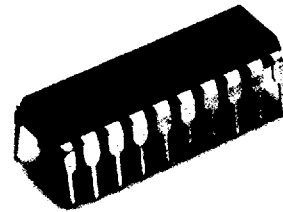


M51162P**RECORDING/PLAYBACK PREAMPLIFIER FOR
STEREO CASSETTE TAPE RECORDER****DESCRIPTION**

The M51162P is a recording and playback preamplifier for stereo cassette tape recorders. The IC built-in recording/playback mode selector switches and 2 channels of preamplifiers with an ALC circuit. This configuration realizes compact designs and a system with good channel balance.

FEATURES

- Built-in microphone and equalizer amplifiers with electronic switches.
- Built-in line amplifiers with ALC.
- Low noise $1\mu\text{Vrms}$ ($R_g = 1\text{k}\Omega$)
- Low distortion ratio 0.2% ($V_o = 1\text{Vrms}$)

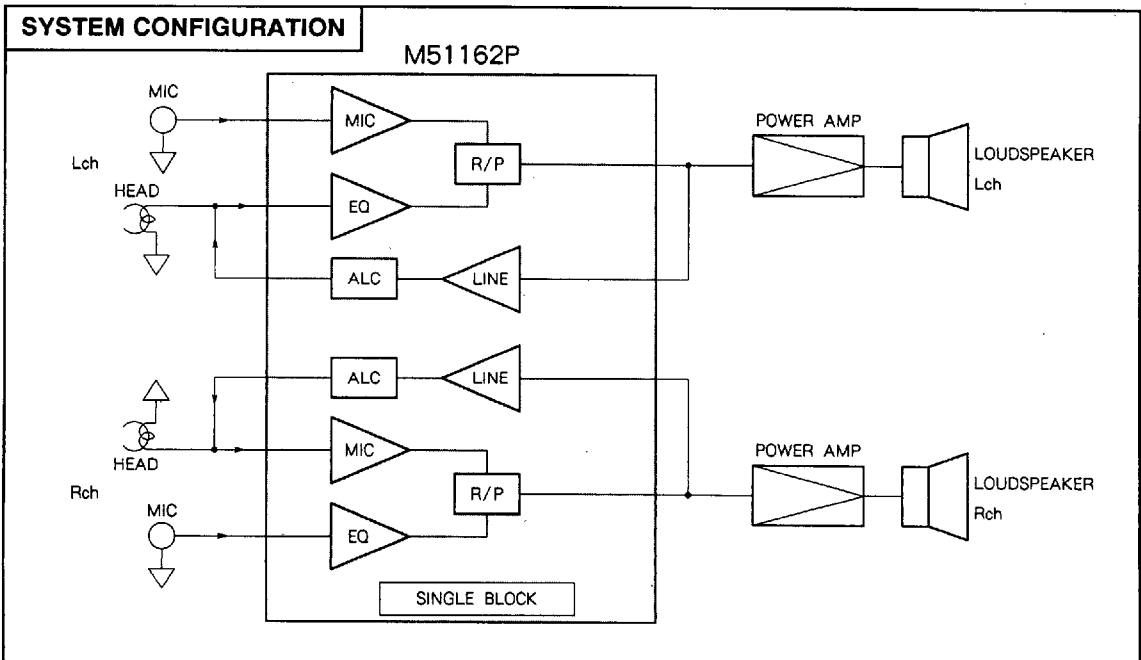


Outline 20P4

2.54mm pitch 300mil DIP
(6.3mm × 24.0mm × 3.3mm)

RECOMMENDED OPERATING CONDITIONS

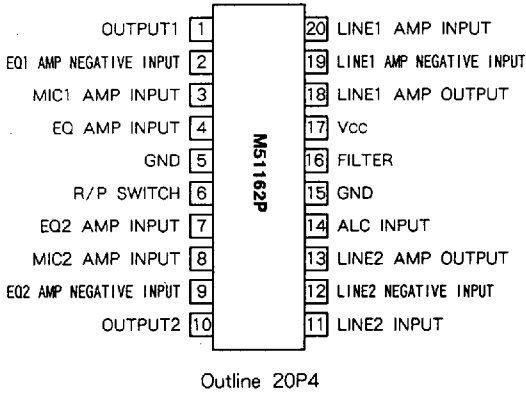
Supply voltage range $V_{cc} = 3.5 \sim 12\text{V}$
 Rated supply voltage $V_{cc} = 9\text{V}$

