

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

DESCRIPTION

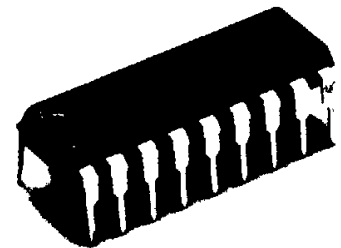
The M51166P is an IC for radio double cassette tape players.

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 ⑰)



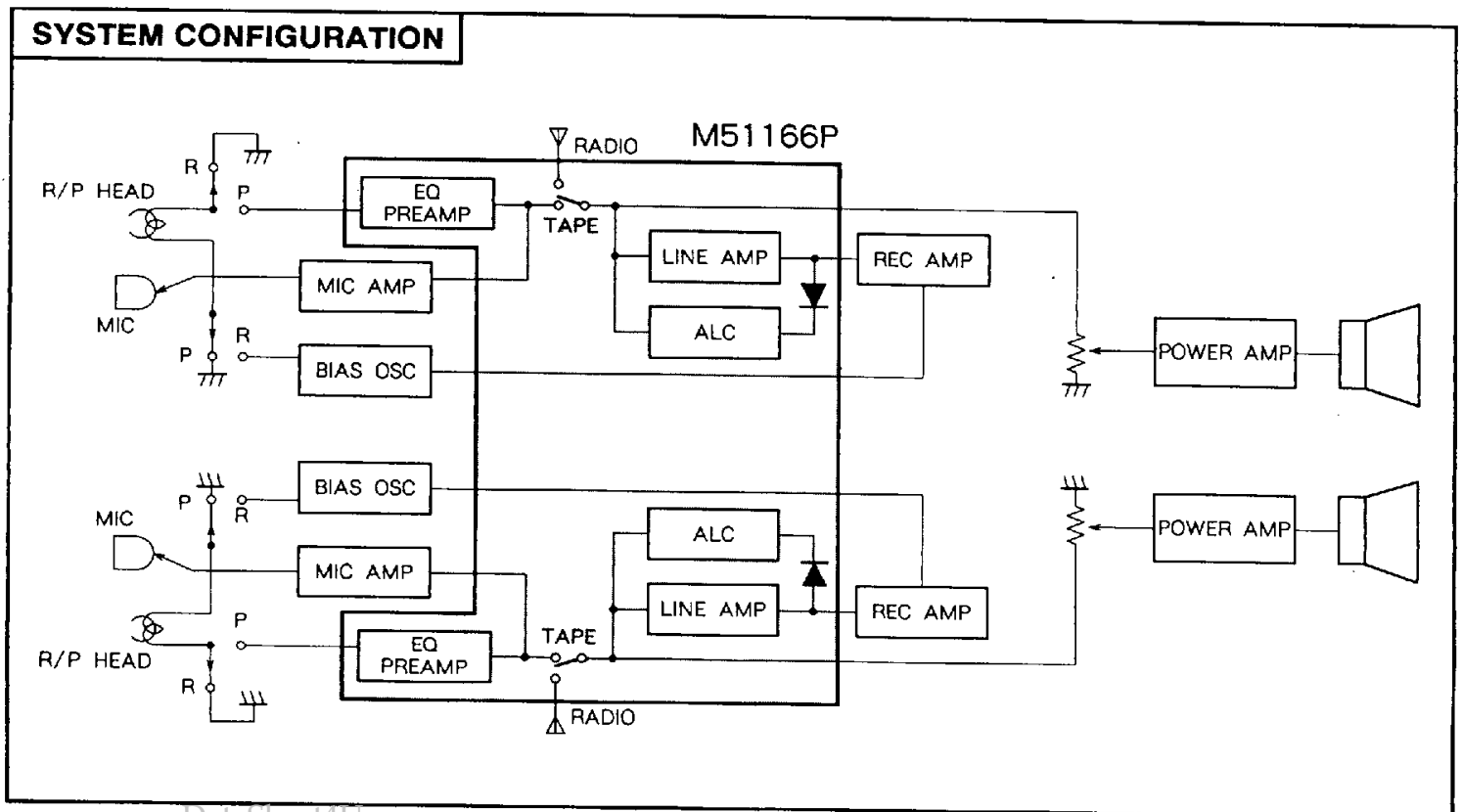
Outline 18P4

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

