

VCR Hi-Fi audio signal processing system

BH7777AK

The BH7777AK is a HiFi audio signal processing system IC comprised of a peak-noise reduction (PNR) processor, an FM modulator/demodulator circuit, an input/output switch circuit, an automatic FM detector circuit, an FM band-pass filter, and a regulator circuit. The IC runs of a dual $\pm$ power supply which allows a large reduction in the number of external components required.

●Applications

Video cassette recorders

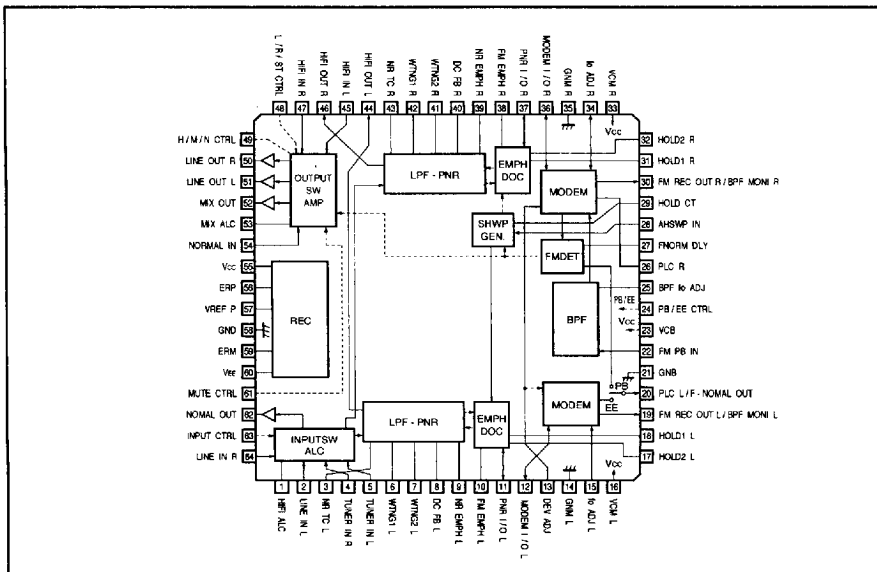
●Features

- 1) Operates off dual $\pm$ power supply which allows a large reduction in the number of coupling capacitors required. A built-in regulator makes it easy to construct a power supply system.
- 2) Two input switch systems are provided (tuner and line). LEFT/RIGHT/STEREO and HiFi/MIX/NORMAL switches are built-in.
- 3) HiFi input has built-in ALC circuit.
- 4) The PNR processor and FM modulation/demodulation circuit provide reverse characteristics at recording and playback to allow combined adjustment of FM deviation

and playback level.

- 5) Peak-level compression circuit suppresses abnormal noise generation due to pulsating noise sources.
- 6) Switching noise is reduced by a slope-control type differential compensation circuit.
- 7) Built-in FM band-pass filter connects directly to the playback amplifier and excels at attenuation of the other channel. The FM recording output circuit has a high-performance high-frequency cutoff filter that produces a sine wave output.
- 8) Built-in noise-detecting automatic FM detector circuit.

