

M51166P

QUAD RECORDING/PLAYBACK PREAMPLIFIER WITH ALC PEAK DETECTOR FOR DUAL CASSETTE PLAYER

DESCRIPTION

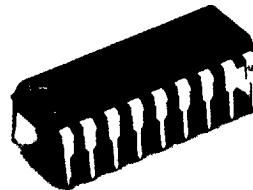
The M51166P is an IC for radio double cassette tape players.

It has a built-in 4 low-noise preamplifiers and 2 channels of ALC.

The built-in peamplifiers are of direct input type. The IC also contains ALC peak detectors and ALC. This configuration makes it possible to construct a recording/playback system with few external parts.

FEATURES

- Four low-noise dual preamplifiers built-in
- High voltage gain 89dB
- Built-in ALC peak detectors
- Easy-to-mount pin configuration grouped into input pins (① to ⑨) and output pins (⑩ to ⑰)



Outline 18P4

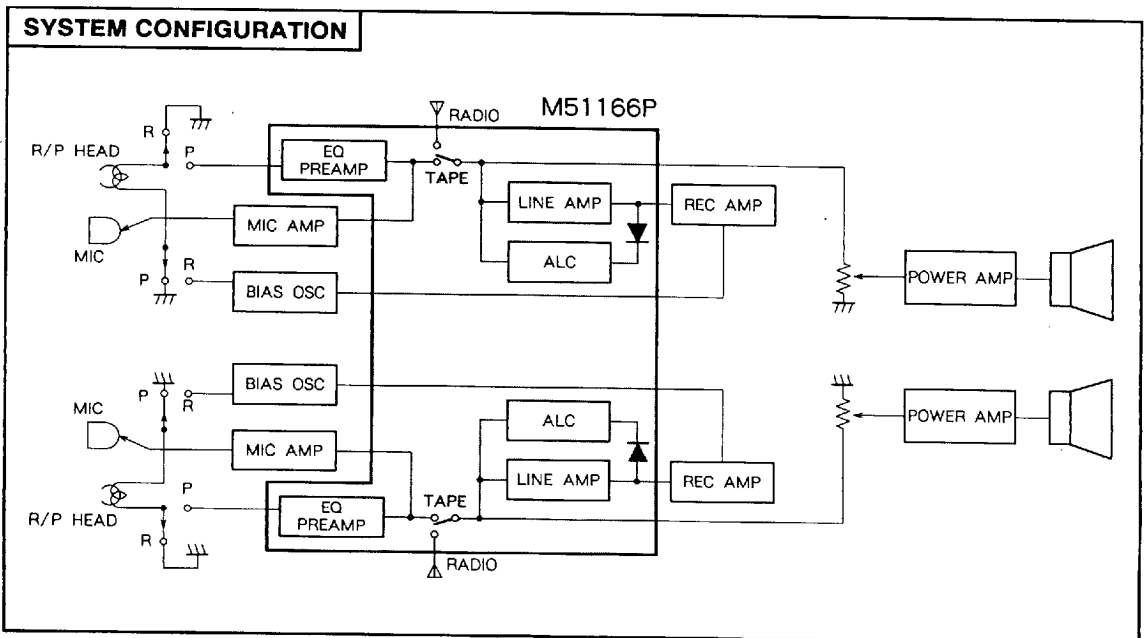
2.54mm pitch 300mil DIP
(6.3mm × 24.0mm × 3.3mm)

