

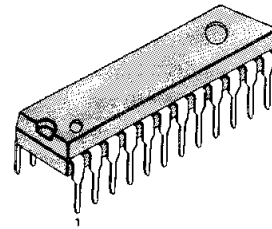
## PLAYBACK/RECORD PRE AMPLIFIER FOR DOUBLE DECK

The KA22291 is a monolithic integrated circuit consisting of a dual input playback amplifier, a channel for double or auto-reverse operation and a two-channel record amplifier. It is suitable for 6V-9V double deck or auto-reverse cassette applications.

### FEATURES

- Dual input two-channel playback amplifier
- Two-channel record amplifier
- Built in ALC and Muting circuit
- PB/REC and playback input select switch included
- Power ON ALC discharge circuit included
- Operating supply voltage:  $V_{CC} = 4V \sim 12V$
- REC/PB power on quick start circuit
- Few external part required.

24 SDIP



### ORDERING INFORMATION

Device	Package	Operating Temperature
KA22291	24 SDIP	$-25^{\circ}\text{C} \sim +75^{\circ}\text{C}$

### BLOCK DIAGRAM

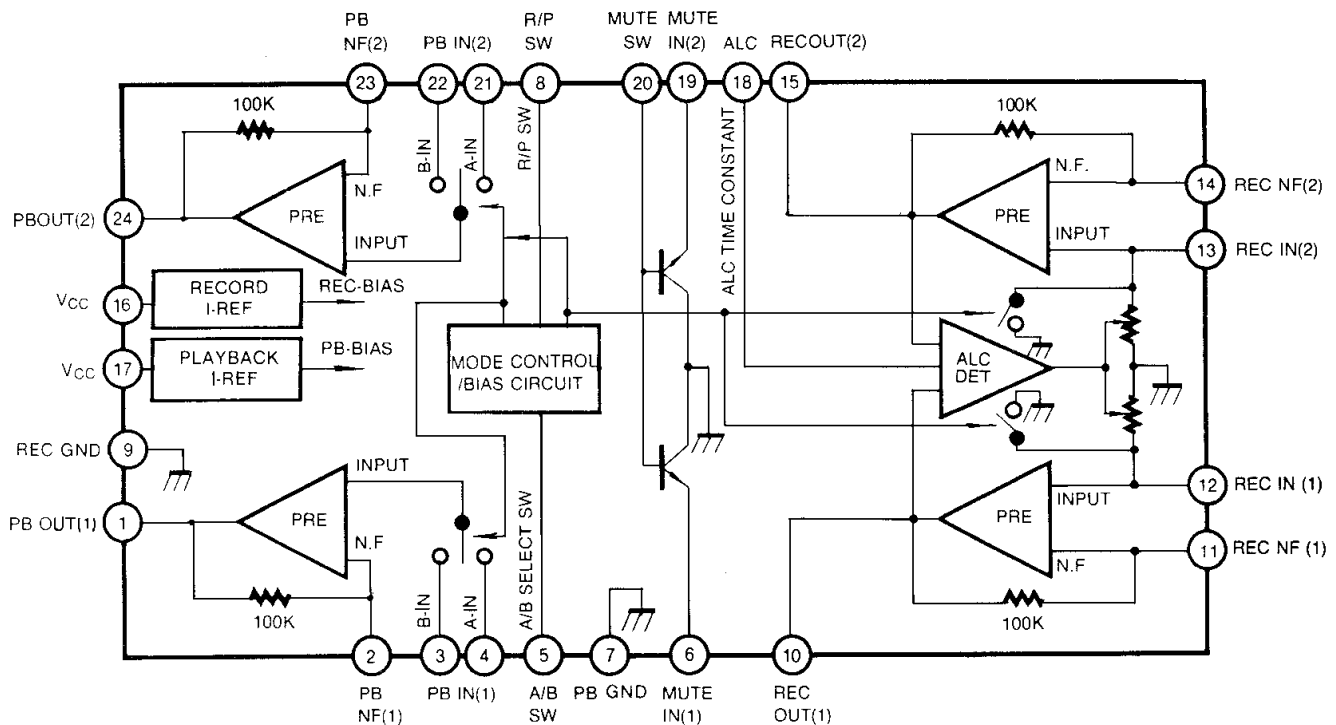


Fig. 1

\* These specifications are subject to change without notice.