RECOMMENDED OPERATING CONDITIONS

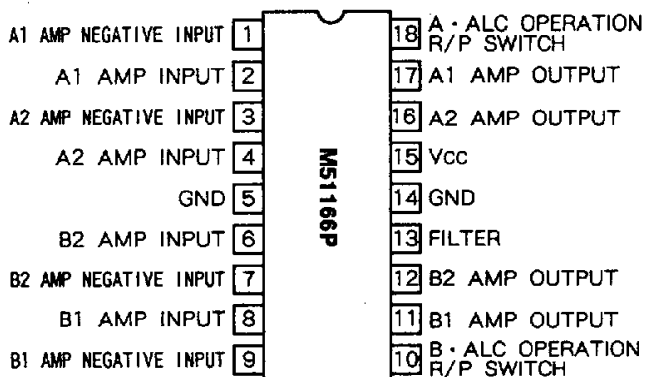
Supply voltage range $V_{CC} = 5$ to $10V$

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



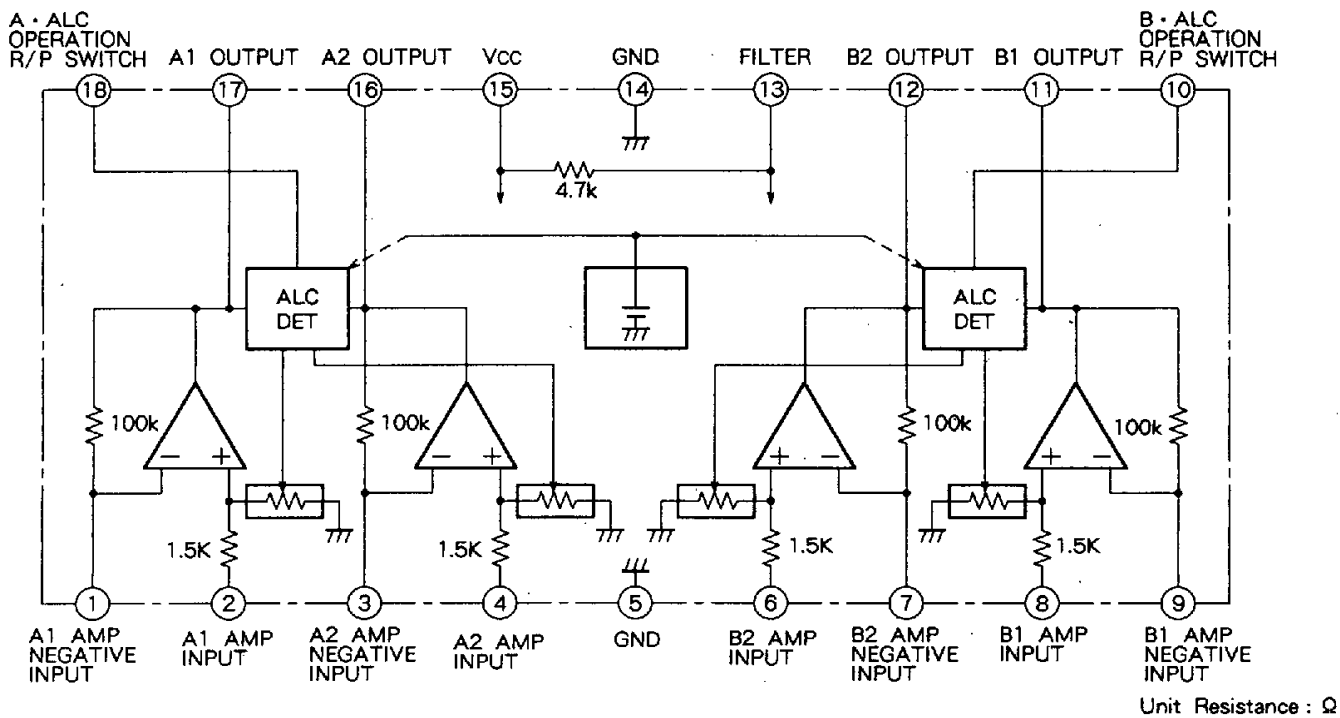
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PIN CONFIGURATION (TOP VIEW)