RECOMMENDED OPERATING CONDITIONS

Supply voltage range..... $V_{CC} = 5$ to $10V$

Rated supply voltage..... $V_{CC} = 9V$

SYSTEM CONFIGURATION



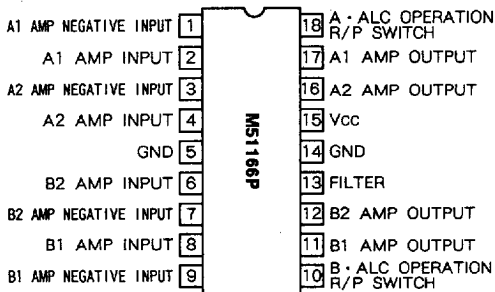
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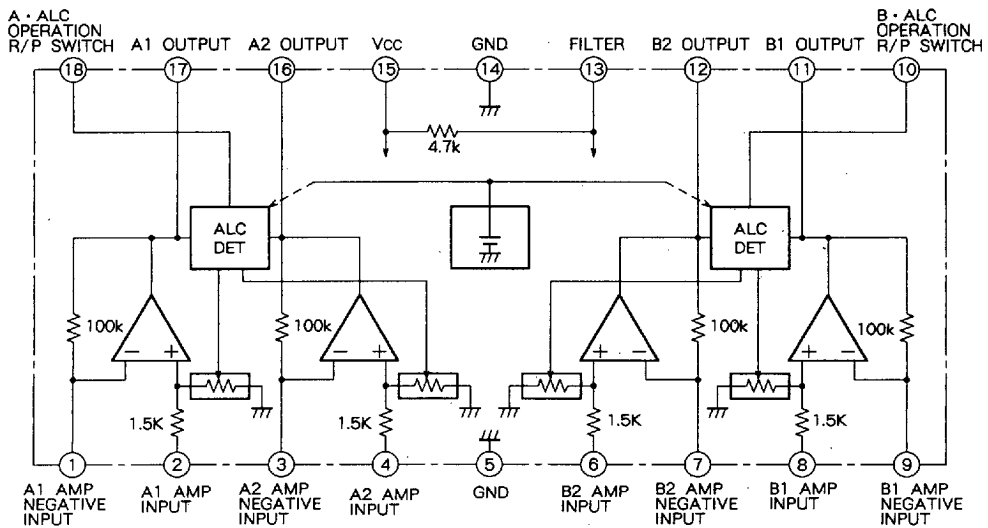
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PIN CONFIGURATION (TOP VIEW)



Outline 18P4

IC INTERNAL BLOCK DIAGRAM



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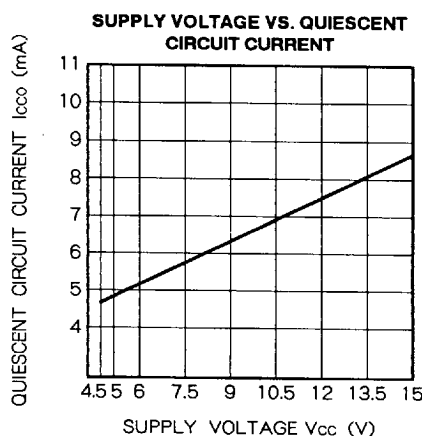
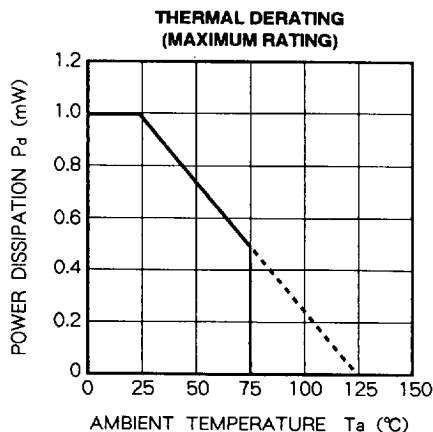
ABSOLUTE MAXIMUM RATINGS (Ta = 25 °C, unless otherwise noted)

Symbol	Parameter	Conditions	Ratings	Unit
Vcc	Supply voltage	Quiescent	15	V
Icc	Circuit current		50	mA
Pa	Power dissipation		1000	mW
Kθ	Thermal derating	Ta ≥ 25 °C	10	mW/°C
Topr	Operating temperature		-20 to +75	°C
Tstg	Storage temperature		-40 to +125	°C

ELECTRICAL CHARACTERISTICS (Ta = 25 °C, Vcc = 9V, RL = 10k Ω, f = 1kHz, unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
Icco	Quiescent circuit current		—	6	—	mA
Gvo	Open loop voltage gain	Vo = 1Vrms, CNF = 100 μF	—	89	—	dB
Gvc	Closed loop voltage gain	Vo = 1Vrms, RNF = 240 Ω	50	53	55	dB
THD	Total harmonic distortion	Vo = 1Vrms, RNF = 240 Ω	—	0.1	0.6	%
Vo	Maximum output voltage	THD = 3%	2.0	2.5	—	Vrms
Ni	Input-referred noise voltage	Rθ = 0 Ω, BPF (20 to 20kHz - 3dB)	—	1.5	2.5	μVrms
ALCA	ALC range	Input voltage range from start of ALC operation with an output voltage of Vi = -72dBV to the point where the output voltage is 3dB higher. Re = 12Ω	40	46	—	dB
ALCb			0.8	1.05	1.25	Vrms
ALCTHD			—	0.5	2	%
ALC1			—	0	2	dB
ALC2	ALC balance	Re = 24Ω	—	0	2	dB