SYSTEM CONFIGURATION

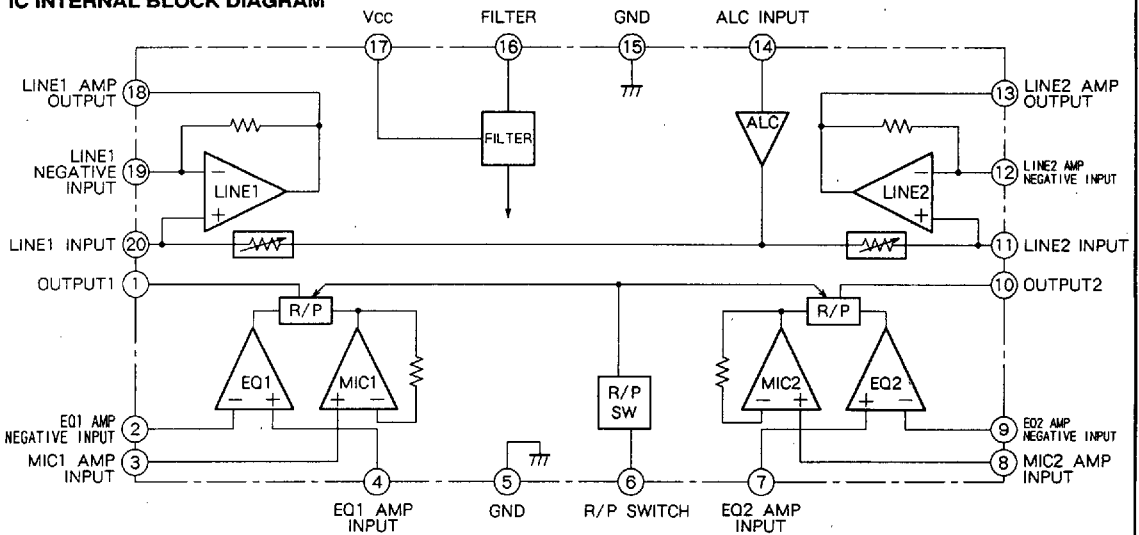
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PIN CONFIGURATION



IC INTERNAL BLOCK DIAGRAM



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ABSOLUTE MAXIMUM RATINGS (Ta = 25 °C, unless otherwise noted)

Symbol	Parameter	Ratings	Unit
Vcc	Supply voltage	18	V
Icc	Circuit current	100	mA
Pa	Power dissipation	1000	mW
Kθ	Thermal derating (Ta ≥ 25 °C)	10	mW/°C
Topr	Operating temperature	-20 ~ + 75	°C
Tstg	Storage temperature	-40 ~ +125	°C

ELECTRICAL CHARACTERISTICS (Ta = 25 °C, Vcc = 9V, f = 1kHz, unless otherwise noted)