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

Characteristic	Symbol	Value	Unit
Supply Voltage	$V_{CC}$	12	V
Power Dissipation	$P_D$	1000	mW
Operating Temperature	$T_{OPR}$	-25 ~ +75	°C
Storage Temperature	$T_{STG}$	-55 ~ +125	°C

**ELECTRICAL CHARACTERISTICS**(Ta = 25°C, V<sub>CC</sub> = 9V, f = 1KHz, unless otherwise specified)

Characteristic		Symbol	Test Condition	Min	Typ	Max	Unit
Circuit Current		$I_{CCO}$	$V_I = 0$ , REC MODE	10	18	26	mA
PLAYBACK	Open Loop Voltage Gain	$G_{VO}$	$V_I = -80\text{dBm}$	60	90		dB
	Output Voltage	$V_{O1}$	THD = 1%, NAB	0.75	1.2		V
	Total Harmonic Distortion	THD <sub>1</sub>	$V_O = 0.2\text{V}$ , NAB		0.05	0.3	%
	Cross Talk	Ch to Ch	$V_O = 0.5\text{V}$ , NAB		-55	-45	dB
		Ain to Bin	$V_O = 0.5\text{V}$ , NAB		-55	-45	dB
	Equivalent Input Noise Voltage	$V_{NI}$	Filter: 20Hz ~ 20KHz $R_G = 2.2\text{K}$ , $V_I = 0$		1.2	2.2	μV
RECORD	Close Loop Voltage Gain	$G_{VC}$	$V_I = 68\text{dBm}$ , ALC off	58	60	62	dB
	Output Voltage	$V_{O2}$	THD = 1%, ALC off	1.2	1.6		V
	Total Harmonic Distortion	THD <sub>2</sub>	$V_I = 68\text{dBm}$ , ALC off		0.2	1	%
	ALC Output Voltage	$V_{O(ALC)}$	$V_I = -20\text{dBm}$	0.75	0.95	1.35	V
	ALC THD	THD <sub>ALC</sub>	$V_I = -20\text{dBm}$		0.2	1.0	%
	ALC Range	$\Delta V_{ALC}$	$V_I = -60\text{dBm}$ , +3dB UP	40	50		dB
	Cross Talk (ALC)	CT <sub>3</sub>	$V_I = -50\text{dBm}$		-55	-40	dB
RECORD TO PLAYBACK Cross Talk		CT <sub>4</sub>	REC input = 0 PLAY output = 0.5V		-55	-40	dB
Muting Range		MR	$V_I = -20\text{dBm}$		-55	-40	dB

\*These specification are subject to change without notice.

The schematic diagram illustrates the internal circuitry of the KA22291 integrated circuit, which is a 24-pin device. The pins are numbered 1 through 24, with pins 1-12 on the bottom and pins 13-24 on the top. The diagram shows various input/output pins, switches, resistors, and capacitors connected to the internal circuitry.

