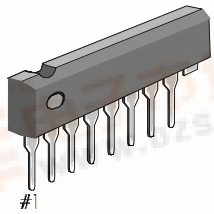
INTRODUCTION

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

8–SIP



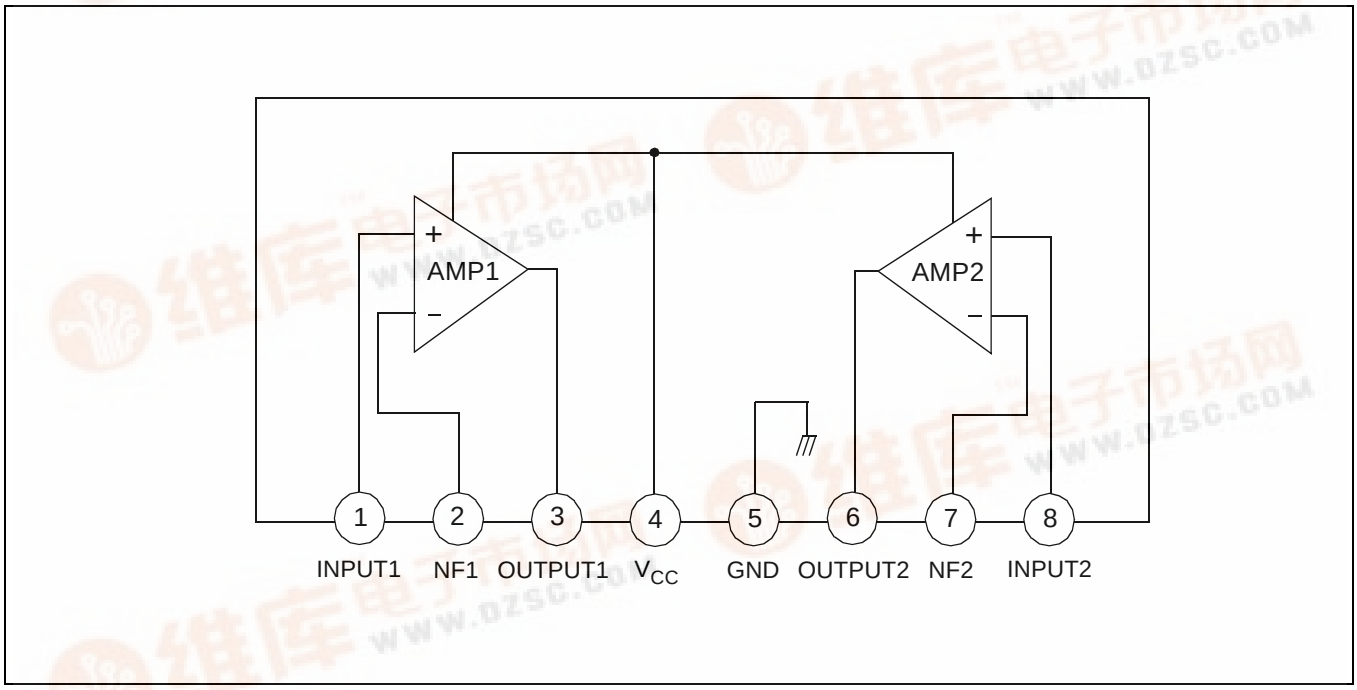
FEATURES

- Recommended operating supply voltage range: V_{CC} = 5V to 14V
- Low noise (V_{NI} = 1.0μV: 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)