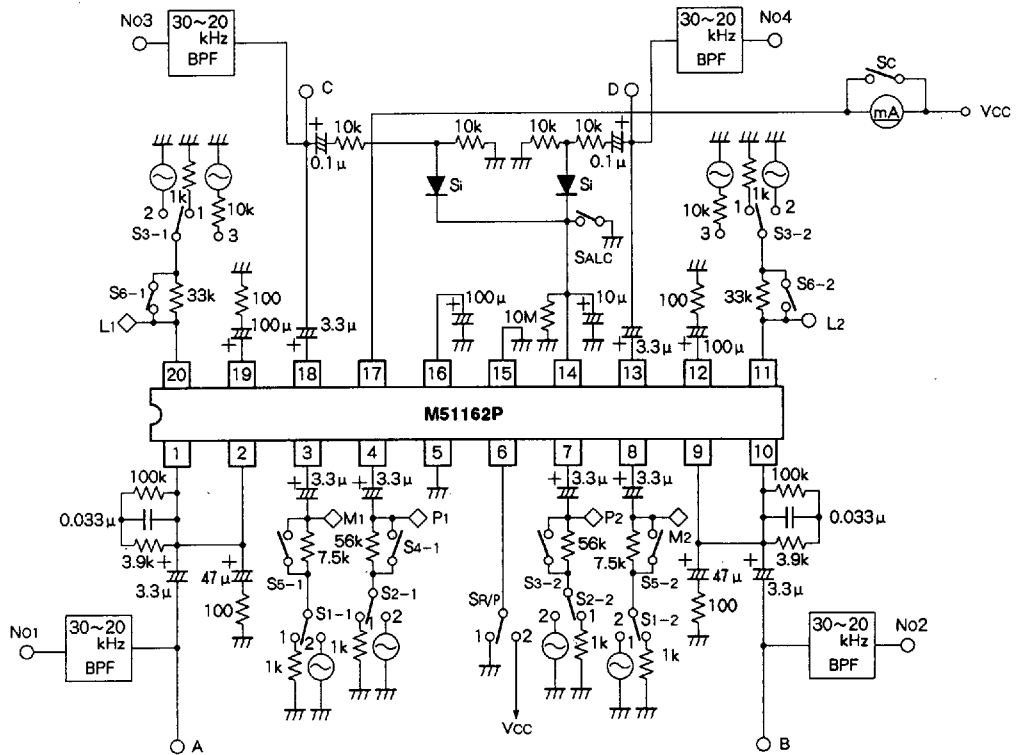
Symbol	Parameter	Test conditions	Limits			Unit	
			Min	Typ	Max		
Icco	Quiescent circuit current	Playback mode	5	10	15	mA	
GVM1	EQ amplifier CH-1 MIC amplifier CH-1	Voltage gain	V _{OM} = 1Vrms	23	24.5	26	dB
VOM1		Maximum output voltage	THD = 3%	1.5	2.5	—	Vrms
THDM1		Total harmonic distortion	V _{OM} = 1Vrms	—	0.2	0.5	%
ZiM1		Input impedance	M ₁ voltage when input = 10mVrms	5	7.5	10	k Ω
NiM1		Equivalent input noise voltage	R _g = 1k Ω, 30~20kHz BPF	—	1	2	μVrms
GVP1		Voltage gain	V _{OP} = 1Vrms	35	38	41	dB
VoP1		Maximum output voltage	THD = 3%	1.5	2.5	—	Vrms
THDP1		Total harmonic distortion	V _{OP} = 1Vrms	—	0.2	0.5	%
ZiP1		Input impedance	P ₁ voltage when input = 10mVrms	40	56	75	k Ω
NiP1		Equivalent input noise voltage	R _g = 1k Ω, 30~20kHz BPF	—	1	2	μVrms
GVL1	Line-recording amplifier CH-1	Voltage gain	V _{OL} = 1Vrms	37	40	43	dB
VoL1		Maximum output voltage	THD = 3%	1.9	2.5	—	Vrms
THDL1		Total harmonic distortion	V _{OL} = 1Vrms	—	0.2	0.5	%
ZiL1		Input impedance	L ₁ voltage when input = 10mVrms	20	33	45	k Ω
NiL1		Equivalent input noise voltage	R _g = 1k Ω, 30~20kHz BPF	—	1	3	μVrms
ALCA	ALC circuit	ALC range	From the point ALC is activated until output is 3dB up.	40	46	—	dB
ALCTHD		ALC distortion	Input distortion, from the point ALC is activated until input reaches + 20dB.	—	—	1.5	%
ALCs		ALC balance	The difference in CH-1/CH-2 ALC output level, from the point ALC is activated until input reaches + 20dB.	—	—	3	dB

Note. Electrical characteristics for channel 2 are the same as channel 1.

