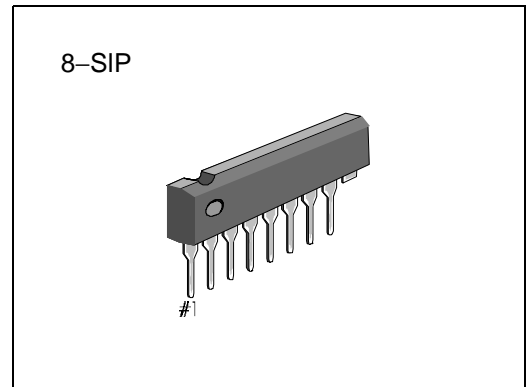


**INTRODUCTION**

The S1A0211X01 is a monolithic integrated circuit consisting of a 2-channel pre-amplifier in an 8-pin plastic single in-line package.

**FEATURES**

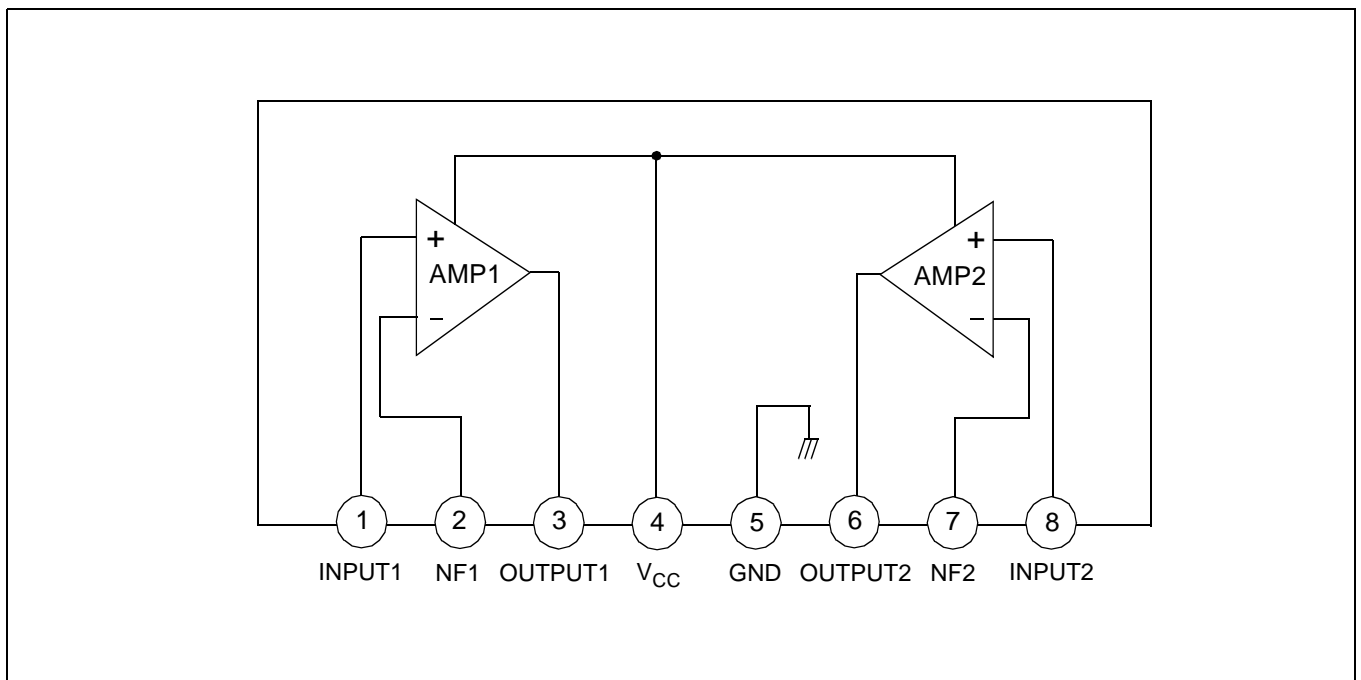
- Recommended operating supply voltage range:  
 $V_{CC} = 5V$  to  $14V$
- Low noise ( $V_{NI} = 1.0\mu V$ : Typ)
- High channel separation
- Minimum number of external parts required