**Pin Connections and Components:**

- Pin 1:** PB OUT, connected to a 10K resistor and a 10μF capacitor.
- Pin 2:** OPEN = CLOSE LOOP, connected to a 6.2K resistor and a 0.027μF capacitor.
- Pin 3:** SHORT = OPEN LOOP, connected to a 47μF capacitor and a 150Ω resistor.
- Pin 4:** PB A-IN, connected to a 2.2K resistor.
- Pin 5:** PB B-IN, connected to a 2.2K resistor.
- Pin 6:** MUTE IN, connected to a 10K resistor and a 10μF capacitor.
- Pin 7:** MUTE OUT, connected to a 10K resistor.
- Pin 8:** V<sub>CC</sub> = 9V, connected to the 9V supply.
- Pin 9:** REC OUT, connected to a 10K resistor and a 10μF capacitor.
- Pin 10:** REC IN, connected to a 100Ω resistor and a 47μF capacitor.
- Pin 11:** 2.2K resistor connected to ground.
- Pin 12:** 2.2K resistor connected to ground.
- Pin 13:** REC IN, connected to a 2.2K resistor and a 10μF capacitor.
- Pin 14:** REC OUT, connected to a 10K resistor and a 47μF capacitor.
- Pin 15:** V<sub>CC</sub> = 9V, connected to the 9V supply.
- Pin 16:** MUTE IN, connected to a 10K resistor and a 10μF capacitor.
- Pin 17:** MUTE OUT, connected to a 10K resistor.
- Pin 18:** SW3, connected to a 10K resistor and a 10μF capacitor.
- Pin 19:** SW3, connected to a 10K resistor and a 10μF capacitor.
- Pin 20:** SW3, connected to a 10K resistor and a 10μF capacitor.
- Pin 21:** SW3, connected to a 10K resistor and a 10μF capacitor.
- Pin 22:** SW3, connected to a 10K resistor and a 10μF capacitor.
- Pin 23:** SW3, connected to a 10K resistor and a 10μF capacitor.
- Pin 24:** SW3, connected to a 10K resistor and a 10μF capacitor.

**Internal Circuitry and Switches:**

- SW2:** A switch connected to pins 10 and 11, labeled "GND SHORT = PLAY = REC".
- SW3:** A switch connected to pins 18 and 19, labeled "SHORT MUTE ON".
- SW4-1:** A switch connected to pins 22 and 23, labeled "OPEN = CLOSE LOOP" and "SHORT = OPEN LOOP".
- SW4-2:** A switch connected to pins 2 and 3, labeled "OPEN = CLOSE LOOP" and "SHORT = OPEN LOOP".

**Other Components:**

- Resistors:** 10K, 6.2K, 2.2K, 100Ω, 150Ω, 1MΩ.
- Capacitors:** 10μF, 0.027μF, 47μF, 1000P.

**Fig. 2**

Fig. 2

\* These specifications are subject to change without notice.

## APPLICATION INFORMATION

### 1. R/P SWITCH

Apply R/P input voltage at PIN 8.

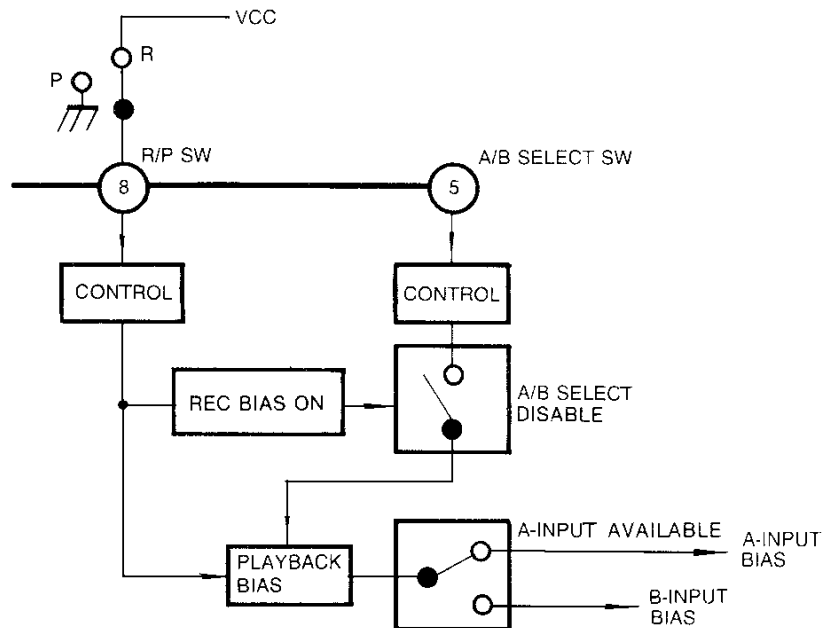
PLAY: 0V (GND)

REC: 4.5V ~ 12V (Don't apply 13V above).

Only valid A/B input select in playback mode.

In record mode, the playback A-input was available and the ALC was turned on by record bias.