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TEST CIRCUIT



Units Resistance : Ω
Capacitance : F

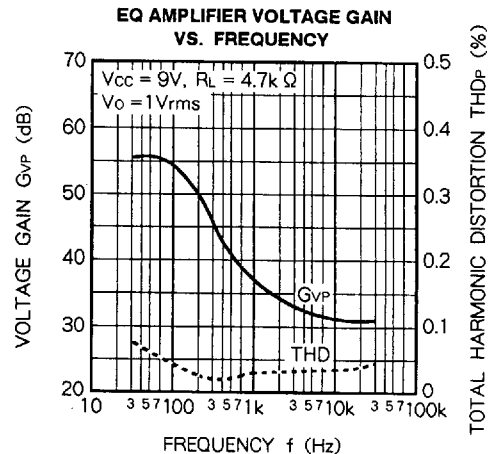
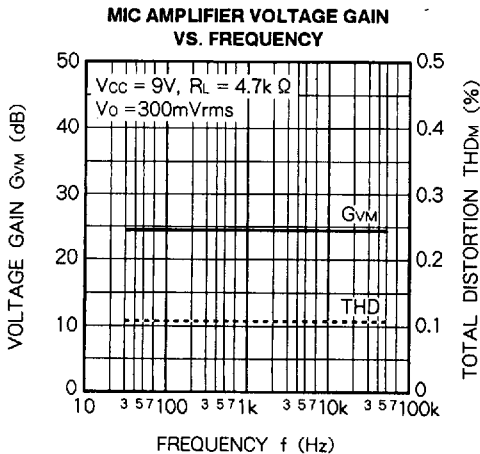
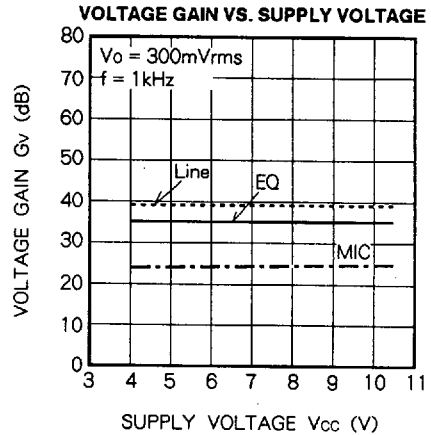
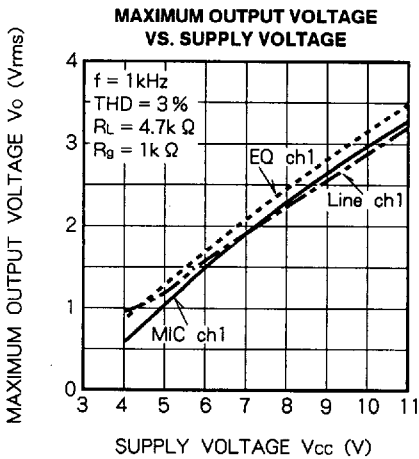
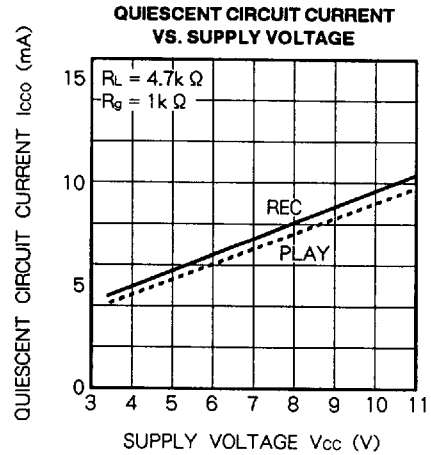
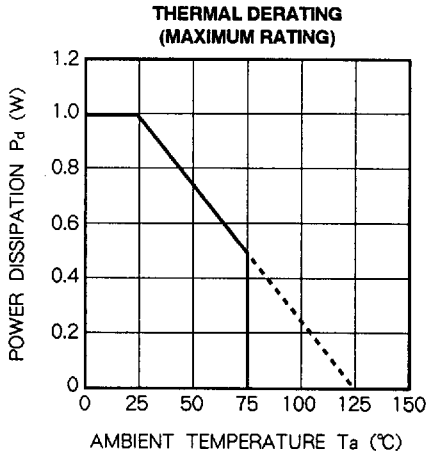
TEST METHODS

	Parameter	Switch conditions										Test point							
		Sr/P	Sc	S1-1,2	S2-1,2	S3-1,2	S4-1,2	S5-1,2	S6-1,2	SALC		A	B	C	D	P1,2	M1,2	L1,2	mA
MIC amplifier	Icco	1	OFF	1	1	1	ON	ON	ON	OFF		○	○						○
	GVM1,2	2	ON	2	1	1	ON	ON	ON	OFF		○	○						
	THDM1,2	↑	↑	↑	↑	↑	↑	↑	↑	↑		○	○						
	ZIM1,2	↑	↑	↑	↑	↑	↑	OFF	↑	↑							○		
	NIM1,2	↑	↑	↑	↑	↑	↑	ON	↑	↑									○
EQ amplifier	GVP1,2	1	ON	1	2	1	ON	ON	ON	OFF		○	○						
	VOP1,2	↑	↑	↑	↑	↑	↑	↑	↑	↑		○	○						
	THDP1,2	↑	↑	↑	↑	↑	↑	↑	↑	↑		○	○						
	ZIP1,2	↑	↑	↑	↑	↑	OFF	↑	↑	↑						○			
	NIP1,2	↑	↑	↑	↑	↑	ON	↑	↑	↑									○
Line-recording amplifier	GVL1,2	2	ON	2	1	2	ON	ON	ON	OFF				○	○				
	VOL1,2	↑	↑	↑	↑	↑	↑	↑	↑	↑				○	○				
	THDL1,2	↑	↑	↑	↑	↑	↑	↑	↑	↑				○	○				
	ZIL1,2	↑	↑	↑	↑	↑	↑	OFF	↑	↑							○		
	NIL1,2	↑	↑	↑	↑	↑	↑	ON	↑	↑									○
ALC circuit	ALCA	2	ON	2	1	3	ON	ON	ON	ON				○	○				
	ALCTHD	↑	↑	↑	↑	↑	↑	↑	↑	↑				○	○				
	ALCB	↑	↑	↑	↑	↑	↑	↑	↑	↑				○	○				

