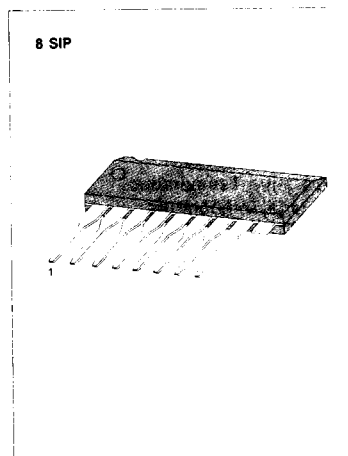


DUAL LOW NOISE EQUALIZER AMPLIFIER

The KA22211 is a monolithic integrated circuit consisting of a 2-channel pre-amplifier in a 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

SCHEMATIC DIAGRAM**ORDERING INFORMATION**

Device	Package	Operating Temperature
KA22211	8 SIP	$-20^{\circ}C \sim +70^{\circ}C$

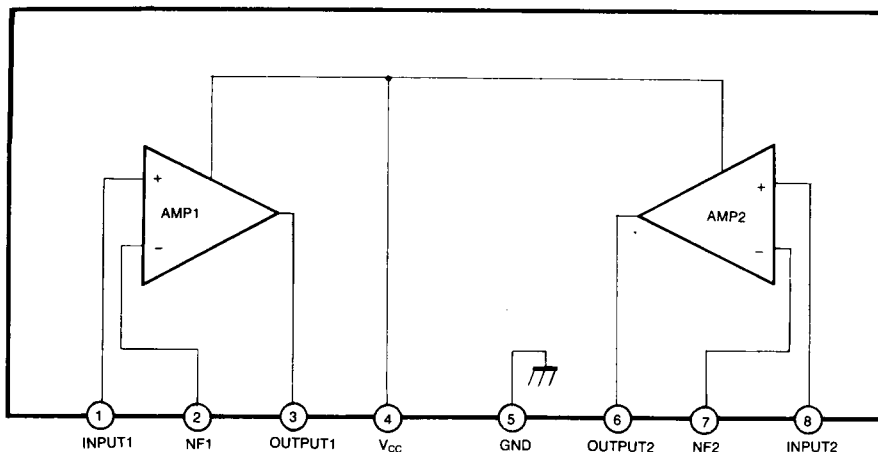
BLOCK DIAGRAM

Fig. 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 = 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	33	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

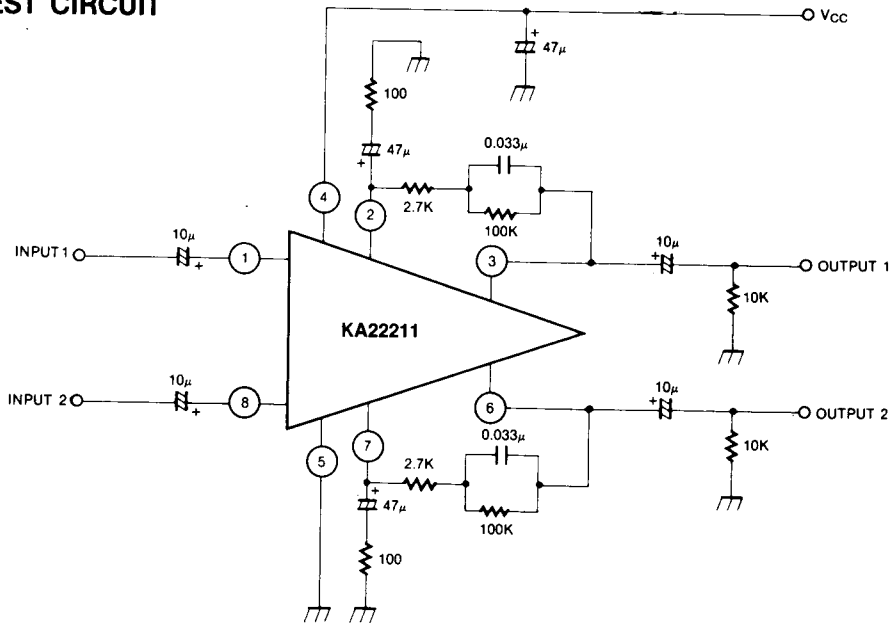


Fig. 2

APPLICATION INFORMATION

External Components

C₂ (C₉): Input coupling capacitor
 These components are concerned with the output noise and operation starting time, and its capacitance is adequate for 10μF.
 As C₂ (C₉) below 4.7μF extends the operation starting time, a capacitance of over 4.7μF is recommended.

C₃ (C₈): 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 C₃ (C₈) makes the operation starting time of an amplifier late. It's capacitance is adequate for 47μF.

C₄, R₃, R₂ (C₇, R₄, R₅): Equalizer network
 This components decide the frequency response of an equalizer amplifier. The time constant of standard NAB characteristic is as follows:

Tape Speed	9.5cm/sec	4.75cm/sec
Time Constant		
C ₄ (R ₂ + R ₃)	3,180μsec	1,590μsec
C ₄ , R ₂	90μsec	120μsec

C₁₁ 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:

C₁ (C₁₀): Protection capacitor
 These components protect against wave damage is strong electric fields and engine noise damage and block oscillation at high amplifying operation.

C₅ (C₆): Output coupling capacitor
 The recommended value is 10μF.

APPLICATION CIRCUIT

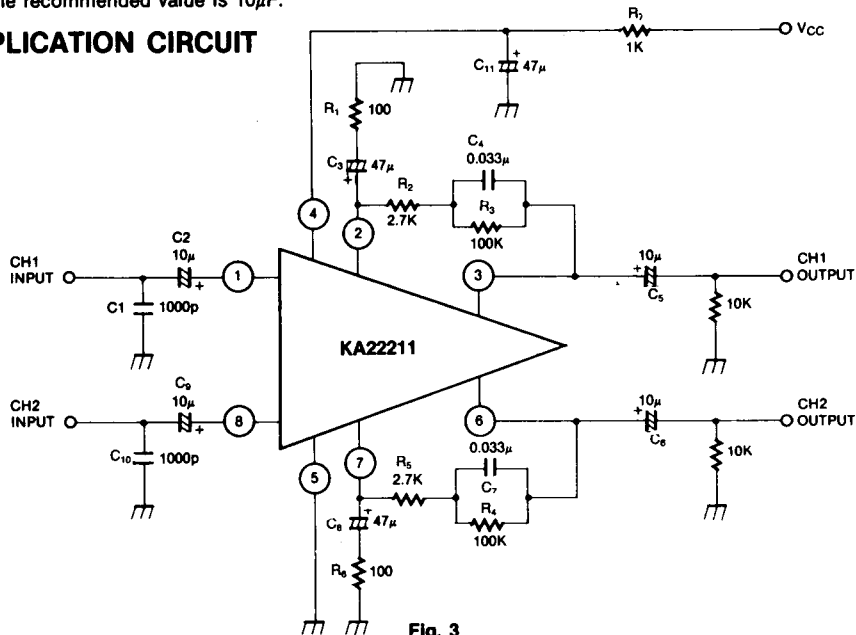


Fig. 3