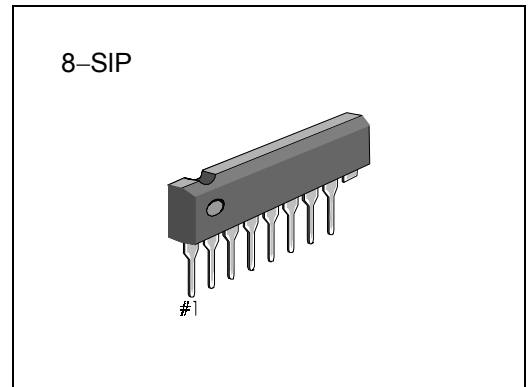


**INTRODUCTION**

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**

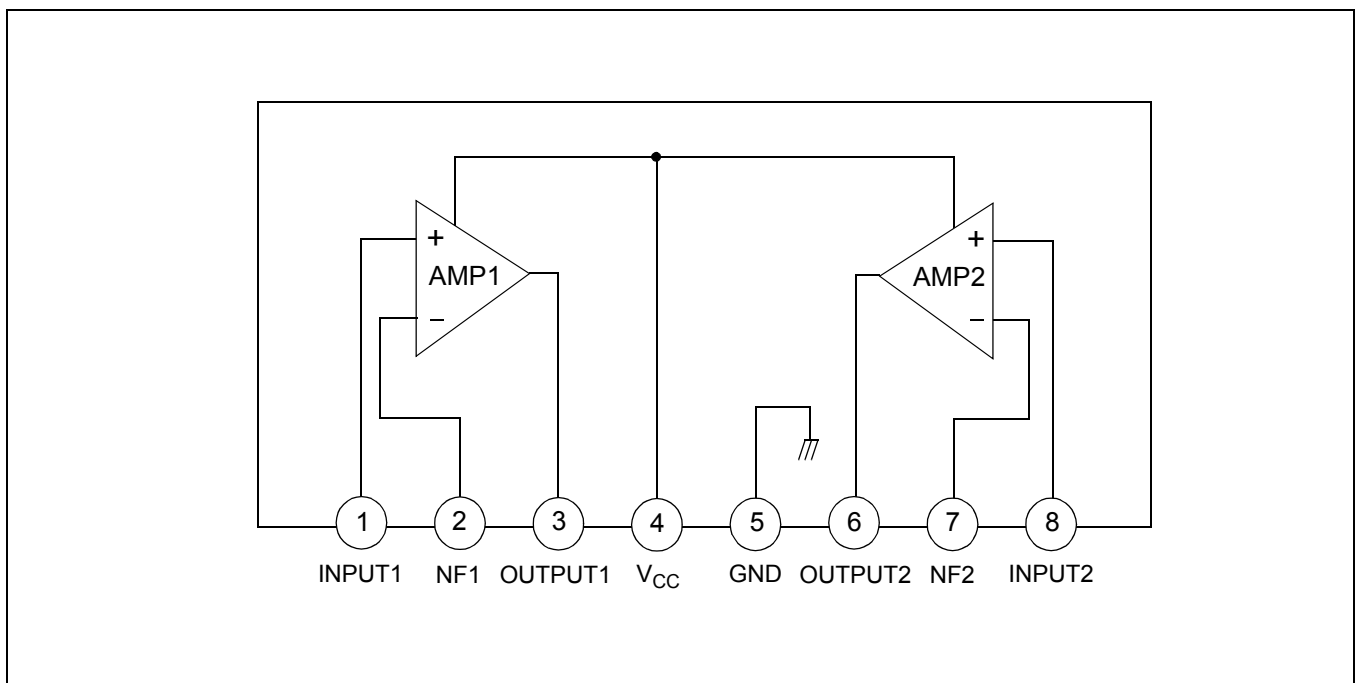


Figure 1.