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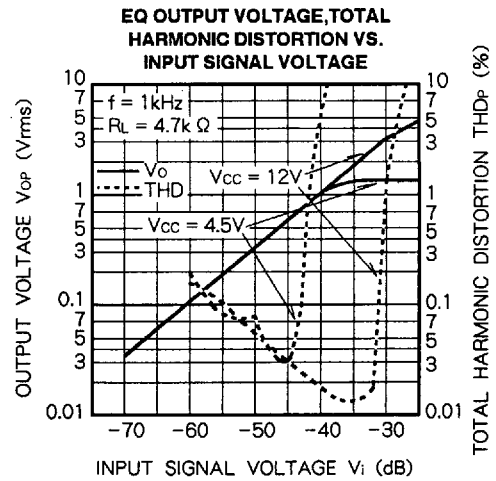
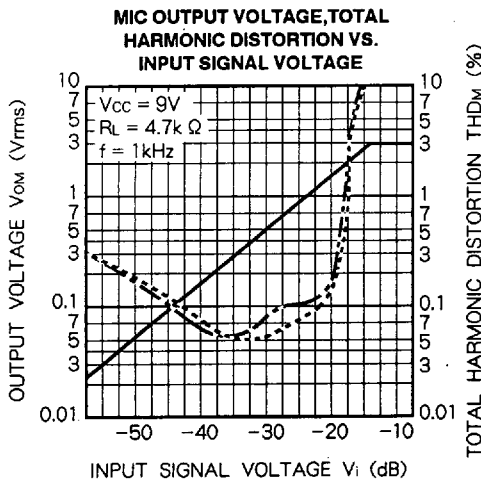
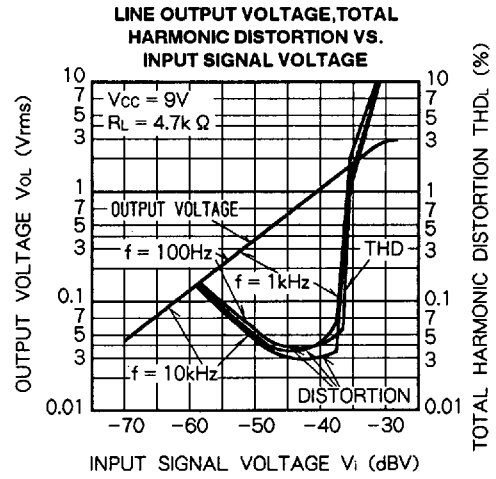
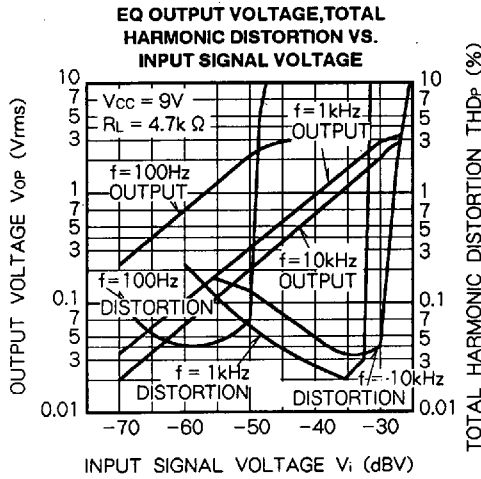
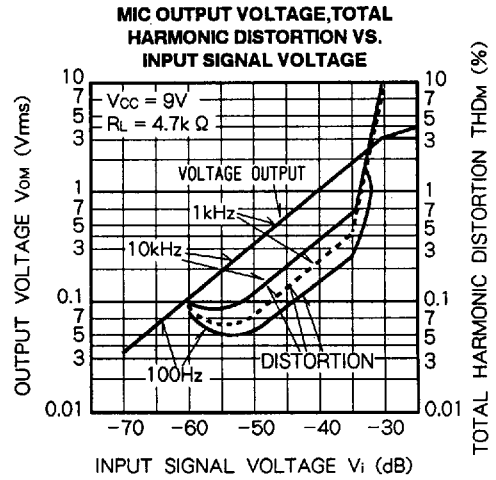
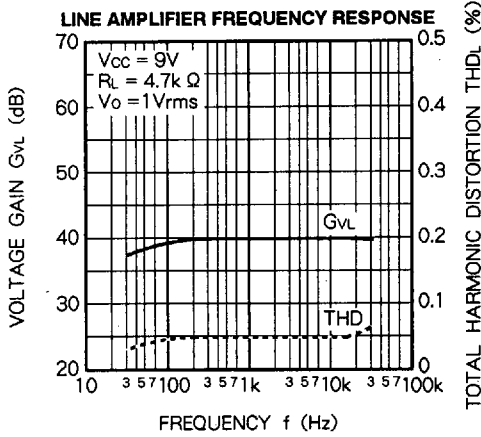
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TYPICAL CHARACTERISTICS