**ORDERING INFORMATION**

| Device          | package | Operating Temperature |
|-----------------|---------|-----------------------|
| S1A0211X01-I0U0 | 8-SIP   | -20°C — +70°C         |

**BLOCK DIAGRAM**



**ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)**

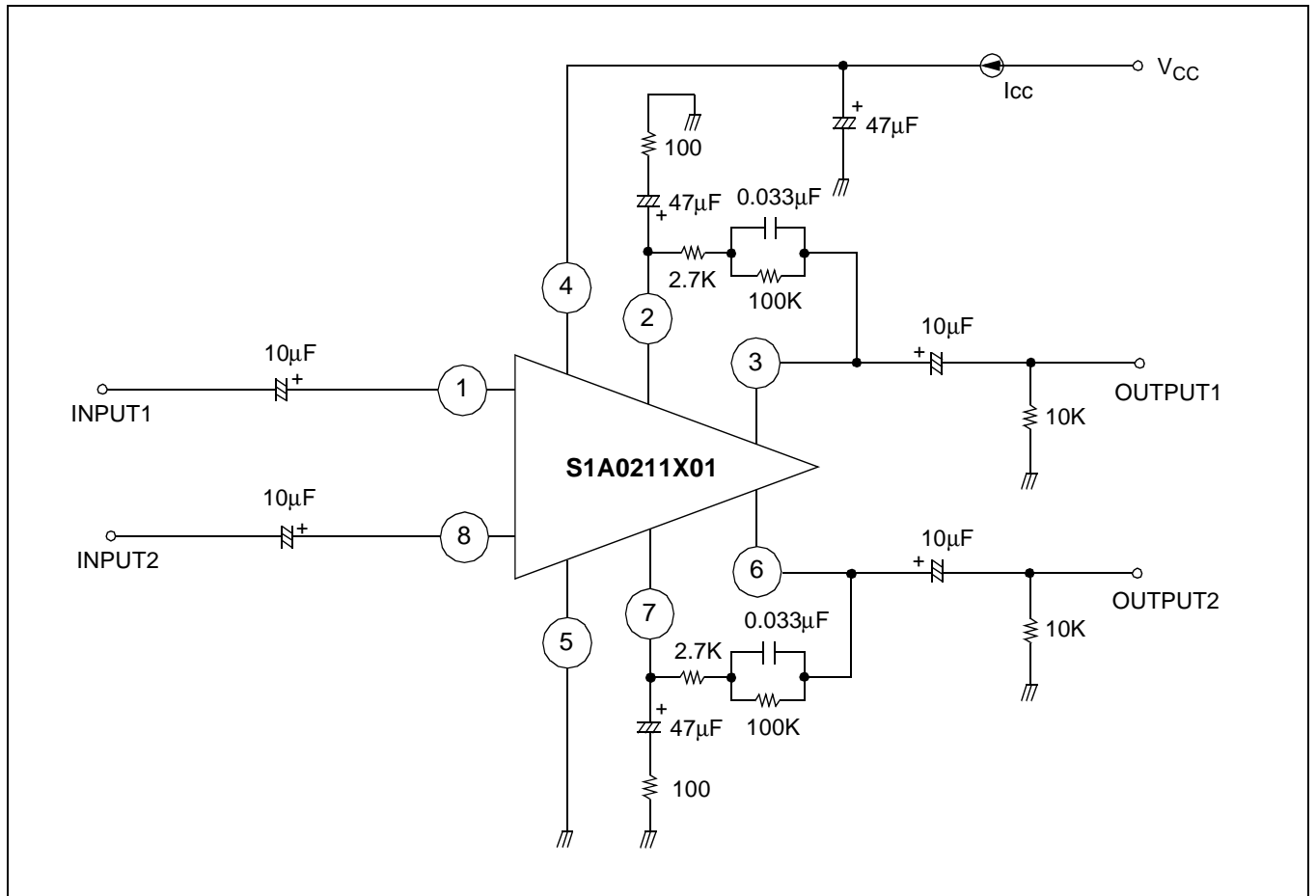
| Characteristic        | Symbol    | Value        | Unit |
|-----------------------|-----------|--------------|------|
| Supply Voltage        | $V_{CC}$  | 18           | V    |
| Power Dissipation     | $P_D$     | 200          | mW   |
| Operating Temperature | $T_{OPR}$ | - 20 - + 70  | °C   |
| Storage Temperature   | $T_{STG}$ | - 40 - + 125 | °C   |

