

M51166P

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

DESCRIPTION

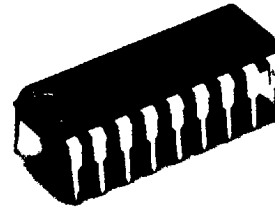
The M51166P is an IC for radio double cassette tape players.

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

The built-in preamplifiers 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 ⑱)



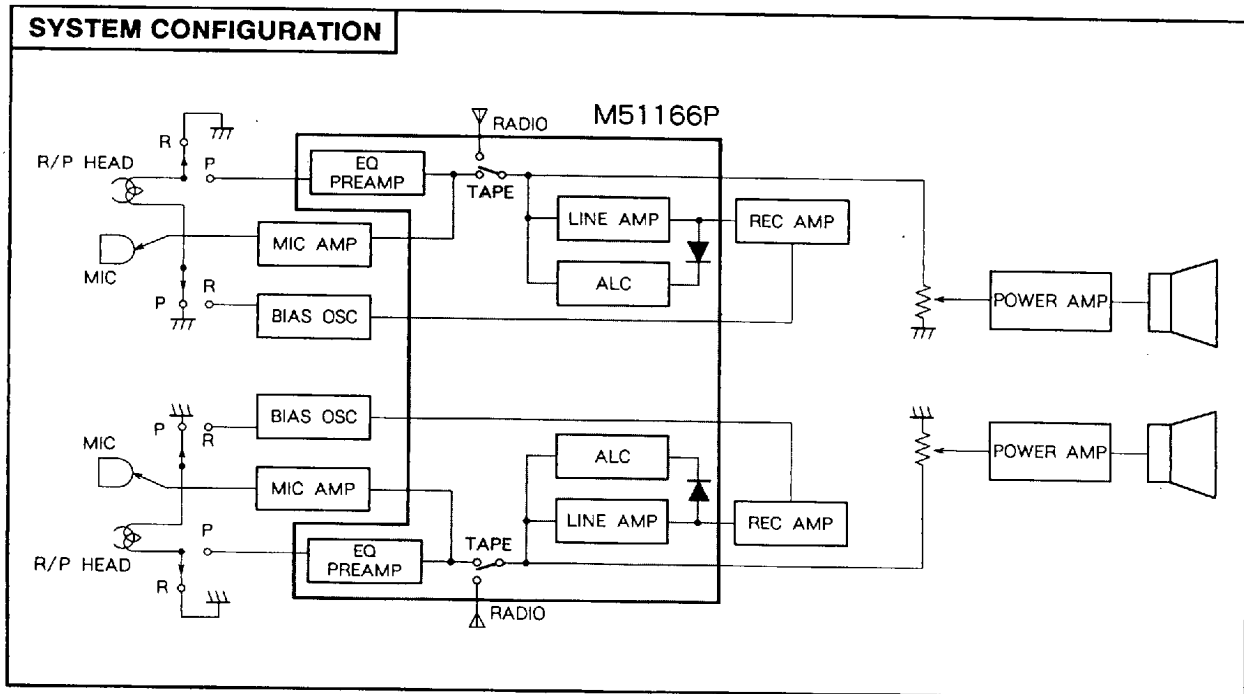
Outline 18P4

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 $V_{CC} = 9V$



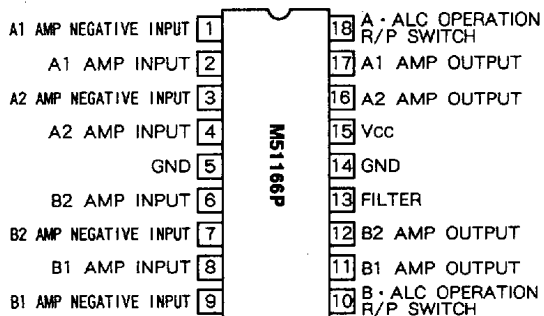
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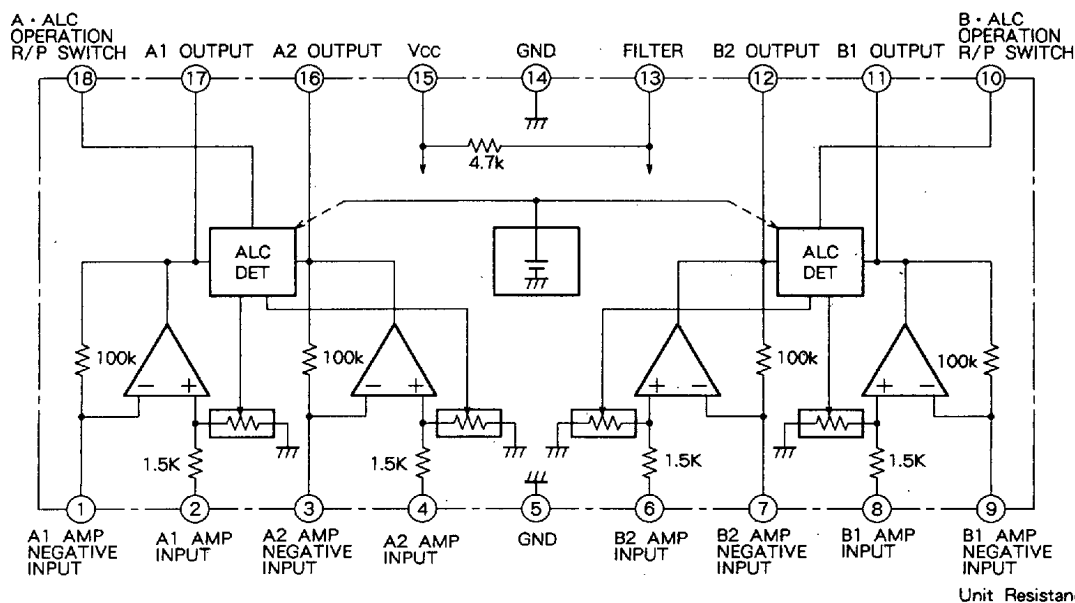
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PIN CONFIGURATION (TOP VIEW)