●Block diagram



7828999 0022363 938

ROHM

● Pin descriptions

Pin No.	Pin name	Function	Pin Voltage	I/O circuit
1	HiFi ALC	HiFi audio ALC time constant setting.	0.0V	EF (NPN) $\sim 200\Omega$
2, 64	LINE IN L, R	Line input (L and R). GND bias resistor required.	0.0V	B (NPN)
3, 43	NR TC L, R	PNR attack and recovery time setting. Attack R: 530Ω , recovery R: $6.5k\Omega$.	-5.0V	—
4, 5	TUNER IN L, R	Tuner input (L and R). GND bias resistor required.	0.0V	B (NPN)
6, 42	WTNG1 L, R	Waiting characteristic setting.	0.0V	$10k\Omega$
7, 41	WTNG2 L, R	Waiting high-frequency time constant setting (external C = $0.022\mu F$)	0.0V	$1.1k\Omega$
8, 40	DC FB L, R	PNR operating reference potential.	0.0V	$11.5k\Omega$
9, 39	NR EMPH L, R	NR emphasis time constant setting. R = $18k\Omega$, $5.6k\Omega$ (external C = $0.01\mu F$)	0.0V	—
10, 38	FM EMPH L, R	FM emphasis time constant setting. R = $11k\Omega$, $6.2k\Omega$ (external C = $3300pF$)	0.0V	—
11, 37	PNR I/O L, R	PNR processor input/output (EE: compressed output, PB: expanded input)	0.0V	EE: EF (NPN) PB: $50k\Omega$
12, 36	MODEM I/O L, R	MODEM input/output (EE: modulated input, PB: demodulated output)	2.5V	EE: $50k\Omega$ PB: EF (NPN)
13	DEV ADJ.	Deviation fine adjustment.	—	B (NPN)
14, 35	GND _M (GNM) L, R	GND for PNR and MODEM. Both L and R unconnected.	0.0V	—
15, 34	f _o ADJ L, R	VCO control current input.	2.5V	EF (NPN)
16, 33	V _{CCM} (VCM) L, R	V _{CC} for MODEM.	5.0V	—
17, 32	HOLD2 L, R	For connection of slope control differential holding capacitor.	0.0V	EF (NPN) $\sim 1k\Omega$
18, 31	HOLD1 L, R	For connection of previous value holding capacitor.	0.0V	200Ω
19, 30	FM REC OUT L, R (BPF MONITOR L, R)	Recording FM input pin. Sine wave output. BPF output monitor pin.	EE: 2.7V PB: 2.7V	EF (NPN) $\sim 200\Omega$
20	PLC L (F - NORMAL OUT)	PLC time constant setting. FM detector signal output.	EE: 0.0V PB: 4.5V 0.0V	EE: EF (NPN) $\sim 50k\Omega$ PB: EF (NPN)
21	GND _B (GNB)	FM BPF GND.	0.0V	—
22	FM PB IN	Playback FM input. (660mV _{P-P} Typ). No input coupling capacitor (GND to V _{CC}).	0.0V	$33k\Omega$
23	V _{CCB} (VCB)	FM BPF GND.	5.0V	—
24	PB / EE CTRL	EE mode/PB mode control.	—	B (PNP)
25	BPF f _o ADJ.	FM BPF center frequency adjustment.	1.8V	EF (NPN) $\sim 200\Omega$
26	PLC R (CARRIER FILTER)	PLC time constant setting. Attack R: $10k\Omega$. For connection of capacitor for FM detector carrier filter.	EE: 0.0V PB: 2.4V	EE: EF (NPN) $\sim 10k\Omega$ PB: EF (NPN) $\sim 400\Omega$
27	FNORM DLY	Forced normal signal return delay time setting. Set the time constant with C and R.	—	OPEN - C (NPN)
28	AHWP IN	Audio head switching pulse input.	—	B (NPN)
29	HOLD CT	Hold time setting.	—	OPEN - C (NPN)
44, 46	HiFi OUT L, R	PNR audio output.	0.0V	EF: (P - P)
45, 47	HiFi IN L, R	HiFi input for output switch.	0.0V	$47k\Omega$
48	L / R / ST CTRL	LEFT/RIGHT/STEREO switch control.	—	B (PNP)
49	H / M / N CTRL	HiFi/MIX/NORMAL switch control.	—	B (PNP)
50, 51	LINE OUT L, R	Line output.	0.0V	330Ω
52	MIX OUT	Mixer amplifier output for RF converter.	0.0V	EF (NPN)

* EF: emitter follower, P-P: push pull, B: base, and C: collector.

All numerical values are standardized values.

7828999 0022364 874

ROHM

● Pin descriptions

Pin No.	Pin name	Function	Pin Voltage	I/O circuit
53	MIX ALC	ALC time constant setting for mixer amplifier. Attack and recovery time setting.	-5.0V	EF (NPN) ~500 Ω
54	NORMAL IN	Switch input for normal output	0.0V	B (NPN)
55	V _{CC}	V _{CC} regulator.	5.0V	—
56	ERP	V _{CC} regulator error output.	5.0V	C (NPN)
57	VREF P	V _{CC} / 2 reference voltage. With power on detect and precharge function.	2.5V	10k Ω
58	GND	Input/output switch GND.	0.0V	—
59	ERM	V _{EE} regulator error output.	-5.0V	C (NPN)
60	V _{EE}	V _{EE} regulator	-5.0V	—
61	MUTE CTRL	Line output mute control input.	—	3k Ω (2.5V or more)
62	NORMAL OUT	Switch output for normal input	0.0V	B (NPN)
63	INPUT CTRL	TUNER/BIL/LINE input selection control	—	B (PNP)

* I/O circuit; EF: emitter follower, P-P: push pull, B: base, and C: collector.

All numerical values are standardized values.

● Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Applied voltage	V _{IN}	24, 25, 48, 49, 61, 63 pin...+6.5	V
	V _{IN}	60pin.....-6.0	V
	V _{IN}	Other than the pins above...+6.0	V
Power dissipation	P _d	800 *	mW
Operating temperature	T _{opr}	-10 ~ 70	°C
Storage temperature	T _{stg}	-55 ~ 125	°C

* When IC is stand alone, reduced by 8.0mW for each increase in Ta of 1°C over 25°C. When mounted on 70mm x 70mm², t = 1.6mm glass epoxy PCB, P_d = 1.1W (reduced by 11mW for each increase in Ta of 1°C over 25°C).

● Recommended operating conditions (Ta=25°C)

Parameter	Symbol	Limits	Unit
Power supply voltage	UNREG - V _{CC}	7.0 ~ *	V
Power supply voltage	UNREG - V _{EE}	7.0 ~ *	V

* The built-in regulator in this IC outputs +5.0V from pin 55, and -5.0V from pin 60. The supply voltage range given above is the voltage to be applied to UNREG V_{CC} and UNREG V_{EE} pins in the test circuit to obtain regulator output. Therefore, the upper limit of the voltage range is set by the externally connected transistor that forms the regulator circuit, and not by the IC itself. Note, also, that the lower limit will change depending on the value of the resistor connected between the collector and base of the transistor.

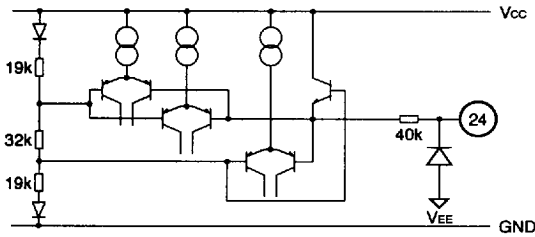
7828999 0022365 700

ROHM

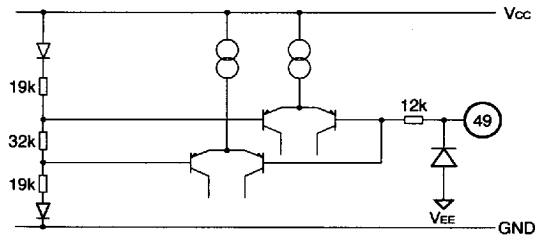
147

●Input/output circuits

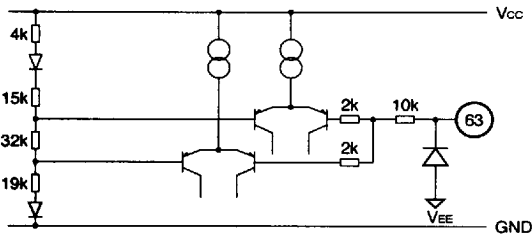
PB / EE CTRL



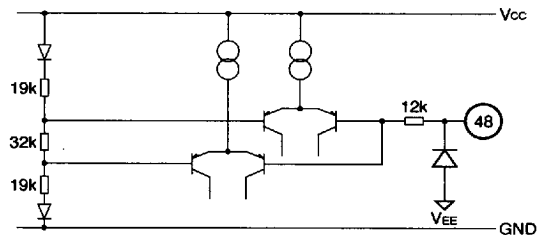
HiFi / MIX / NOMAL CTRL



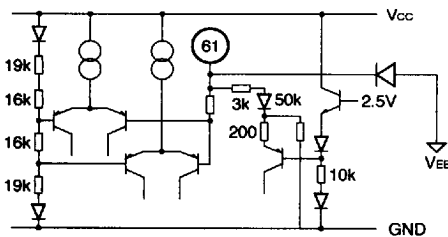
INPUT CTRL



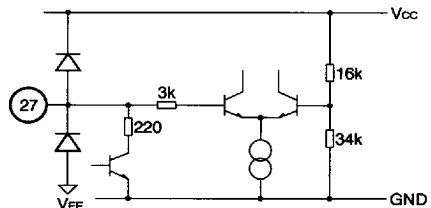
LEFT / RIGHT / STEREO CTRL



MUTE CTRL



FNORM DLY



●Electrical characteristics

- Unless otherwise specified, the following measurement conditions apply:

UNREG - $V_{CC}=+10V$ UNREG - $V_{EE}=-10V$ $T_a=25^{\circ}C$

Input control

(INPUT CTRL pin 63)

: all mode

HiFi/MIX/NORMAL control

(H/M/N CTRL pin 49)

: High (HiFi)

LEFT/RIGHT/STEREO control

(L/R/ST CTRL pin 48)

: Low (STEREO)

MUTE control

(MUTE CTRL pin 61)

: Low (MUTE)

Forced NORMAL control

(FNORM CTRL pin 27)

: Pulled to V_{CC} via R (330k Ω)

PB/EE control

(PB/EE CTRL pin 24)

: High (EE)

* With regard to the control system voltages, refer to the mode holding voltage range.

