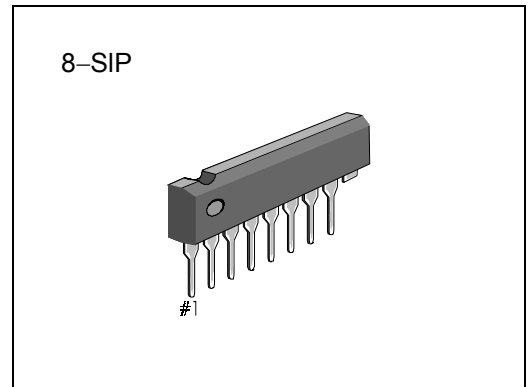


INTRODUCTION

The KA22211 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:
 $V_{CC} = 5V \sim 14V$
- Low noise ($V_{NI} = 1.0\mu V$: Typ)
- High channel separation
- Minimum number of external parts required



ORDERING INFORMATION

Device	package	Operating Temperature
KA22211	8-SIP	-20°C ~ +70°C

BLOCK DIAGRAM

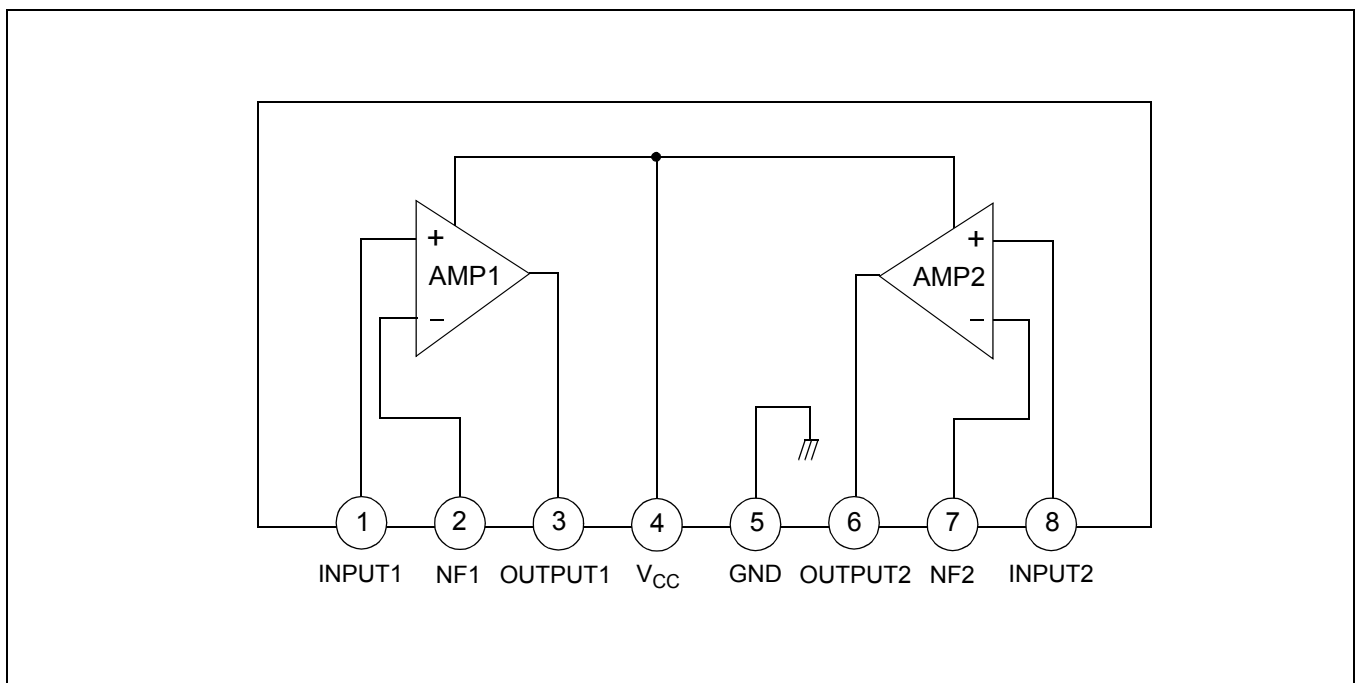


Figure 1.