Outline 18P4

IC INTERNAL BLOCK DIAGRAM



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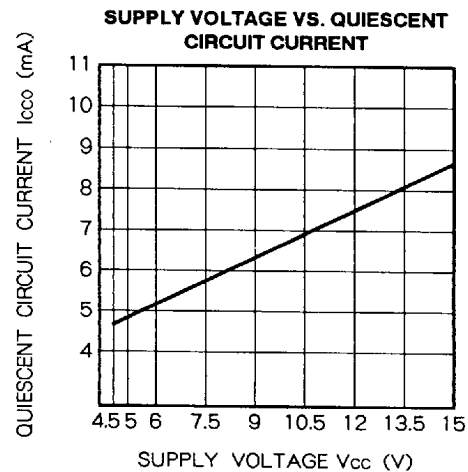
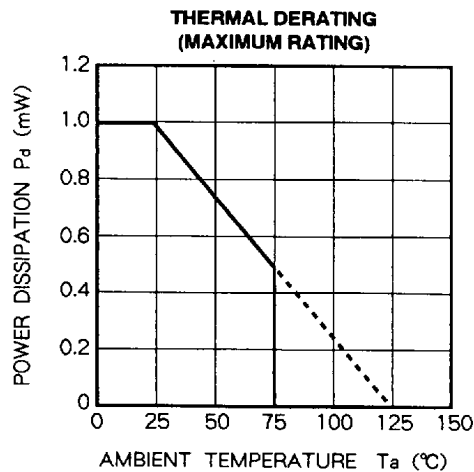
ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$, unless otherwise noted)

Symbol	Parameter	Conditions	Ratings	Unit
V_{cc}	Supply voltage	Quiescent	15	V
I_{cc}	Circuit current		50	mA
P_d	Power dissipation		1000	mW
K_θ	Thermal derating	$T_a \geq 25^\circ\text{C}$	10	mW/ $^\circ\text{C}$
T_{opr}	Operating temperature		-20 to +75	$^\circ\text{C}$
T_{stg}	Storage temperature		-40 to +125	$^\circ\text{C}$

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

Symbol	Parameter	Test conditions	Limits			Unit	
			Min	Typ	Max		
I_{cco}	Quiescent circuit current		-	6	-	mA	
G_{vo}	Amplifiers	Open loop voltage gain	-	89	-	dB	
G_{vc}		Closed loop voltage gain	$V_o = 1\text{V}_{rms}$, $R_{NF} = 240\Omega$	50	53	55	dB
THD		Total harmonic distortion	$V_o = 1\text{V}_{rms}$, $R_{NF} = 240\Omega$	-	0.1	0.6	%
V_o		Maximum output voltage	THD = 3%	2.0	2.5	-	V _{rms}
N_i		Input-referred noise voltage	$R_g = 0\Omega$, BPF (20 to 20kHz - 3dB)	-	1.5	2.5	μV_{rms}
ALCA	ALC circuits	ALC range	Input voltage range from start of ALC operation with an output voltage of $V_i = -72\text{dBV}$ to the point where the output voltage is 3dB higher. $R_e = 12\Omega$	40	46	-	dB
ALCB				0.8	1.05	1.25	V _{rms}
ALC _{THD}		ALC distortion	Output voltage and distortion at an input voltage signal of $V_i = -50\text{dBV}$. $R_e = 24\Omega$	-	0.5	2	%
ALC ₁		ALC output voltage		-	0	2	dB
ALC ₂		ALC balance					

