Circuit with minimum number of external parts)

Sample Printed Circuit Pattern
Description of External Parts

C1 (330pF) : Input short capacitor
Reduces the high frequency noise when the input impedance is increased. Not required when the input impedance is decreased.

C2 (100μF) : Feedback capacitor
Decreasing the capacitance value lowers the low frequency response. Increasing the capacitance value makes the starting time later.

C3 (0.1μF) : Oscillation blocking capacitor
Decreasing the capacitance value causes oscillation to occur easily. Use a polyester film capacitor that is good in high frequency response and temperature characteristic. The use of an electrolytic capacitor may cause oscillation to occur at low temperatures.

C4 (470μF) : Output capacitor
Decreasing the capacitance value causes insufficient power at low frequencies.

C5 (470μF) : Power capacitor
Decreasing the capacitance value causes ripple to occur easily. Locating at a distance from the IC or removing this capacitor may cause oscillation to occur.

C6 (100μF) : Ripple filter capacitor
Decreasing the capacitance value excessively or removing this capacitor causes ripple to occur. However, increasing the capacitance value does not always cause ripple to be reduced. Decreasing the capacitance value makes the starting time earlier.

R1 (100kΩ) : Input bias resistor
Determines the bias (bias of zero potential) to be applied to the input pin and the input impedance. Not required if a variable resistor is also used as this resistor.

R2 (3.3Ω) : Resistor connected in series with oscillation blocking capacitor
Prevents phase shift attributable to the oscillation blocking capacitor so that oscillation is hard to occur.

Note for Changing Voltage Gain
The voltage gain can be reduced by adding an external resistor (R_{NF}) in series with the feedback capacitor. (See VG · R_{NF} characteristic curve). However, it should be noted that various characteristics are also changed (THD-VG, V_{NO}-VG, Vro-VG). The voltage gain must not be reduced to be less than 30dB. Since the frequency response is extended and oscillation is liable to occur when the voltage gain is reduced, high-cut must be made as required. (High-cut is made by connecting a capacitor of approximately 30pF across pins (6) and (7).)

External Muting
If external muting is required, make the circuit as shown on next page. In this case, the pop noise is similar to that which occurs at the time of power switch ON/OFF. If the value of the series resistor is decreased, more pop noise is heard at the time of attack; if increased, muting is hard to work.

Measure against Fold-back of Output Waveform
Since the input pin is zero-biased, the circuit may be saturated at an overinput, causing a part of the output waveform to be folded back (e.g. when the peak input voltage exceeds 600mV). In such a case, the fold-back of the waveform can be prevented by using the built-in diode (also can be prevented by using an external diode). When the built-in diode is used, a resistor must be connected in series with the input pin to cause the diode to conduct no overcurrent (10mA or less).
Fold-back Output Waveform

Fold-back of waveform

External muting

Measure against fold-back

Gain adjusting resistor

High-cut capacitor

Unit (resistance: Ω, capacitance: F)

Fold-back Output Waveform

Output power, $P_0 - W$

Input voltage, $V_1 - mV$

$f = 1kHz$

$V_{CC} = 16V$

$R_L = 8Ω$

$V_{CC} = 12V$

$R_L = 8Ω$

$P_0 - f$

Total harmonic distortion, THD -

Output power, $P_0 - W$

$f = 10kHz$

$1kHz$

$R_L = 8Ω$

$C = 1μF$

$C = 10%$

Output power, $P_0 - W$

Frequency, $f - Hz$

Supply voltage, $V_{CC} - V$

$V_{CC} = 16V$

$R_L = 8Ω$

$V_{CC} = 12V$

$R_L = 8Ω$

$C = 1μF$

$C = 10%$
Proper Cares in Using IC

- **Maximum ratings**
  
  If the IC is used in the vicinity of the maximum ratings, even a slight variation in conditions may cause the maximum ratings to be exceeded, thereby leading to breakdown. Allow an ample margin of variation for supply voltage, etc. and use the IC in the range where the maximum ratings are not exceeded.

- **Pin-to-pin short**
  
  If power is applied when the space between pins is shorted, breakdown or deterioration may occur. When mounting the IC on the board or applying power, make sure that the space between pins is not shorted with solder, etc.

- **When used in radio applications**
  
  When using in radios, allow a sufficient space between IC and bar antenna.
• Printed circuit pattern
When designing the printed circuit pattern, make the power supply, output, and ground lines thick and short and arrange the pattern and parts so that no feedback loop is formed between input and output. Place power capacitor C5, oscillation blocking capacitor C3 as close to IC pins as possible to prevent oscillation from occurring. Refer to the sample printed circuit pattern.

• Some plug jacks to be used for connecting to the external speaker can have the both poles short-circuited once when connecting. In this case, the load is short-circuited, which may break down the IC.