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 Ω
Equivalent Input Noise Voltage	V_{NI}	$R_G = 2.2k\Omega$ BW (- 3dB) = 15Hz ~ 30kHz	-	1.0	2.0	μV
Cross Talk	CT	$R_G = 2.2k\Omega$	50	65	-	dB

TEST CIRCUIT

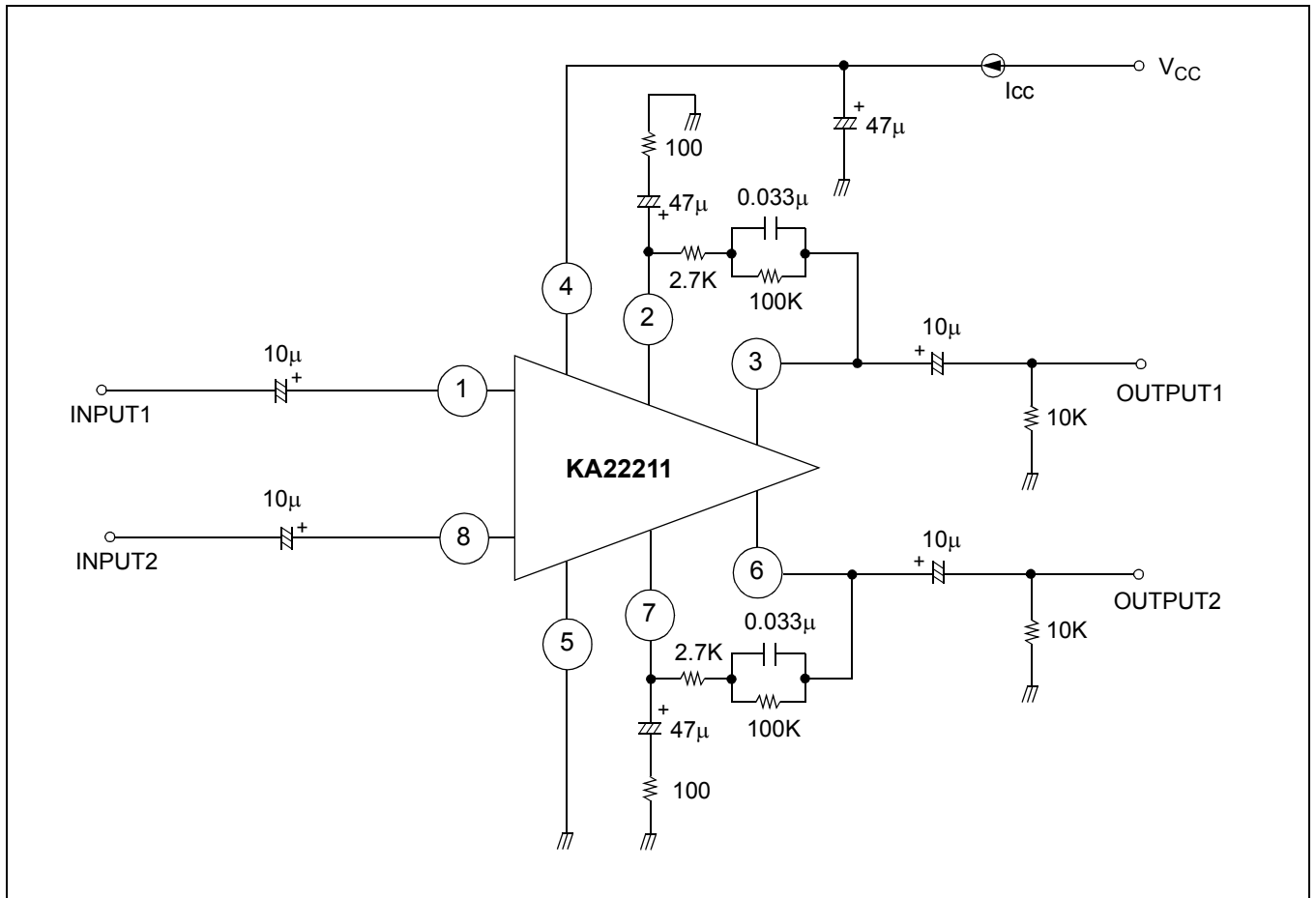


Figure 2.