TYPICAL CHARACTERISTICS

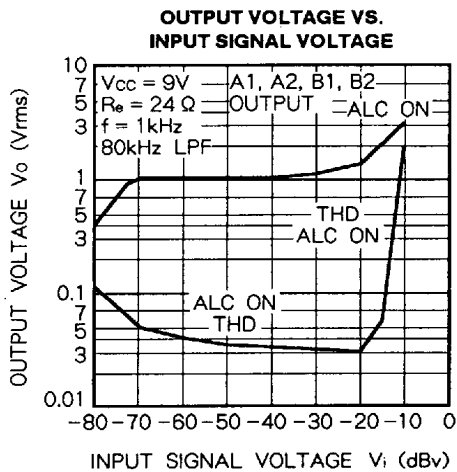
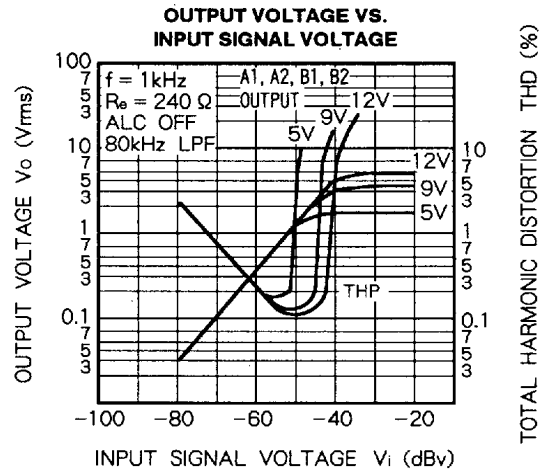
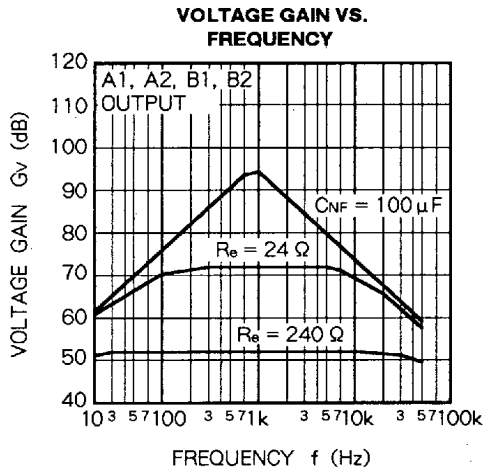
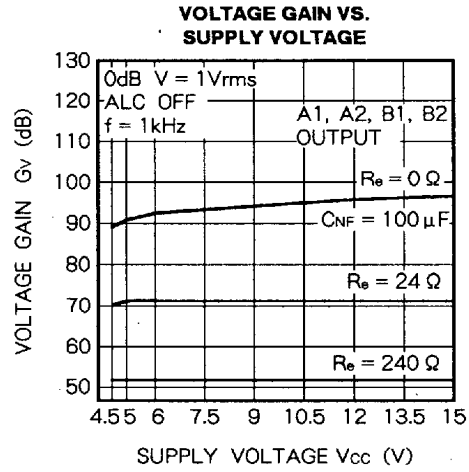
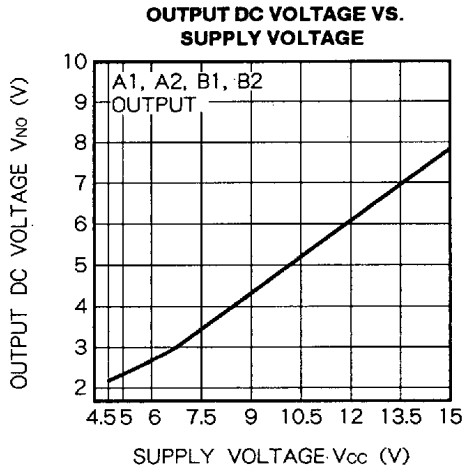


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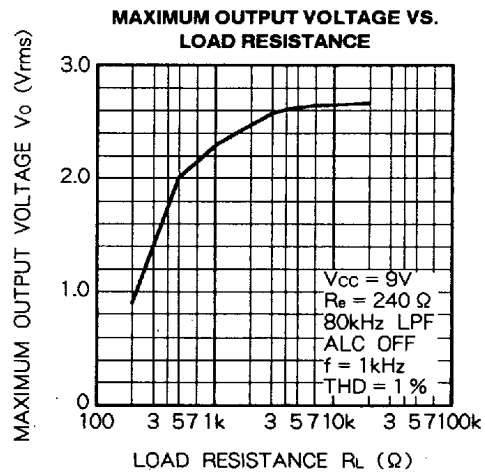