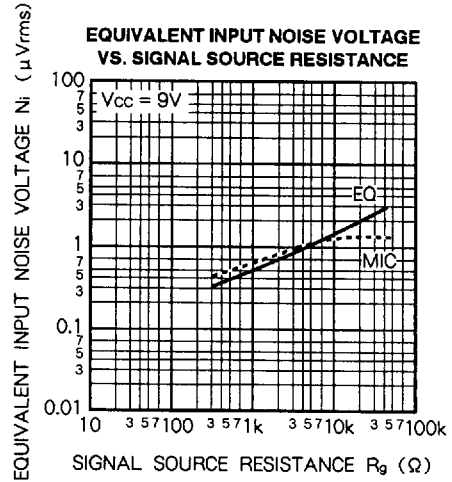
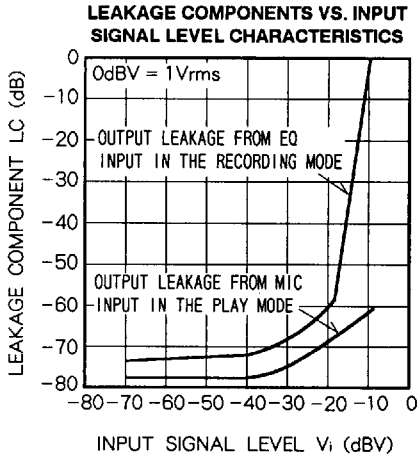
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RECORDING/PLAYBACK PREAMPLIFIER FOR STEREO CASSETTE TAPE RECORDER



FUNCTION AND TERMINAL DESCRIPTION

1. EQ amplifier

Normally connected to the input from the magnetic head, this amplifier functions to set equalization for proper playback of the tape being used.

●EQ amp input pins, pin ④ and pin ⑦. Input impedance, 56k Ω typ.

Negative feedback pins, pin ② and pin ⑨.

Output pins, pin ① and pin ⑩. (EQ/MIC output is switched by electronic switch.)

2. MIC amplifier

Functions to amplify the input signal from the microphone connection. The circuitry of this amplifier is the same as the EQ amp, and gain is fixed at 24dB.

●MIC amp input pins, pin ③ and pin ⑧. Input impedance 7.5k Ω typ.

Output pins, pin ① and pin ⑩.

3. Line amplifier

Functions to further amplify the signal received from the EQ, MIC and other amplifiers. Can also be used as the recording amplifier.

●Line amp input pins, pin ⑪ and pin ⑭. Input impedance 33k Ω typ.

Negative feedback pins, pin ⑫ and pin ⑬

Output pins, pin ⑬ and pin ⑮

4. ALC circuit

Functions to automatically control the level of the input signal by using a built-in variable resistor.

●ALC circuit input pin, pin ⑭

Variable resistor pins, pin ⑪ and pin ⑭

In the playback mode, ALC operations are automatically disabled.

5. R/P switch

Switching between the recording and playback mode is accomplished through a DC voltage signal.

●R/P switch control pin, pin ⑥

Recording mode: Control voltage, more than 2.2V, more than 100 μA current.

Playback mode: Grounded

6. Filter

pin ⑮

7. Power supply

pin ⑦

8. Ground

pin ⑤ and ⑮