Outline 18P4

IC INTERNAL BLOCK DIAGRAM



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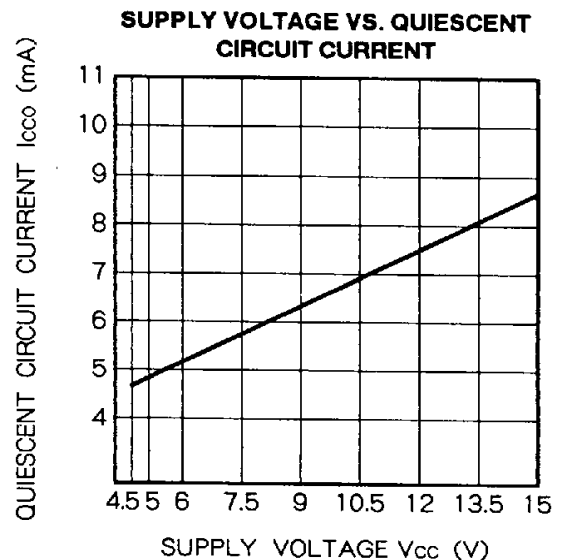
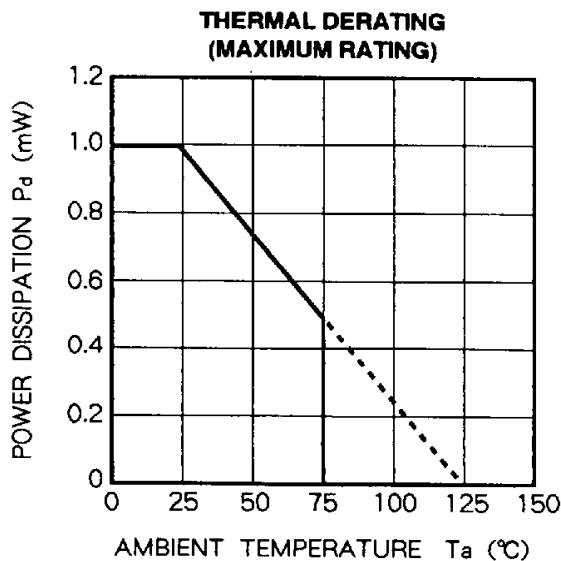
ABSOLUTE MAXIMUM RATINGS (Ta = 25°C, unless otherwise noted)

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 = 10kΩ, f = 1kHz, unless otherwise noted)

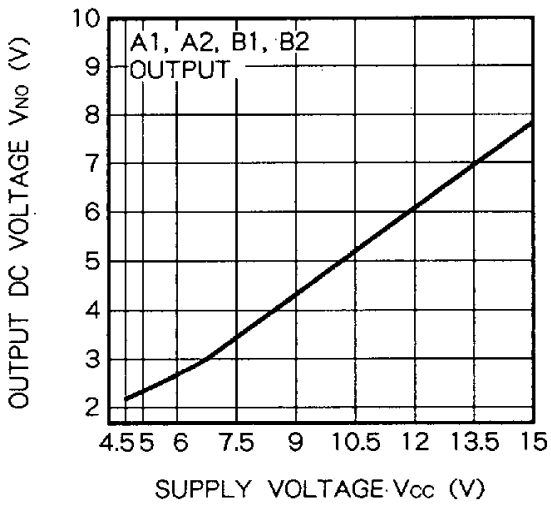
Symbol	Parameter	Test conditions	Limits			Unit			
			Min	Typ	Max				
Icco	Quiescent circuit current		-	6	-	mA			
Gvo	Amplifiers	Open loop voltage gain	-	89	-	dB			
Gvc		Closed loop voltage gain	Vo = 1Vrms, RNF = 240Ω	50	53	55	dB		
THD		Total harmonic distortion	Vo = 1Vrms, RNF = 240Ω	-	0.1	0.6	%		
Vo		Maximum output voltage	THD = 3%	2.0	2.5	-	Vrms		
Ni		Input-referred noise voltage	Rg = 0Ω, BPF (20 to 20kHz - 3dB)	-	1.5	2.5	μVrms		
ALCA		ALC circuits	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	-
ALCB	0.8			1.05	1.25	Vrms			
ALCTHD	ALC distortion		Output voltage and distortion at an input voltage signal of Vi = -50dBV. Re = 24Ω	-	0.5	2	%		
ALC1	ALC output voltage			-	0	2	dB		
ALC2	ALC balance								