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TOTAL HARMONIC DISTORTION THD (%)



TOTAL HARMONIC DISTORTION THD (%)

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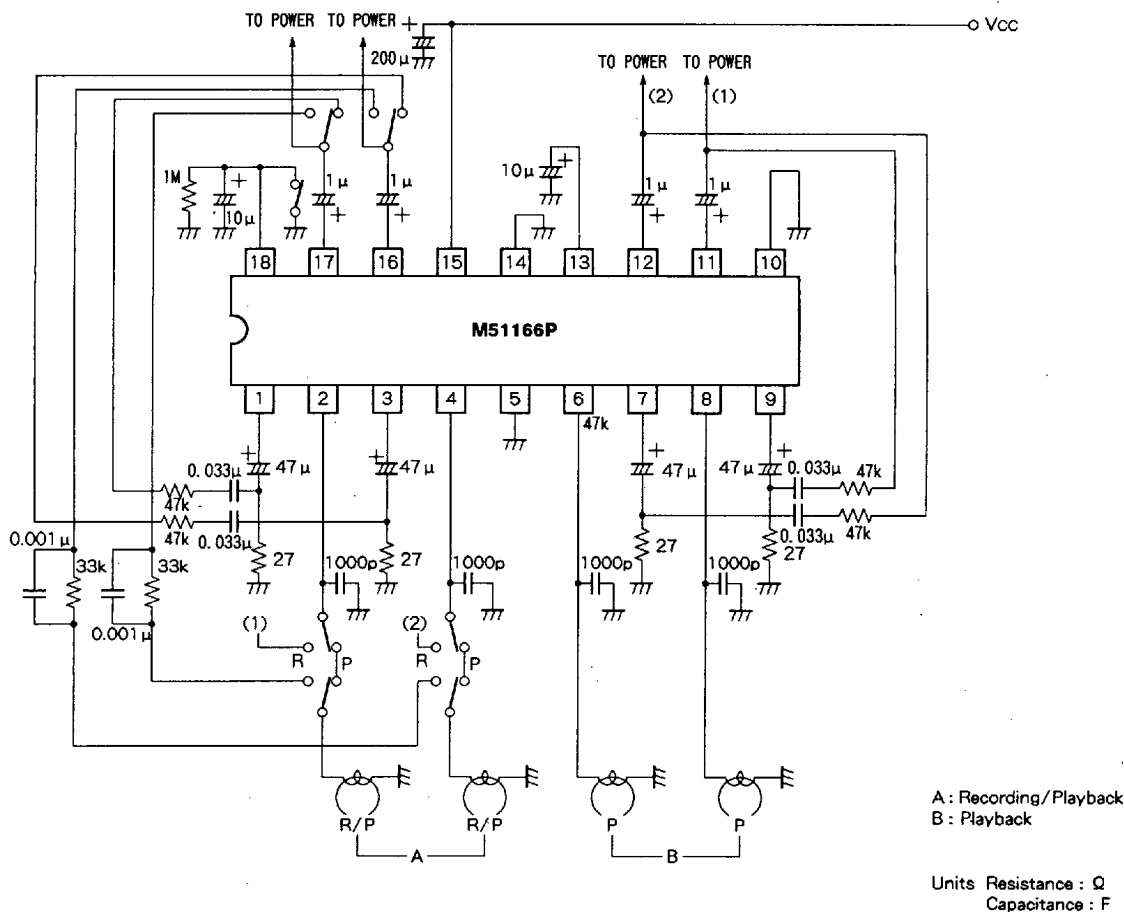
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TEST METHODS (Ta = 25°C, Vcc = 9V, RL = 10k Ω, f = 1kHz, unless otherwise noted)

Symbol	Test conditions	Switching conditions					Measure point
		S1	S2-1,2,3,4	S3-1,2,3,4	S4-1,2	S5-1,2	
Icco		OFF	1	3	ON	3	mA
Gvo	Vi = -80dBV	ON	2	1	↑	↑	A,B,C,D
Gvc	Vi = -52dBV (2.5mVrms)	↑	↑	3	↑	↑	↑
THD	Vi = -52dBV (2.5mVrms)	↑	↑	↑	↑	↑	↑
Vo	THD = 3%	↑	↑	↑	↑	↑	↑
Ni	20Hz to 20kHz BPF	↑	1	3	ON	1/2	E,F
ALCA	Re = 240 Ω	↑	2	2	OFF	3	A/B,C/D
ALCo ALC _{THD}	Output voltage and distortion Vi = -50dBV	↑	↑	↑	↑	↑	↑
ALC _B	Output voltage ratio Vi = -50dBV	↑	↑	↑	↑	↑	A/B,C/D

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

APPLICATION EXAMPLE



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