TYPICAL CHARACTERISTICS

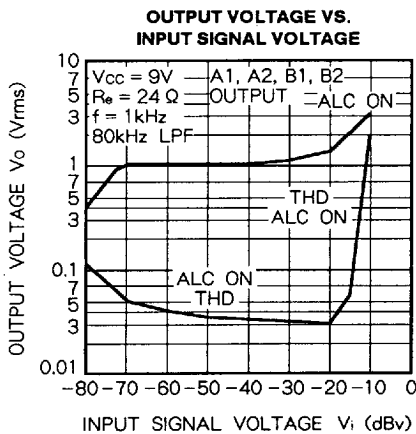
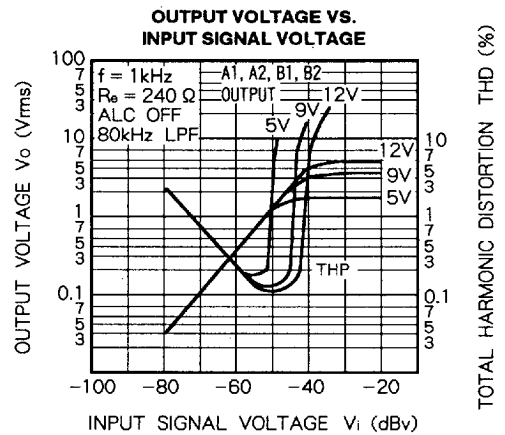
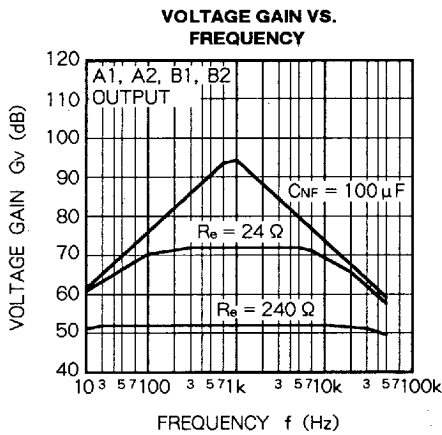
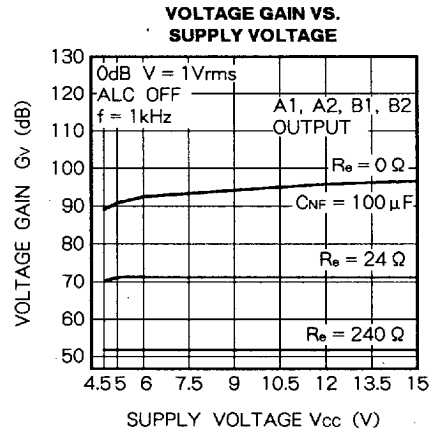
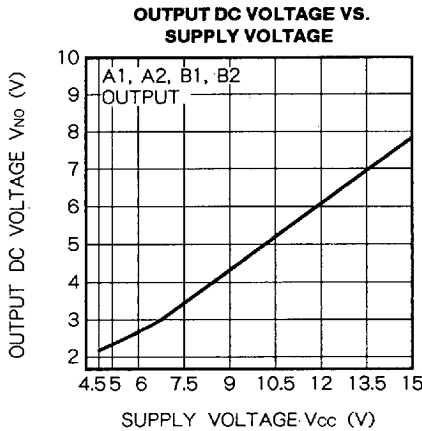


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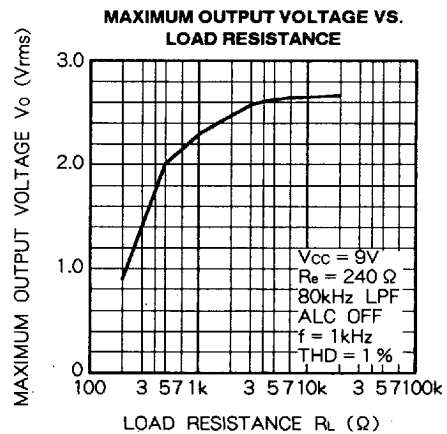


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TOTAL HARMONIC DISTORTION THD (%)