TYPICAL CHARACTERISTICS

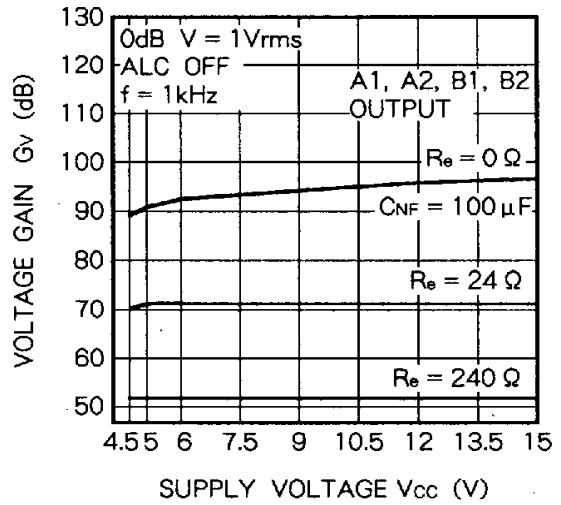


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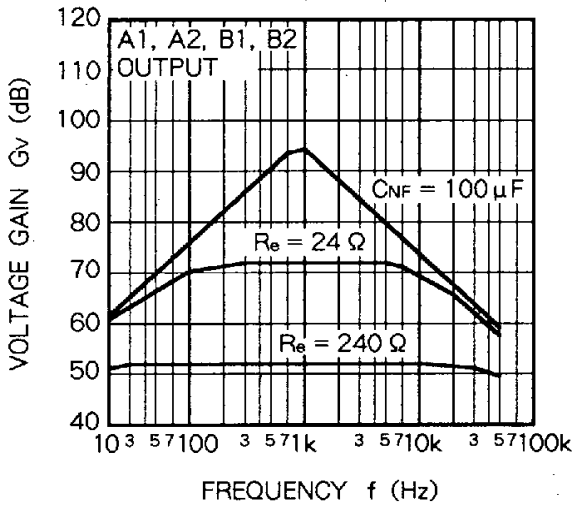
**OUTPUT DC VOLTAGE VS.
SUPPLY VOLTAGE**