**ELECTRICAL CHARACTERISTICS**

(Ta=25°C,  $V_{CC} = 9V$ ,  $R_L = 10k\Omega$ ,  $R_G = 600\Omega$ ,  $f = 1kHz$ , NAB, unless otherwise specified)

| Characteristic                 | Symbol    | Test Conditions                                 | Min. | Typ. | Max. | Unit       |
|--------------------------------|-----------|-------------------------------------------------|------|------|------|------------|
| Quiescent Circuit Current      | $I_{CCQ}$ | $V_I = 0$                                       | -    | 4.0  | 6.0  | mA         |
| Open Loop Voltage Gain         | $G_{VO}$  | -                                               | 65   | 80   | -    | dB         |
| Closed Loop Voltage Gain       | $G_{VC}$  | $V_O = 0.5V$                                    | 30   | 35   | 37   | dB         |
| Output Voltage                 | $V_O$     | THD = 1%                                        | 1.1  | 1.3  | -    | V          |
| Total Harmonic Distortion      | THD       | $V_O = 0.5V$                                    | -    | 0.1  | 0.3  | %          |
| Input Resistance               | $R_I$     | -                                               | 70   | 100  | -    | k $\Omega$ |
| Equivalent Input Noise Voltage | $V_{NI}$  | $R_G = 2.2k\Omega$<br>BW (- 3dB) = 15Hz - 30kHz | -    | 1.0  | 2.0  | $\mu V$    |
| Cross Talk                     | CT        | $R_G = 2.2k\Omega$                              | 50   | 65   | -    | dB         |

TEST CIRCUIT



## APPLICATION INFORMATION

### External Components

$C_2$  ( $C_9$ ): Input coupling capacitor

These components are concerned with the output noise and operation starting time. Its capacitance is adequate for  $10\mu\text{F}$ .

As  $C_2$  ( $C_9$ ) below  $4.7\mu\text{F}$  extends the operation starting time, a capacitance of over  $4.8\mu\text{F}$  is recommended.

$C_3$  ( $C_8$ ): Negative feedback capacitor

These components decide the low cut-off frequency, which is determined as follows:

$$C_3 (C_8) = \frac{1}{2\pi f_L \cdot R_2(R_7)} \quad \text{where, } f_L: \text{ low cut-off frequency.}$$

A large  $C_3$  ( $C_8$ ) makes the operation starting time of an amplifier late. Its capacitance is adequate for 47 F.

$C_4, R_3, R_2$  ( $C_7, R_4, R_5$ ): Equalizer network

These components decide the frequency response of an equalizer amplifier. The time constant of standard NAB characteristic is as follows:

| Tape Speed<br>Time Constant | 9.5 cm/sec            | 4.75 cm/sec           |
|-----------------------------|-----------------------|-----------------------|
| $C_4 (R_2 + R_3)$           | 3,180 $\mu\text{sec}$ | 1,590 $\mu\text{sec}$ |
| $C_4, R_2$                  | 90 $\mu\text{sec}$    | 120 $\mu\text{sec}$   |

$C_{11}$  Filter capacitor of the power line

This should be located as close to the supply voltage pin (Pin 4) as possible. The recommended value is  $47\mu\text{F}$ .