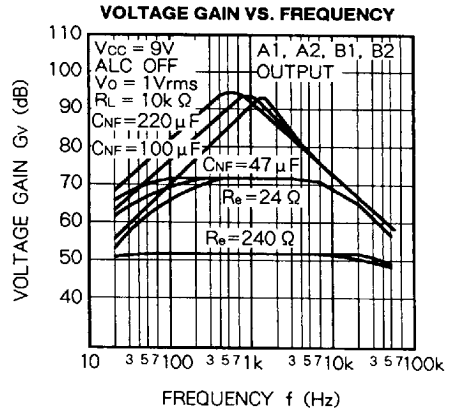
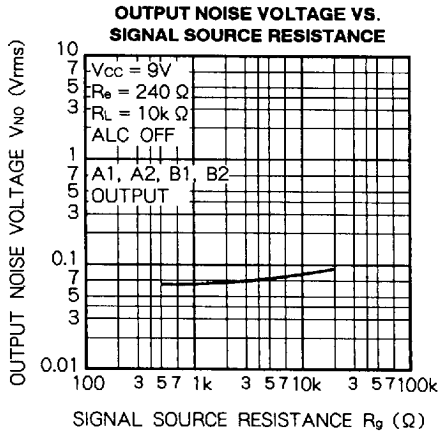
TOTAL HARMONIC DISTORTION THD (%)

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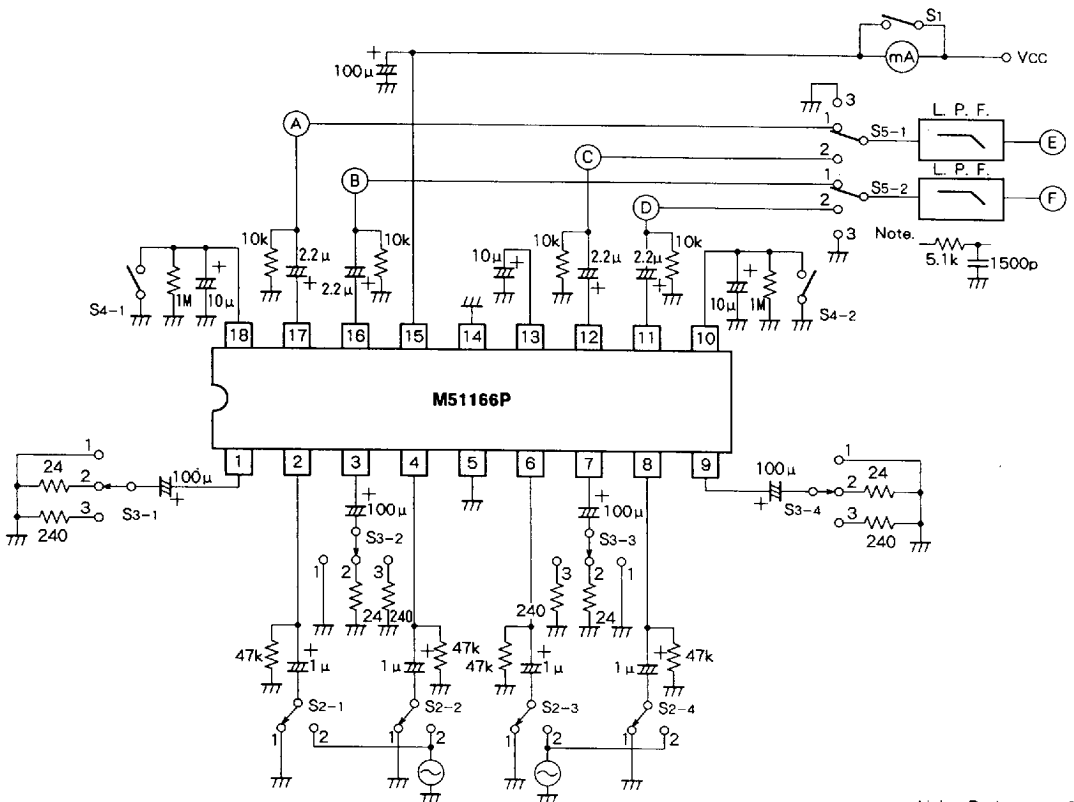