Signal frequency $f=1kHz$

MODEM carrier frequency NTSC L channel 1.30MHz

MODEM carrier frequency NTSC R channel 1.70MHz

7828999 0022366 647

ROHM

●Electrical characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
(REGULATOR)						
EE Circuit current (+ supply)	$I_{QP REC}$	23.8	31.8	42.4	mA	EE mode, no input
PB Circuit current (+ supply)	$I_{QP PB}$	33.5	44.7	59.6	mA	PB mode, no input, FNORM
EE Circuit current (- supply)	$I_{QM REC}$	9.0	12.0	16.1	mA	EE mode, no input
PB Circuit current (- supply)	$I_{QM PB}$	9.1	12.1	16.2	mA	PB mode, no input, FNORM
Regulator pin voltage (+)	V_{OC}	4.65	5.00	5.35	V	
Regulator pin voltage (-)	V_{EE}	-5.33	-4.98	-4.63	V	

(EE THROUGH)

(INPUT : TU L/R IN, LINE L/R IN, OUTPUT : LINE L/R OUT)

Line output level (Typ.)	V_{OEE}	-9.1	-8.1	-7.1	dBV	$V_{IN} = -20\text{dBV}$
Distortion	THD_{EE}	—	0.015	0.070	%	$V_{IN} = -20\text{dBV}^{*1}$
Maximum output level	V_{OMEE}	9.2	10.7	—	dBV	$THD = 1\%^{*1}$
ALC level	V_{ALC1}	4.6	6.1	7.6	dBV	$V_{IN} = -3\text{dBV}$, single channel input
Output residual noise	V_{ONEE}	—	-95.0	-90.0	dBV	$R_g = 1\text{k}\Omega^{*2}$
Crosstalk	CT_{EE}	—	—	-78.0	dBV	$V_{IN} = -12\text{dBV}^{*2}$
Muting level	MT_{EE}	—	-116.0	-95.0	dBV	$V_{IN} = -12\text{dBV}^{*2}$

(INPUT : TU L/R IN, LINE L/R IN, OUTPUT : NORMAL OUT)

Normal out output level	V_{ONORM}	-20.5	-20.0	-19.5	dBV	$V_{IN} = -20\text{dBV}$, simultaneous L & R input
-------------------------	-------------	-------	-------	-------	-----	---

(MIX AMP)

(INPUT : TU L/R IN, LINE L/R IN, OUTPUT : MIX OUT)

Output level	V_{OMIX}	-8.9	-7.9	-6.9	dBV	$V_{IN} = -20\text{dBV}$, simultaneous L & R input
MIX ALC level	V_{ALCMIX}	-5.4	-3.9	-2.4	dBV	$V_{IN} = -14\text{dBV}$, simultaneous L & R input

(PNR ENCODE MODE)

(INPUT : TU L/R IN, LINE L/R IN, OUTPUT : PNR L/R OUT)

Encode output level	V_{OENC}	-16.5	-15.5	-14.5	dBV	$V_{IN} = -20\text{dBV}$
Compression characteristic	CMP	-26.7	-25.0	-23.3	dB	$V_{IN} = -20\text{dBV}$ to -70dBV , output level differential
Encode distortion	THD_{ENC}	—	0.15	0.35	%	$V_{IN} = -20\text{dBV}^{*1}$
Output residual noise	V_{ONENC}	—	-59.0	-54.0	dBV	$R_g = 1\text{k}\Omega^{*2}$

(PNR DECODE MODE)

(INPUT : PNR L/R IN, OUTPUT : LINE L/R OUT)

Output voltage level	V_{ODEC}	-9.1	-7.6	-6.1	dBV	$V_{IN} = -15.5\text{dBV}$
Expansion characteristic	EXP	-52.7	-50.5	-48.3	dB	$V_{IN} = -15.5\text{dBV}$ to -40.5dBV , output level differential
Decode distortion	THD_{DEC}	—	0.05	0.20	%	$V_{IN} = -15.5\text{dBV}^{*1}$

*1 B.W. = 0.4~30 kHz

*2 DIN AUDIO

7828999 0022367 583

ROHM

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
-----------	--------	------	------	------	------	------------

《MODEM REC MODE》

(INPUT : TU L/R IN, LINE L/R IN, OUTPUT : FM REC L/R OUT)