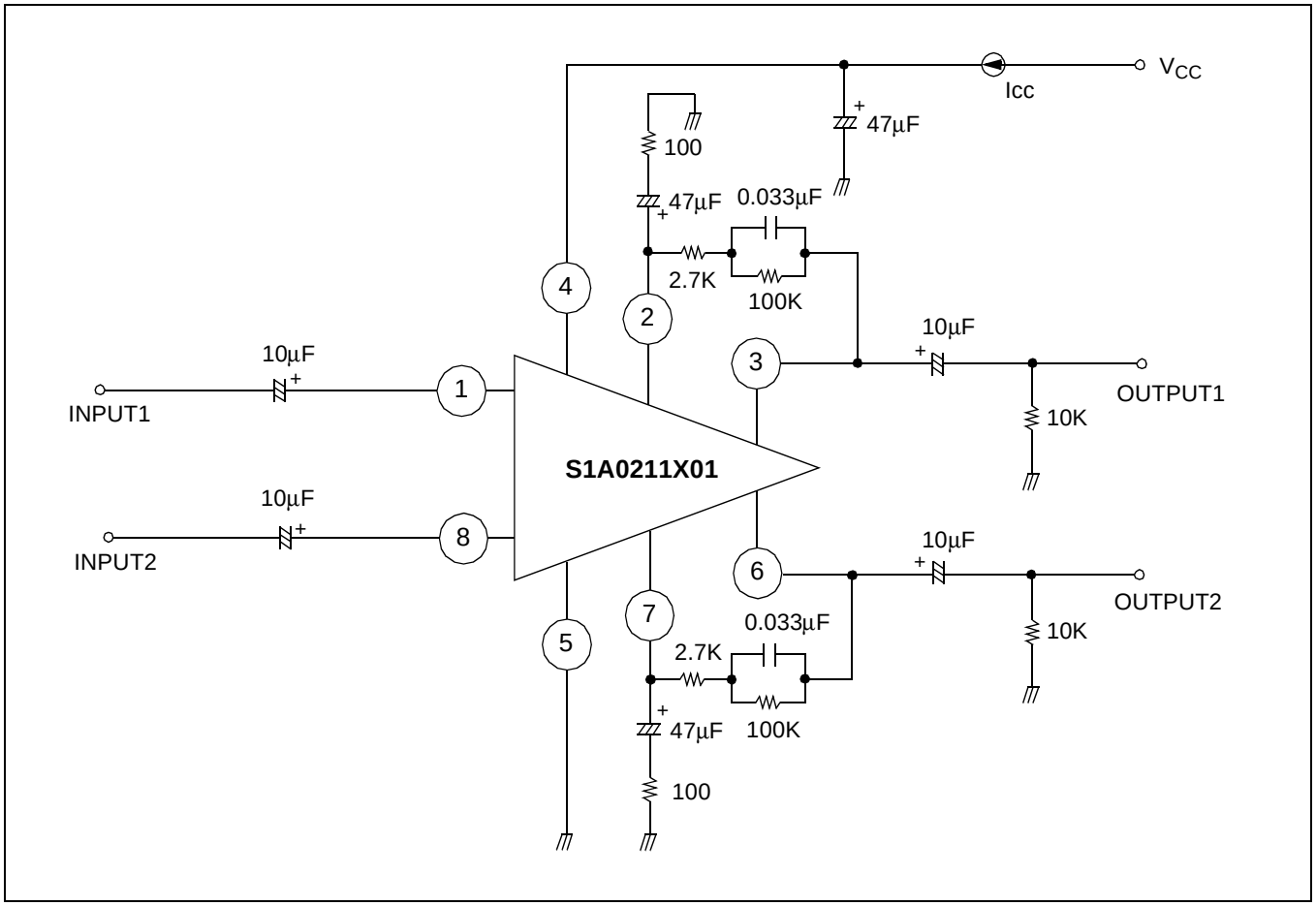
Characteristic	Symbol	Value	Unit
Supply Voltage	V_{CC}	18	V
Power Dissipation	P_D	200	mW
Operating Temperature	T_{OPR}	– 20 – + 70	°C
Storage Temperature	T_{STG}	– 40 – + 125	°C

ELECTRICAL CHARACTERISTICS

(Ta=25°C, V_{CC} = 9V, R_L= 10kΩ, R_G = 600Ω, 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	–	kΩ
Equivalent Input Noise Voltage	V_{NI}	R_G = 2.2kΩ BW (– 3dB) = 15Hz – 30kHz	–	1.0	2.0	μV
Cross Talk	CT	R_G = 2.2kΩ	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 10μF.

As C2 (C9) below 4.7μF extends the operation starting time, a capacitance of over 4.8μF is recommended.

C_3 (C_8): Negative feedback capacitor

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

$$C_3\ (C_8) = \frac{1}{2\pi f_L \bullet R_2(R_7)}$$ where, f_L: 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 / Time Constant	9.5 cm/sec	4.75 cm/sec
C_4 (R_2 + R_3)	3,180 μsec	1,590 μsec
C_4, R_2	90 μsec	120 μsec

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 47μF.