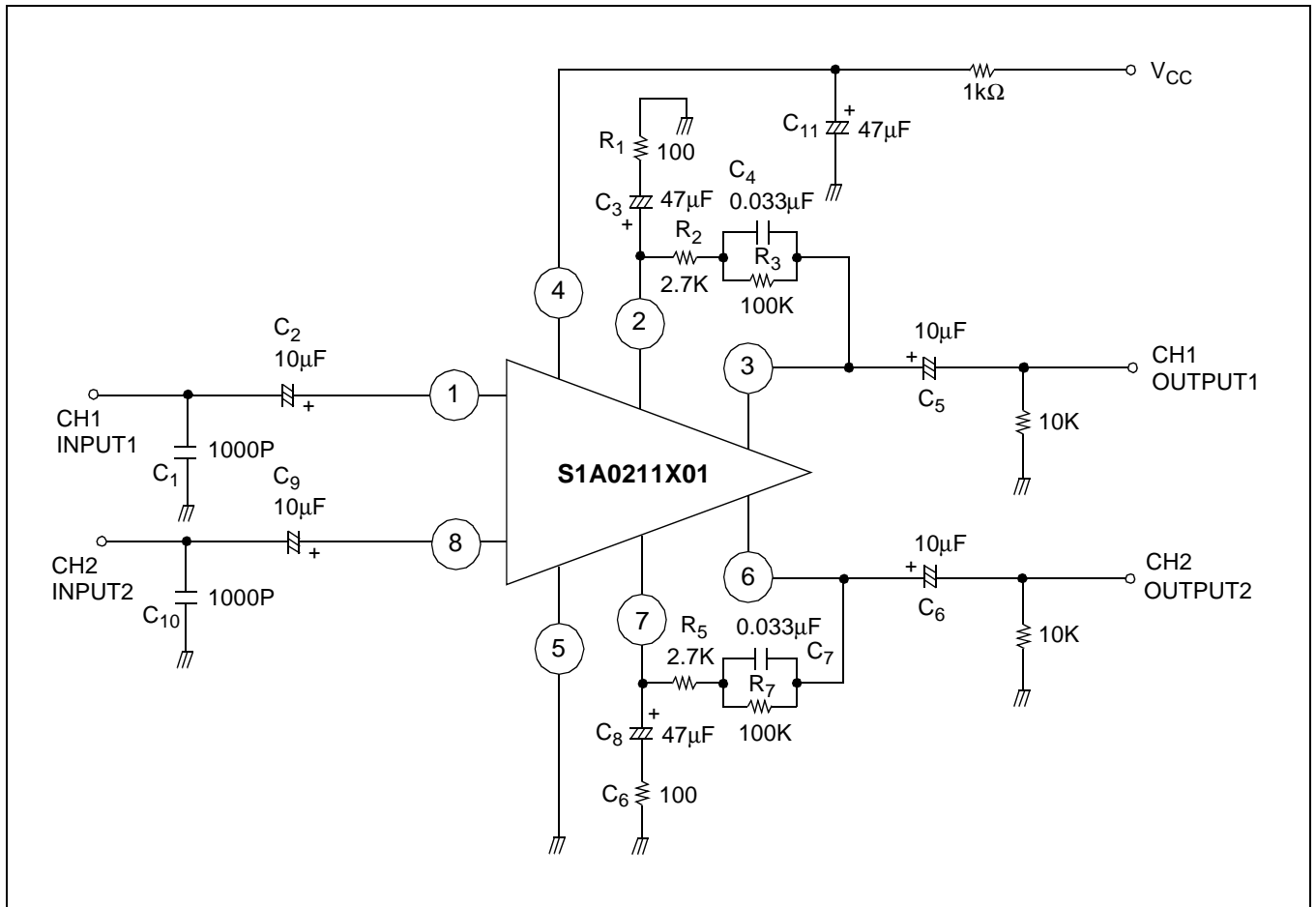
$C_1$  ( $C_{10}$ ): Protection capacitor

These components protect against wave damage of strong electric fields. They also protect against engine noise damage and block oscillation during high amplifying operations.

$C_5$  ( $C_6$ ): Output coupling capacitor

The recommended value is  $10\mu\text{F}$ .

APPLICATION CIRCUIT



NOTES