Carrier setting resistance	Lch	R _{OL}	12.6	15.0	17.4	kΩ	No signal
	Rch	R _{OR}	9.6	11.5	13.4	kΩ	
Frequency deviation	Lch	DEV _L	43.2	49.2	55.2	kHz	V _{IN} (TU, LINE IN) = -20dBV
	Rch	DEV _R	43.2	49.2	55.2	kHz	
FM output level	Lch	V _{OFML}	325	370	425	mV _{P-P}	
	Rch	V _{OFMR}	320	365	420	mV _{P-P}	

《MODEM PB MODE》

(INPUT : FM PB IN, OUTPUT : LINE L/R OUT)

Carrier setting resistance, after BPF f0 frequency adjustment, V_{IN} = 660mV_{P-P}, 1.30MHz, 1.70MHz MIX IN

Demodulated output level	Lch	V _{ODL}	-9.6	-7.6	-5.6	dBV	DEV = ±50kHz
	Rch	V _{ODR}	-9.6	-7.6	-5.6	dBV	
Demodulated distortion 1	Lch	THD _{DL}	—	0.10	0.35	%	DEV = ±50kHz *1
	Rch	THD _{DR}	—	0.10	0.35	%	
Demodulated noise level	Lch	V _{ONDL}	—	-97.5	-87.0	dBV	Unmodulated *2
	Rch	V _{ONDR}	—	-97.5	-87.0	dBV	

《Recording → playback total characteristics》

(REC→INPUT : TU L/R IN, LINE L/R IN, OUTPUT : LINE L/R OUT)

(PB→INPUT : FM PB IN, OUTPUT LINE L/R OUT)

Line output recording/playback level difference	Lch	V _{RPL}	-1.2	0.0	1.2	dB	EE mode: V _{IN} = -20dBV. RO adjusted for EE mode. PB mode: Input FM PB IN = 660mV _{P-P} . EE/PB line out level difference for L, R MIX IN, frequency deviation as for EE (DEV _{L,R}), V _{IN} = -20dBV.
	Rch	V _{RPR}	-1.2	0.0	1.2	dB	

《FM BPF》

(INPUT : FM PB IN, OUTPUT : BPF MONITOR L/R)

BPF center frequency setting resistance value	R _{OBPF}	19.6	25.2	30.8	kΩ	f = 1.505MHz, V _{IN} = 200mV _{P-P} R and L output level the same.
---	-------------------	------	------	------	----	--

Lch, Rch mix input signal level, 660mV_{P-P} (ratio 1:1)

NTSC Lch						
1.30MHz insertion loss	ATT _{NLC}	-14.1	-11.1	-8.1	dB	1.30MHz + 1.70MHz FM ALC ON
1.70MHz insertion loss	ATT _{NL} 1.70	—	—	ATT _{NLC} -30.0	dB	1.30MHz + 1.70MHz
NTSC Rch						
1.70MHz insertion loss	ATT _{NRC}	-15.3	-12.3	-9.3	dB	1.30MHz + 1.70MHz FM ALC ON
1.30MHz insertion loss	ATT _{NR} 1.30	—	—	ATT _{NRC} -30.0	dB	1.30MHz + 1.70MHz

*1 B.W. = 0.4~30 kHz

*2 DIN AUDIO

7828999 0022368 41T

●Electrical characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
《DO detector circuit》						
DO detector level	V _{DDO}	76.5	82.5	88.5	dB μ	Input level to give DO due to attenuation.
《Hold pulse generation circuit》						
Hold delay time	$\tau_{D\text{ HOLD}}$	—	0.60 0.75	1.30	μ S	Time from A.H. PULSE edge to HOLD start.
Hold time	$\Delta \tau_{\text{HOLD}}$	5.55	6.85	8.15	μ S	
《Control system mode holding voltages》						
PB / EE CTRL						
EE holding voltage	V _{H24H}	3.90	—	V _{CC}	V	PB / EE CTRL : H
BPF MONISTOP holding voltage	V _{H24M}	2.25	—	2.85	V	PB / EE CTRL : M, H
PB holding voltage	V _{H24L}	0	—	0.90	V	PB / EE CTRL : L
INPUT CTRL						
TU holding voltage	V _{H63L}	0	—	0.90	V	INPUT CTRL2 : L
TU (BIL) holding voltage	V _{H63M}	2.25	—	2.85	V	
LINE holding voltage	V _{H63H}	3.90	—	V _{CC}	V	INPUT CTRL1 : L
H / M / N CTRL						
HiFi holding voltage	V _{H49H}	3.90	—	V _{CC}	V	
MIX holding voltage	V _{H49M}	2.25	—	2.85	V	
NORMAL holding voltage	V _{H49L}	0	—	0.90	V	
L / R / ST CTRL						
STEREO holding voltage	V _{H45L}	0	—	0.90	V	
Rch holding voltage	V _{H48M}	2.25	—	2.85	V	
Lch holding voltage	V _{H48H}	3.90	—	V _{CC}	V	
MUTE CTRL						
MUTE	V _{H7L}	0	—	1.00	V	
DC MUTE	V _{H7H}	3.90	—	V _{CC}	V	
FNORM CTRL						
FNORM holding voltage	V _{H43}	0	—	2.00	V	

7828999 0022369 356

ROHM

7828999 0022370 078

1-1 Function table

The BH7777AK IC incorporates the following functions.