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TEST CIRCUIT



Units: Resistance : Ω
Capacitance : F

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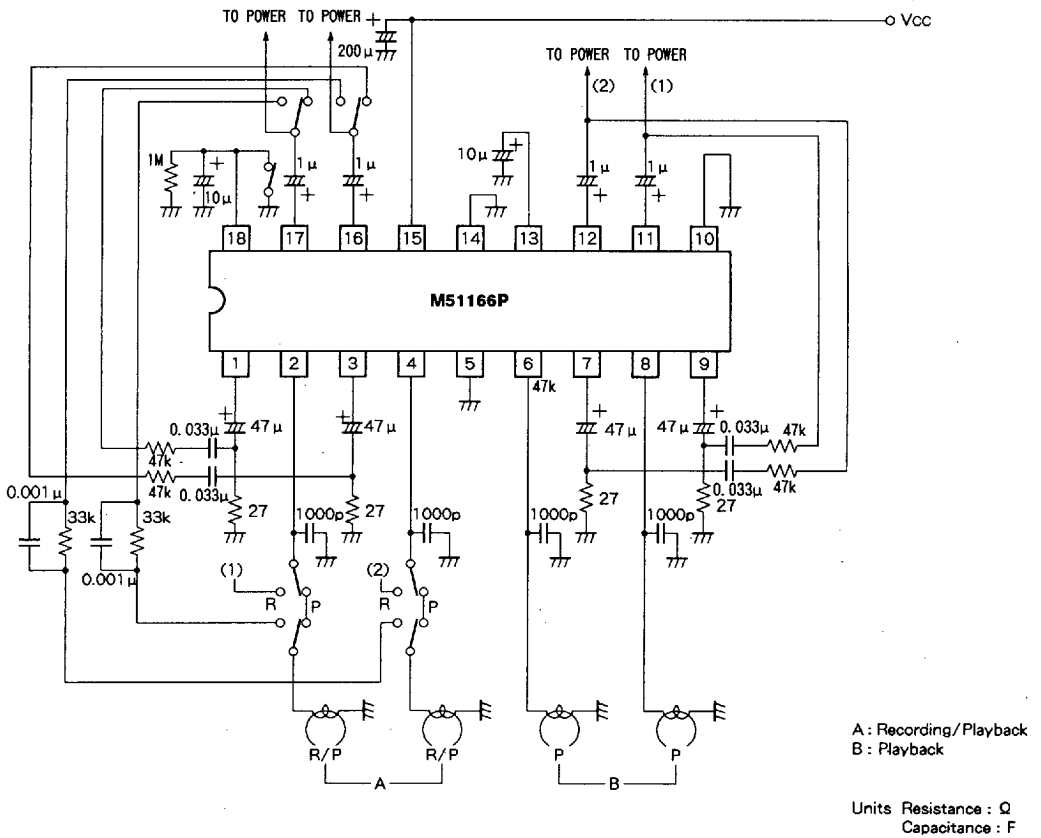
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TEST METHODS ($T_a = 25^\circ\text{C}$, $V_{cc} = 9\text{V}$, $R_L = 10\text{k}\Omega$, $f = 1\text{kHz}$, unless otherwise noted)

Symbol	Test conditions	Switching conditions					Measure point
		S_1	$S_{2,1,2,3,4}$	$S_{3-1,2,3,4}$	$S_{4-1,2}$	$S_{6-1,2}$	
I_{cc0}		OFF	1	3	ON	3	mA
G_{vo}	$V_i = -80\text{dBV}$	ON	2	1	$\uparrow$	$\uparrow$	A,B,C,D
G_{vc}	$V_i = -52\text{dBV}$ (2.5mVrms)	$\uparrow$	$\uparrow$	3	$\uparrow$	$\uparrow$	$\uparrow$
THD	$V_i = -52\text{dBV}$ (2.5mVrms)	$\uparrow$	$\uparrow$	$\uparrow$	$\uparrow$	$\uparrow$	$\uparrow$
V_o	THD = 3%	$\uparrow$	$\uparrow$	$\uparrow$	$\uparrow$	$\uparrow$	$\uparrow$
N_i	20Hz to 20kHz BPF	$\uparrow$	1	3	ON	1/2	E,F
ALCA	$R_a = 240\Omega$	$\uparrow$	2	2	OFF	3	A/B,C/D
ALCo	Output voltage and distortion	$\uparrow$	$\uparrow$	$\uparrow$	$\uparrow$	$\uparrow$	$\uparrow$
ALCTHD	$V_i = -50\text{dBV}$	$\uparrow$	$\uparrow$	$\uparrow$	$\uparrow$	$\uparrow$	$\uparrow$
ALCb	Output voltage ratio	$\uparrow$	$\uparrow$	$\uparrow$	$\uparrow$	$\uparrow$	A/B,C/D

Note 2: ALC balance (ALCb) is measure about output voltage ratio for each A side, B side.

APPLICATION EXAMPLE



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