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:

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

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	9.5 cm/sec	4.75 cm/sec
Time Constant		
$C_4 (R_2 + R_3)$	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 $47\mu\text{F}$.

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

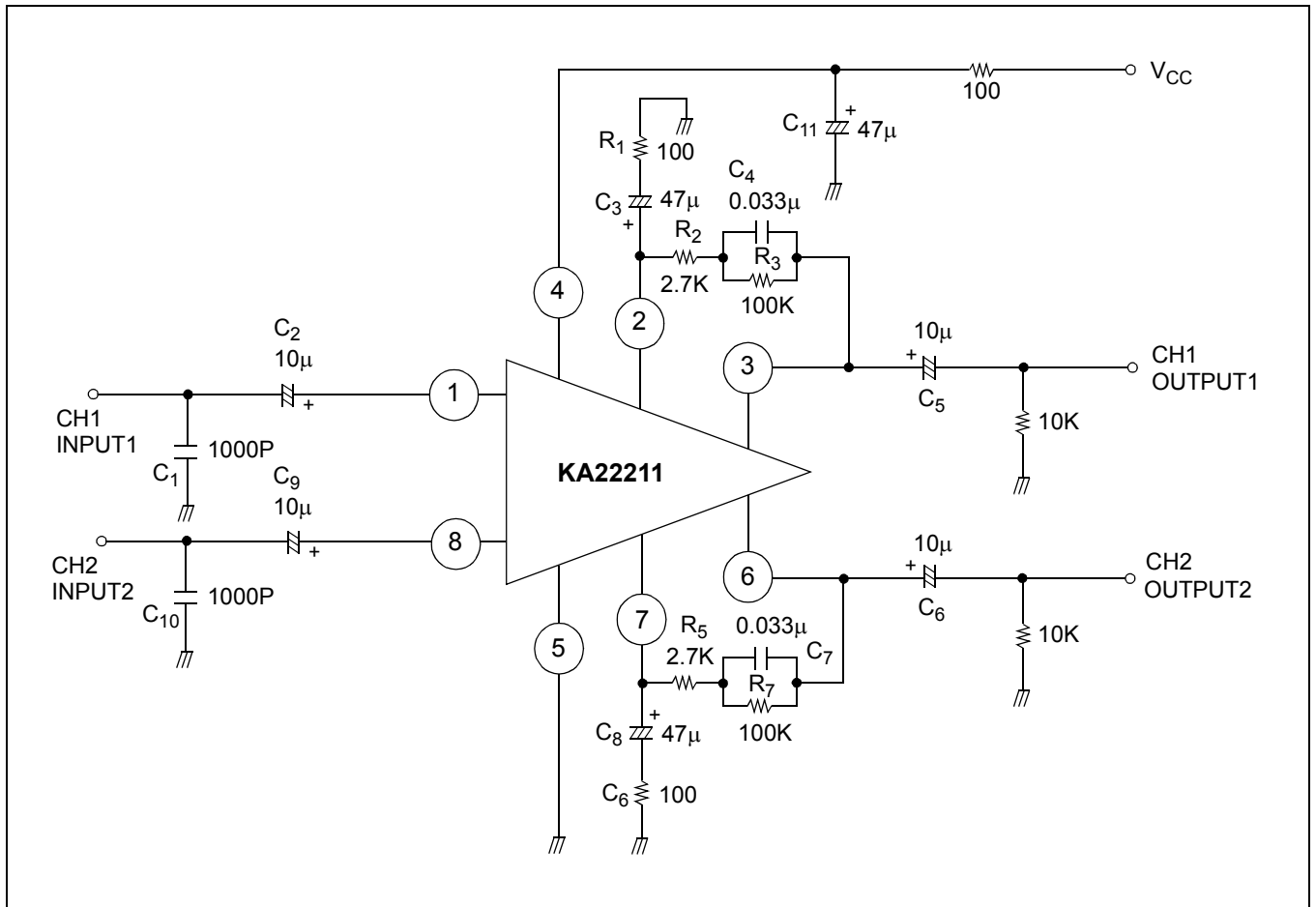


Figure 3.

NOTES