No.	Block name	Main function	Pin number	Power supply
1	Regulator	• $\pm 5V$ regulator (V_{CC} and V_{EE}) • Anti-pop circuit	55~60	$UNREG-V_{CC} : +10V$ $UNREG-V_{EE} : -10V$ $GND : 58P$
2	Input switcher	• TUNER/LINE switching circuit • TUNER/BILINGUAL/LINE switching circuit • Normal out terminal • ALC amplifier	1, 2, 4, 5, 62~64	$+V_{CC}$ (internally connected) $-V_{EE}$ (internally connected) $GND : 58P$
3	Output switcher	• Line out: 12dB (LINE AMP) • LEFT/RIGHT/STEREO switching circuit • HiFi/MIX/NORMAL switching circuit • Normal in • Mute switch • RF mixer amplifier with ALC (MIX AMP)	44~54, 61	$+V_{CC}$ (internally connected) $-V_{EE}$ (internally connected) $GND : 58P$
4	PNR processor	• 20kHz line low-pass filter (20kHz LPF) • PNR processor (MOA, CCA, WTNG, DET) • Fixed emphasis/de-emphasis (EMPH/DEEMPH) • Switching noise slope control-type differential compensation circuit	3, 6~12, 36~43	$+V_{CC}$ (internally connected) $-V_{EE}$ (internally connected) $GND : 58P$
5	Modulation/demodulation	• FM modulator/demodulator circuit • Recording FM high-frequency cutoff filter (FM LPF) • Over-modulation limiter (AUDIO LIM) • PLC circuit (PLC) • Playback FM limiter (FM LIM)	13~19, 30~35	$V_{CC} : 16, 33P$ $GND : 14, 35P$
6	FM detector control	• D.O. detect circuit (D.O. DET) • Noise-detect method automatic FM detector circuit (FM DET) • Hold pulse generator	20, 26~29	$V_{CC} : 16, 33P$ $GND : 14, 35P$
7	FM BPF	• Lch and Rch FM band-pass filter • Input level adjustment circuit (FM ALC)	19, 30, 21~23, 25	$V_{CC} : 23P$ $GND : 21P$

1-2 HiFi and normal audio system flowchart

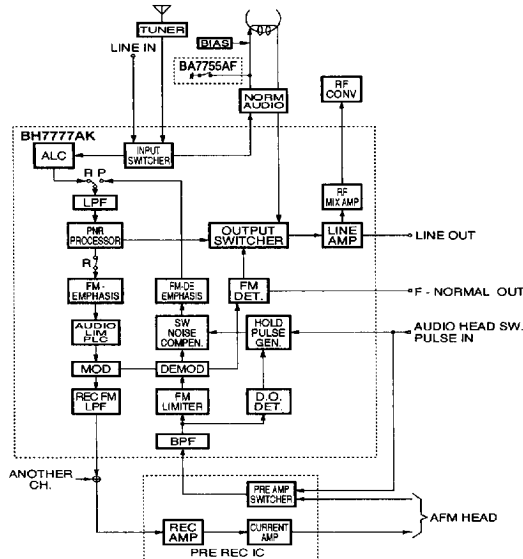


Fig.2

7828999 0022371 T04

2. Signal flow and level diagram

2-1 HiFi audio signal flow for recording (EE through)