### A. RECORD MODE SCHEMATIC



### B. PLAYBACK MODE SCHEMATIC

Fig. 3

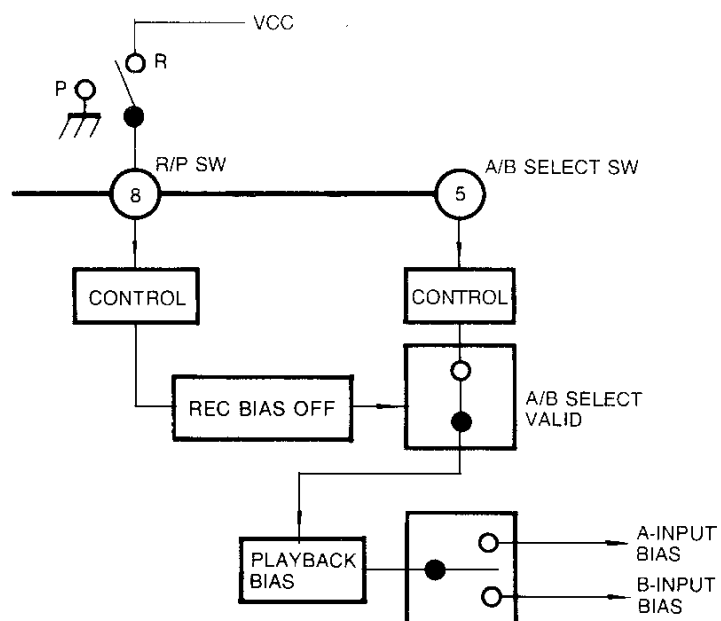


Fig. 4

\* These specifications are subject to change without notice.

## 2. PLAYBACK A/B INPUT SELECT SWITCH (only playback mode)

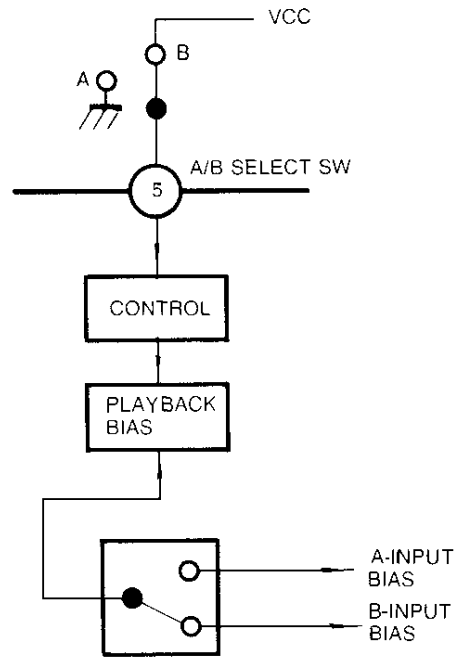
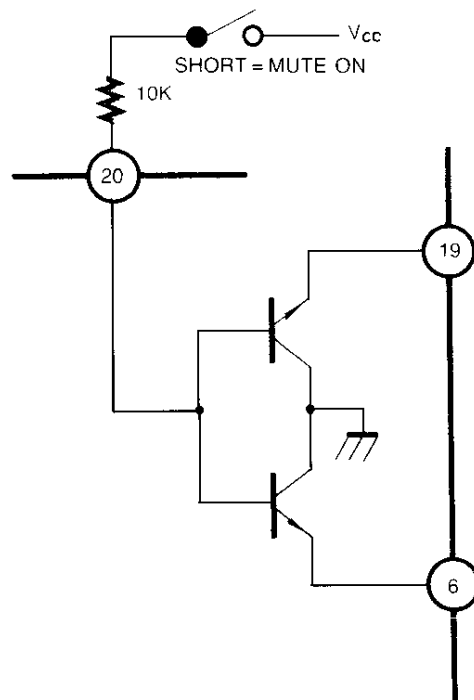


Fig. 5

## 3. MUTE SWITCH



\*THIS CIRCUIT IS OPERATED ON  
REVERSE SATURATION MODE

Fig. 6

\*These specification are subject to change without notice.