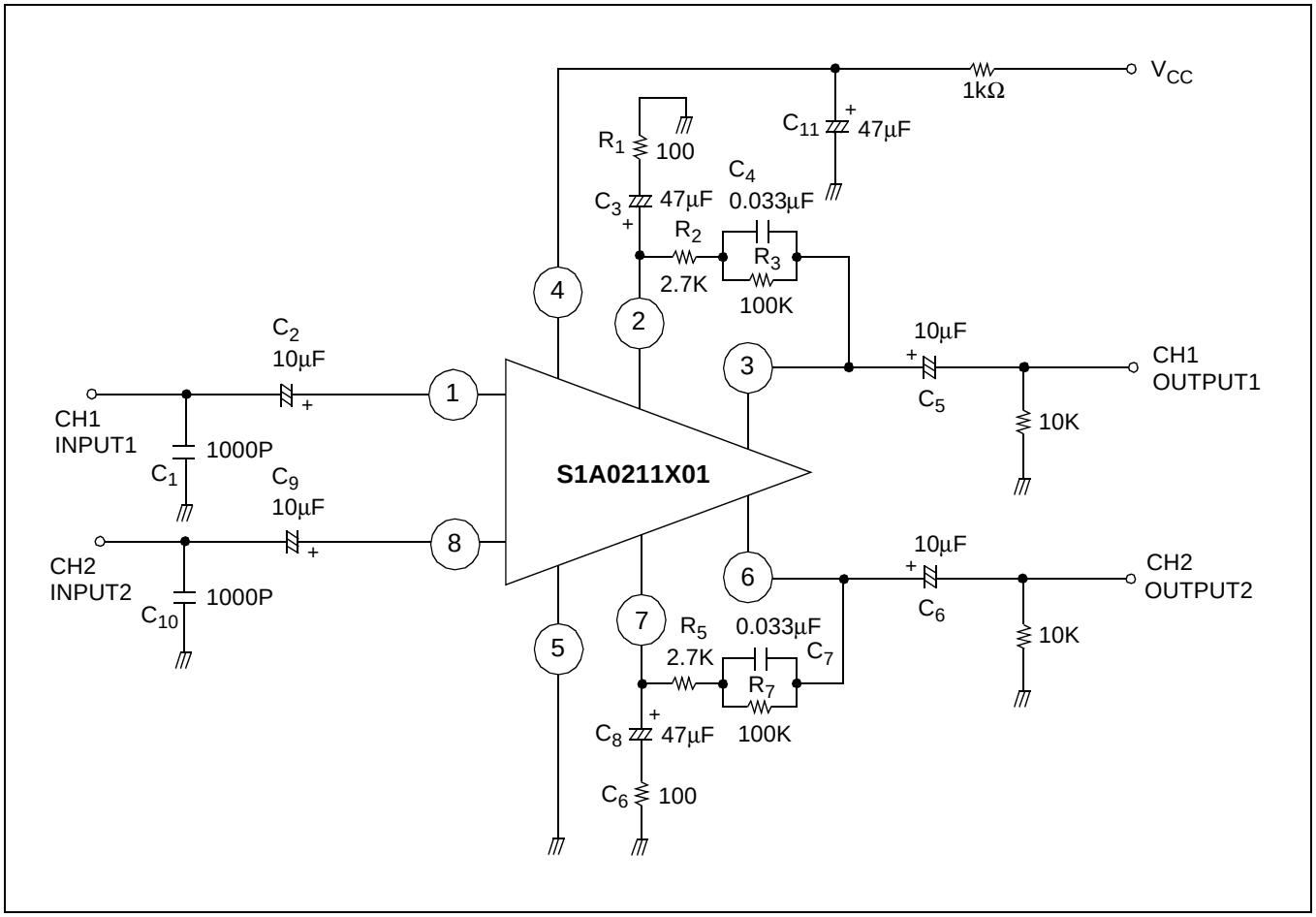
C_1 (C_{10}): Protection capacitor

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 10μF.

APPLICATION CIRCUIT



NOTES