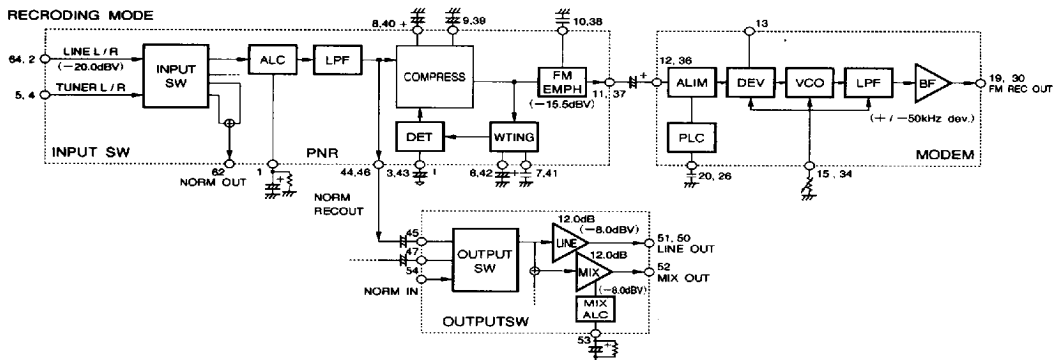


Fig.3

2-2 HiFi audio signal flow for playback

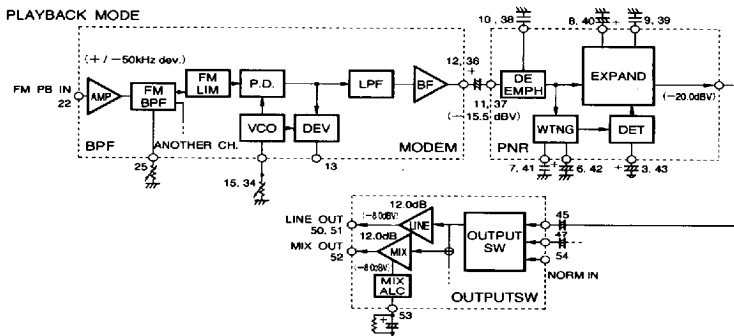


Fig.4

2-3 HiFi audio level diagram

Signal levels for the signals passing through the blocks are shown below (for recording and playback).

- f=1kHz and standard level.

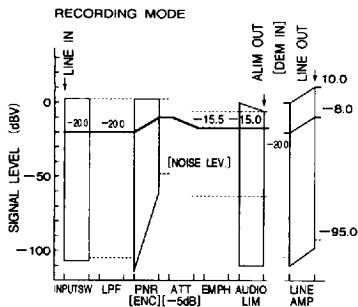


Fig.5

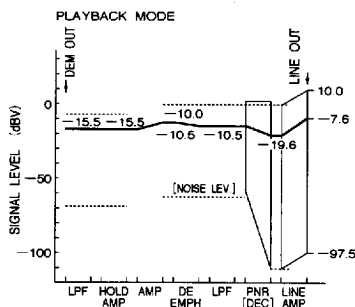


Fig.6

●Control terminals

3-1 Control terminals

•The IC has the following six control terminals.

1)Recording/playback control (PB/EE CTRL: pin 24) EE, PBF and MONITOR OFF modes can be set.

Mode	Control signal	Notes
PB	L	PB mode
BPF MONI OFF	M	PB mode, BPF MONITOR output off
EE	H	EE mode

2)Forced normal control (FNORM DLY: pin 27)

During playback, regardless of the line output mode setting, it is possible to force the output switch to the normal output mode setting (except when mute is "H").

Mode	Control signal	Notes
FNORM	H (OPEN)	Follows the detect state of the auto FM detect circuit.
FNORM	L	Forced normal.

Note: This is also used for the time constant setting function for the automatic FM signal detector circuit (FNORM DLY), when a time constant circuit is connected, leave FNORM mode open.

3)Output switch HiFi/MIX/NORMAL control (H/M/N CTRL: pin 49)

Output switcher HiFi/MIX/NORMAL switching.

Mode	Control signal	Notes
NORMAL	L	NORMAL mode
MIX	M	HiFi + NORMAL mode
HiFi	H	HiFi mode

4)Output switch LEFT/RIGHT/STEREO control (L/R/ST CTRL: pin 48)

Output switcher LEFT/RIGHT/STEREO switching.

Mode	Control signal	Notes
STEREO	L	LINE OUT L: Lch output, LINE OUT R: Rch output
RIGHT	M	LINE OUT L: Rch output, LINE OUT R: Rch output
LEFT	H	LINE OUT L: Lch output, LINE OUT R: Lch output

5)Mute control (MUTE CTRL: pin 61)

Stops line output and MIX output.

Mode	Control signal	Notes
MUTE	L	
MUTE	H	Line mute and DC mute operates.

Note: Be certain to set mute to H at power on and power off.

6)Input control (INPUT CTRL: pin 63)

Input switcher LINE/BILINGUAL/TUNER switching.