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

TEST CIRCUIT

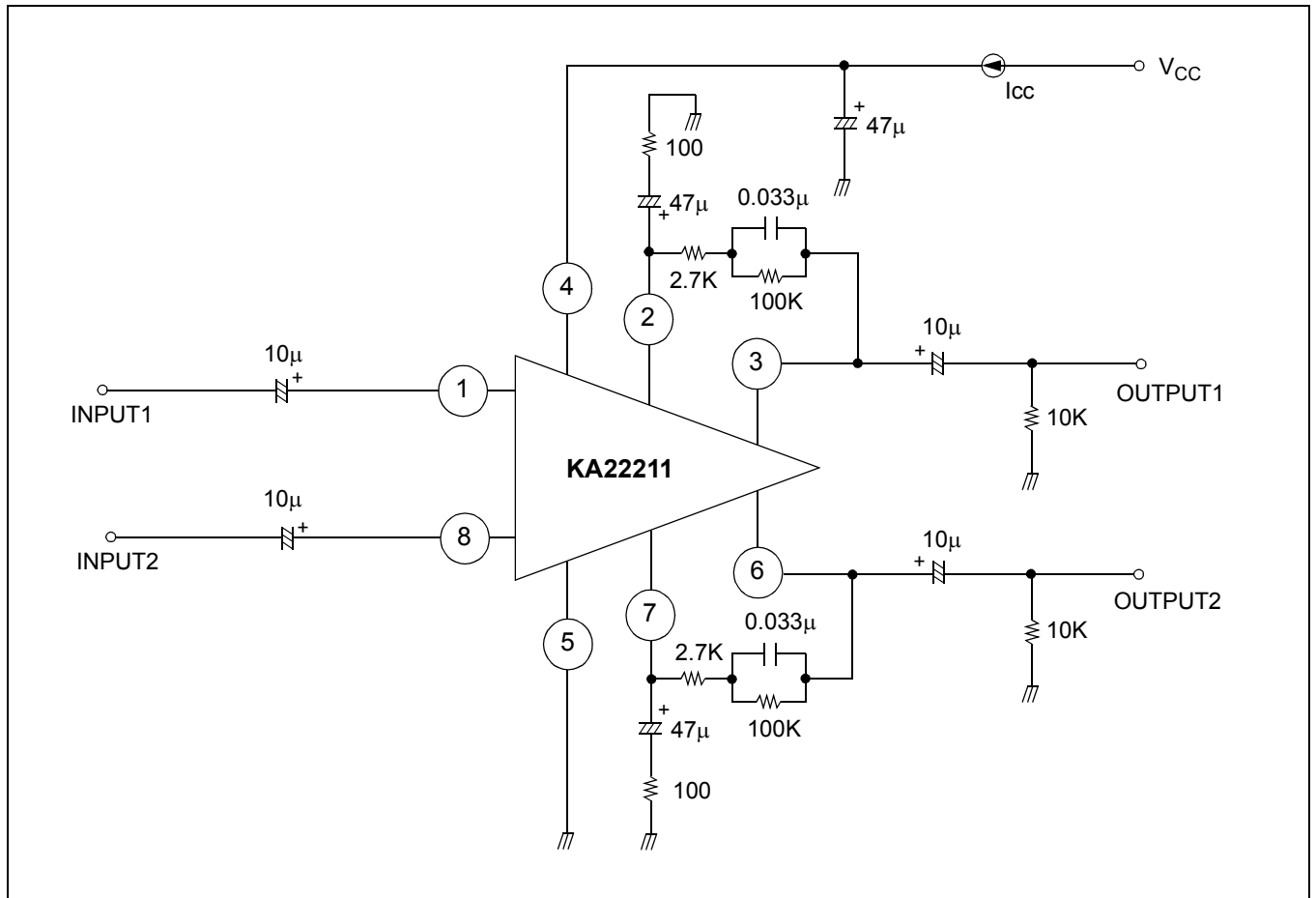


Figure 2.

