

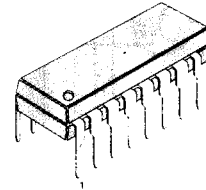
## ONE CHIP TAPE RECORDER SYSTEM

The KA22130 is a monolithic integrated circuit consisting of preamplifier, ALC circuit, power amplifier in 16 pin plastic dual in line package.

## FEATURES

- Suitable for play and recording mono cassette tape recorder.
- Wide operating supply voltage range:  $V_{CC} = 4V \sim 12V$
- High gain preamplifier and power amplifier.
- Output power of power amplifier state  
 $P_o = 1W$  at  $V_{CC} = 6V$ ,  $R_L = 4\Omega$ ,  $THD = 10\%$ .
- Soft tone quality at the time of output saturation.
- Wide ALC range and small variation in output voltage.
- Small shock noise at the time of power on/off due to built-in prevention circuit.
- Variable monitor capability due to recording amplifier consisting of preamplifier alone.
- Minimum number of external parts required.

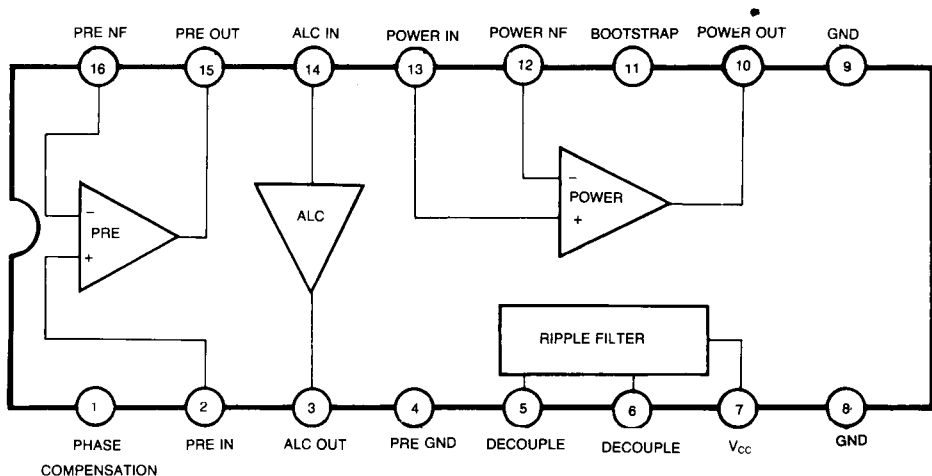
16 DIP



## ORDERING INFORMATION

Device	Package	Operating Temperature
KA22130	16 DIP	$-20^{\circ}C \sim 70^{\circ}C$

## BLOCK DIAGRAM



**ABSOLUTE MAXIMUM RATINGS** ( $T_a = 25^\circ\text{C}$ )

Characteristic	Symbol	Value	Unit
Supply Voltage	$V_{CC}$	13	V
Power Dissipation	$P_D$	1.5	W
Operating Temperature	$T_{OPR}$	-20 ~ +70	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-40 ~ +150	$^\circ\text{C}$

**ELECTRICAL CHARACTERISTIC**( $T_a = 25^\circ\text{C}$ ,  $V_{CC} = 6\text{V}$ ,  $f = 1\text{KHz}$ , unless otherwise specified)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Quiescent Circuit Current	$I_{CCQ}$	$V_{CC} = 6\text{V}$ , $V_i = 0$		18	30	mA
		$V_{CC} = 9\text{V}$ , $V_i = 0$		23	40	mA
<b>Pre Amplifier</b>						
Open Loop Voltage Gain	$G_{VO}$	Open loop		85		dB
Closed Loop Voltage Gain	$G_{VC}$	Closed loop, Play		40		dB
Output Voltage	$V_O$	THD = 1%, Play	0.9	1.2		V
Input Resistance	$R_i$		21	30		$\text{K}\Omega$
Equivalent Input Noise Voltage	$V_{NI}$	Play		1.0	2.0	$\mu\text{V}$
ALC Input Level	$V_{I(ALC)}$	THD = 1%, Rec	-20	-12		dBm
<b>Power Amplifier</b>						
Closed Loop Voltage Gain	$G_{VC}$	$R_F = 51\Omega$	43	45	47	dB
Output Power	$P_O$	$V_{CC} = 6\text{V}$ , $R_L = 4\Omega$ , THD = 10%	0.7	1.0		W
		$V_{CC} = 7.5\text{V}$ , $R_L = 4\Omega$ , THD = 10%	1.0	1.5		W
		$V_{CC} = 9\text{V}$ , $R_L = 4\Omega$ , THD = 10%	1.7	2.2		W
Total Harmonic Distortion	THD	$P_O = 250\text{mW}$		0.3	1.5	%
Input Resistance	$R_i$			30		$\text{K}\Omega$
Output Noise Voltage	$V_{NO}$	$R_G = 10\text{K}\Omega$		0.6	1.8	mV
Ripple Rejection Ratio	RR	$R_G = 0\Omega$ , $V_R = 150\text{mV}$ , $f = 100\text{Hz}$	40	45		dB