Mode	Control signal	Notes
TUNER	L	HiFi: TUNER L/R, NORMAL OUT: TUNER L+R
TU (BIL)	M	HiFi: TUNER L/R, NORMAL OUT: TUNER L
LINE	H	HiFi: LINE L/R, NORMAL OUT: LINE L+R

7828999 0022373 887

ROHM

●Application example

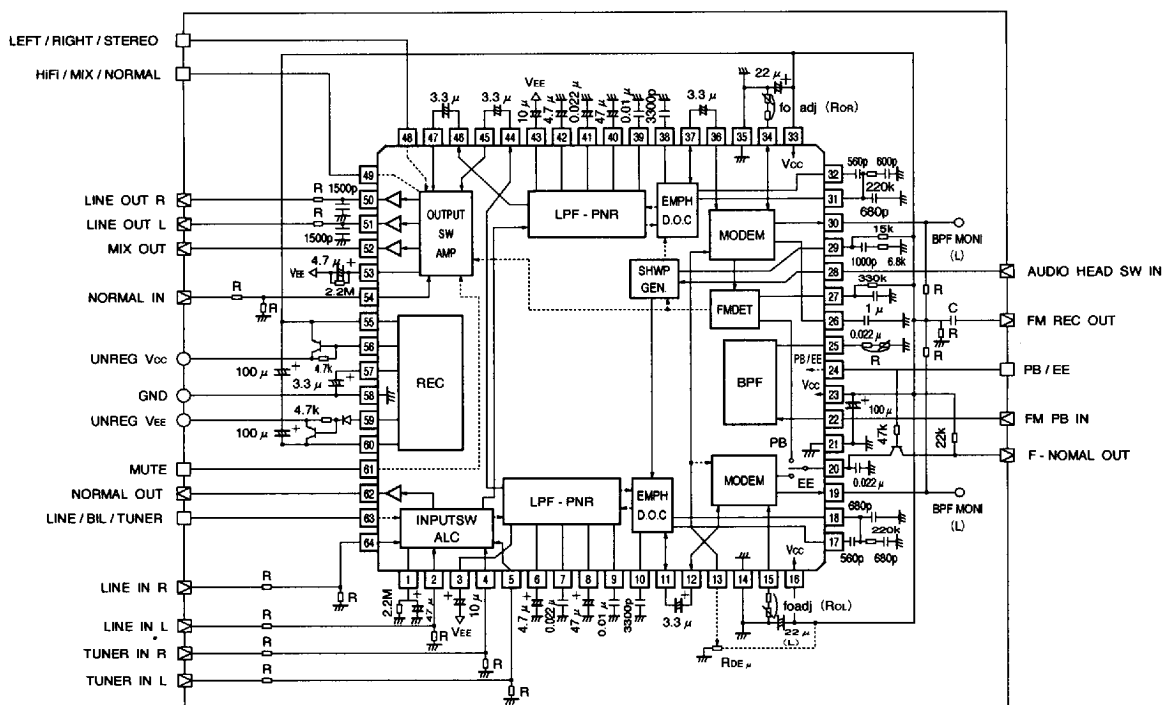


Fig.7

●Operation notes

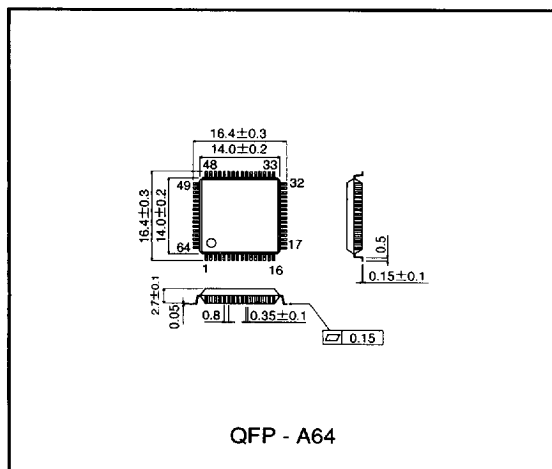
The VCO oscillation frequency, frequency deviation, and BPF center frequency are all directly affected by the temperature characteristics of the adjustment resistor. For this reason, use a metal film resistor.

7828999 0022374 713

Tuner Input Level (V_TUN) [dBV]	PNR I/O Output Level (V_PNR) [dBV]
-80	-45
-70	-40
-60	-35
-50	-30
-40	-25
-30	-20
-20	-15
-10	-10
0	-5
10	-10

The graph plots Line Output Level (dBV) on the y-axis against PNR I/O Input Level (dB) on the x-axis. The y-axis ranges from -100 to 20 in increments of 10. The x-axis ranges from -70 to 0 in increments of 10. The curve starts at approximately (-70, -95), rises linearly through points like (-50, -75), (-30, -55), and (-10, -35), and then levels off to a constant output of about 15 dBV for input levels above -10 dB.

●External dimensions (Units: mm)



Single-chip Hi-Fi audio signal processors

VCR components

7828999 0022375 65T

ROHFF

157