## 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 $\mu\text{sec}$	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

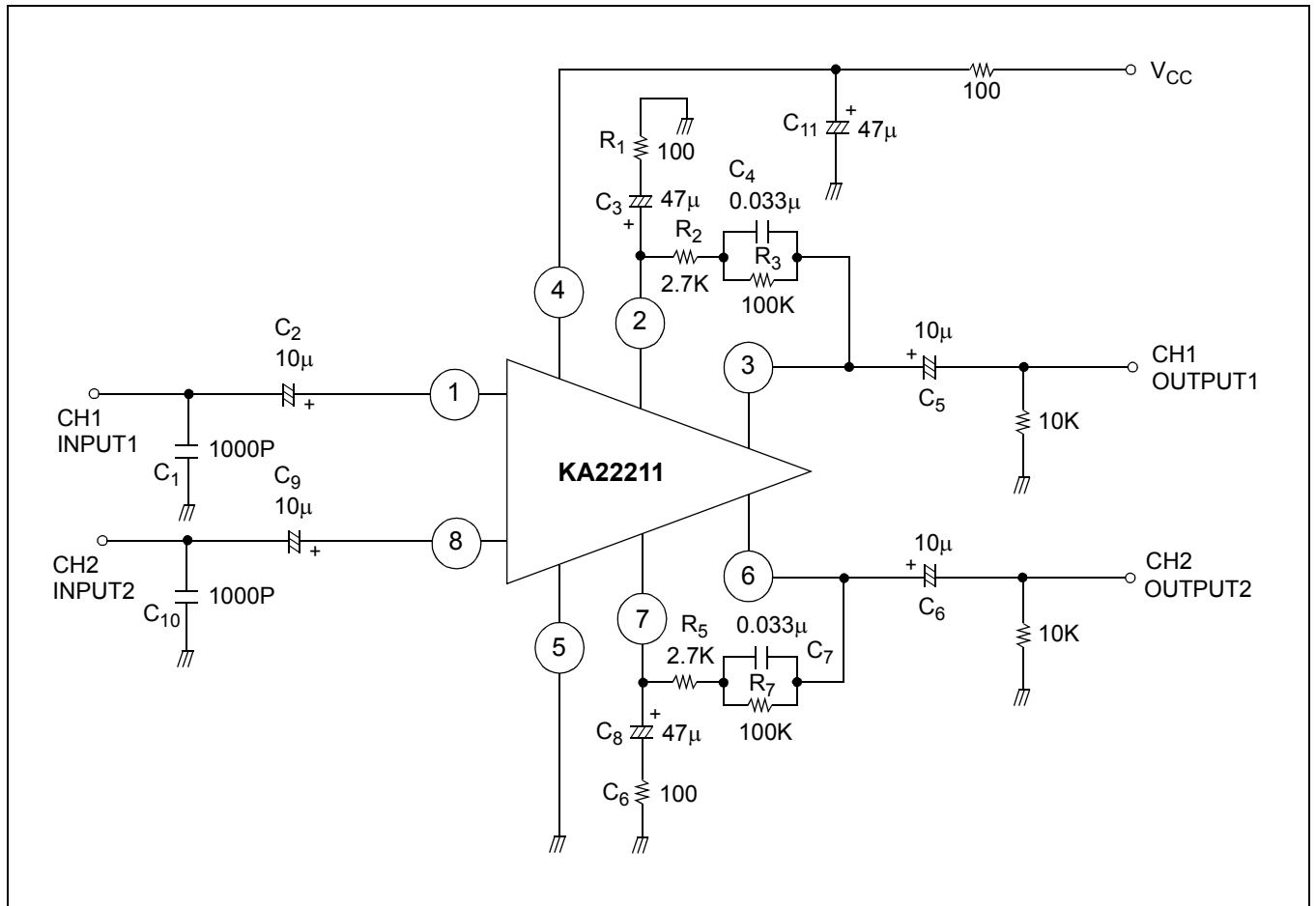


Figure 3.

NOTES