TEST CIRCUIT

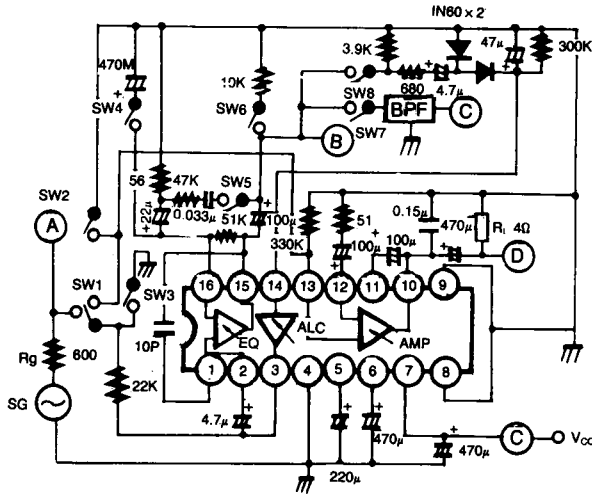


Fig. 2

TEST METHOD

Characteristic		SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	Test Point	Test Method
Power Amplifier	I <sub>CCQ</sub>		on	on	off	on	on	off	off		Test circuit current
	G <sub>Vc</sub>	2	off	off	off	on	on	off	off	A.D.	G <sub>Vc</sub> = 20 log V <sub>O</sub> /V <sub>I</sub> (dB)
	P <sub>O</sub>	2	off	off	off	on	on	off	off	D	Test output voltage at THD = 10%
	THD	2	off	off	off	on	on	off	off	D	Test THD at output voltage V <sub>O</sub> = 1V
	V <sub>NO</sub>		on	off	off	on	on	off	off	D	Test output noise voltage
Pre Amplifier	RR		off	off	off	on	on	off	off	D	RR = 20 log V <sub>RO</sub> /150 (dB) Test output ripple voltage (V <sub>RO</sub> )
	G <sub>VO</sub>	1	off	off	on	off	on	off	off	A.B	A <sub>VO</sub> = 20 log V <sub>O</sub> /V <sub>I</sub> (dB)
	V <sub>O</sub>	1	off	off	off	on	on	off	off	B	Test output voltage at THD = 1%
	V <sub>NI</sub>		off	on	off	on	on	on	off	C	Convert output noise voltage at R <sub>G</sub> = 2.2KΩ, V <sub>NI</sub> = V <sub>NO</sub> /G <sub>V</sub>
	V <sub>f(ALC)</sub>	1	off	off	off	off	off	off	on	A.B	Test input voltage at THD = 1%

APPLICATION CIRCUIT

1. Mono cassette tape recorder

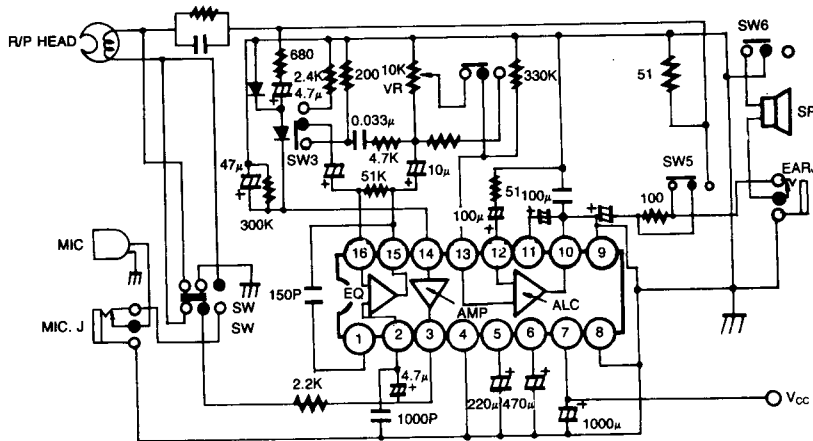


Fig. 3

2. Radio cassette tape recorder

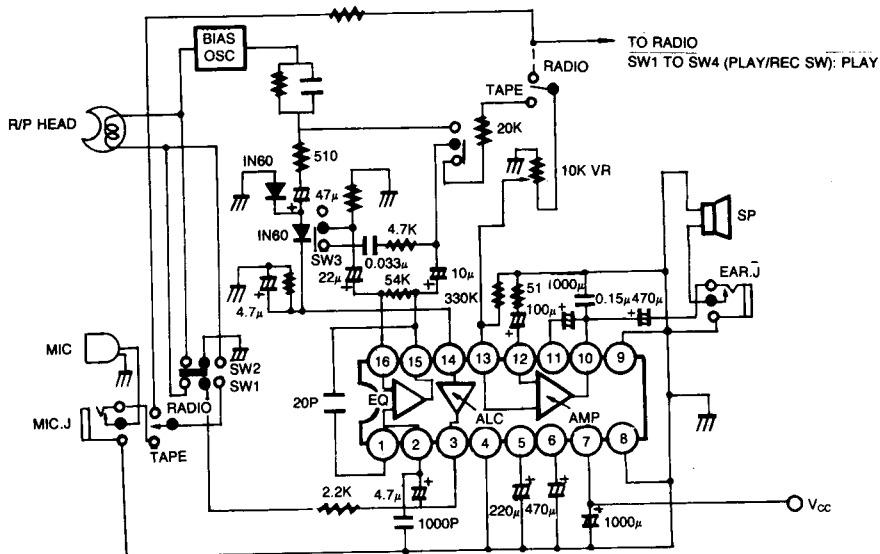


Fig. 4

3