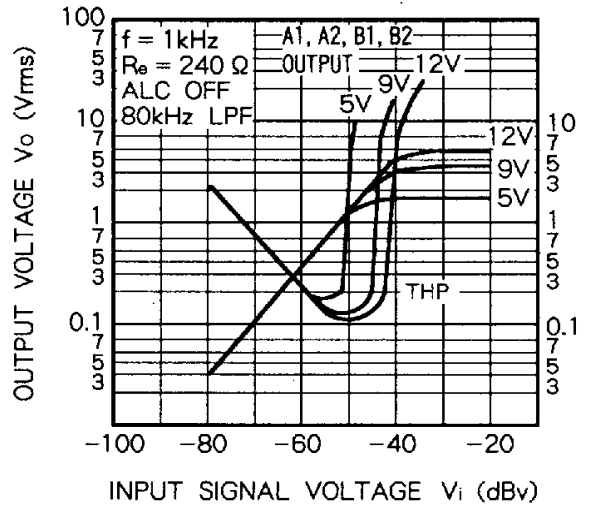
**VOLTAGE GAIN VS.
SUPPLY VOLTAGE**



**VOLTAGE GAIN VS.
FREQUENCY**

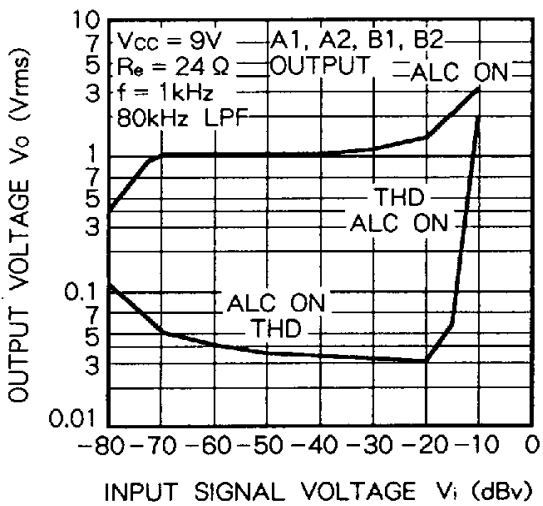


**OUTPUT VOLTAGE VS.
INPUT SIGNAL VOLTAGE**



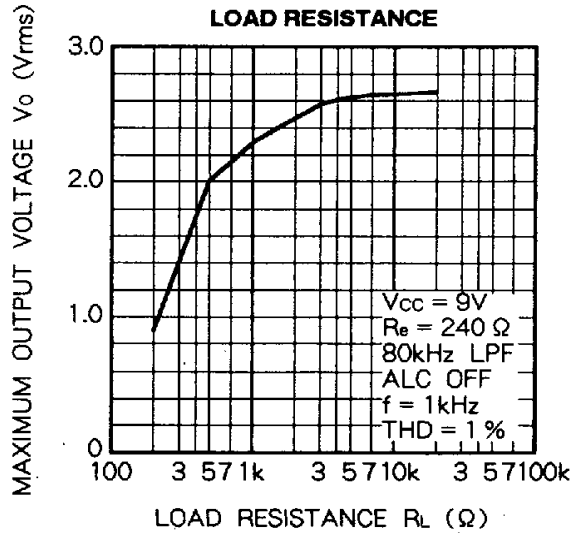
TOTAL HARMONIC DISTORTION THD (%)

**OUTPUT VOLTAGE VS.
INPUT SIGNAL VOLTAGE**

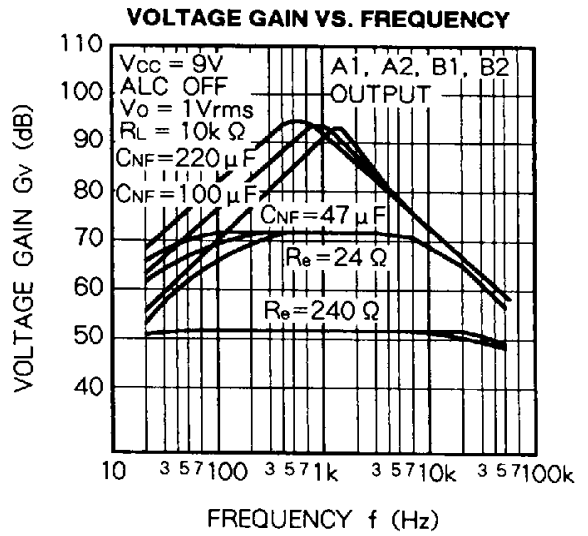
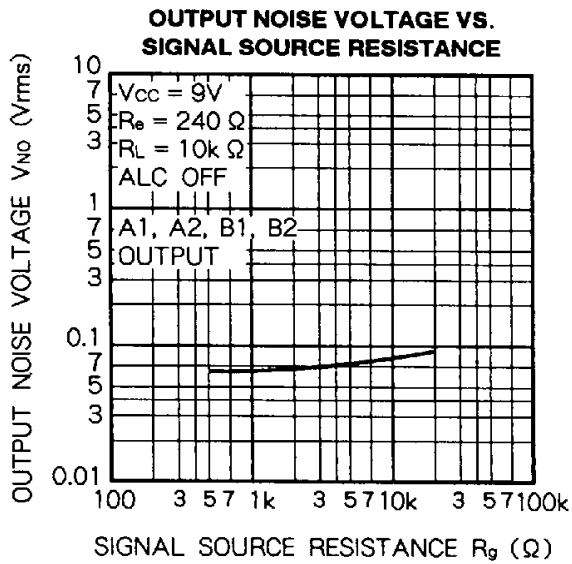


TOTAL HARMONIC DISTORTION THD (%)

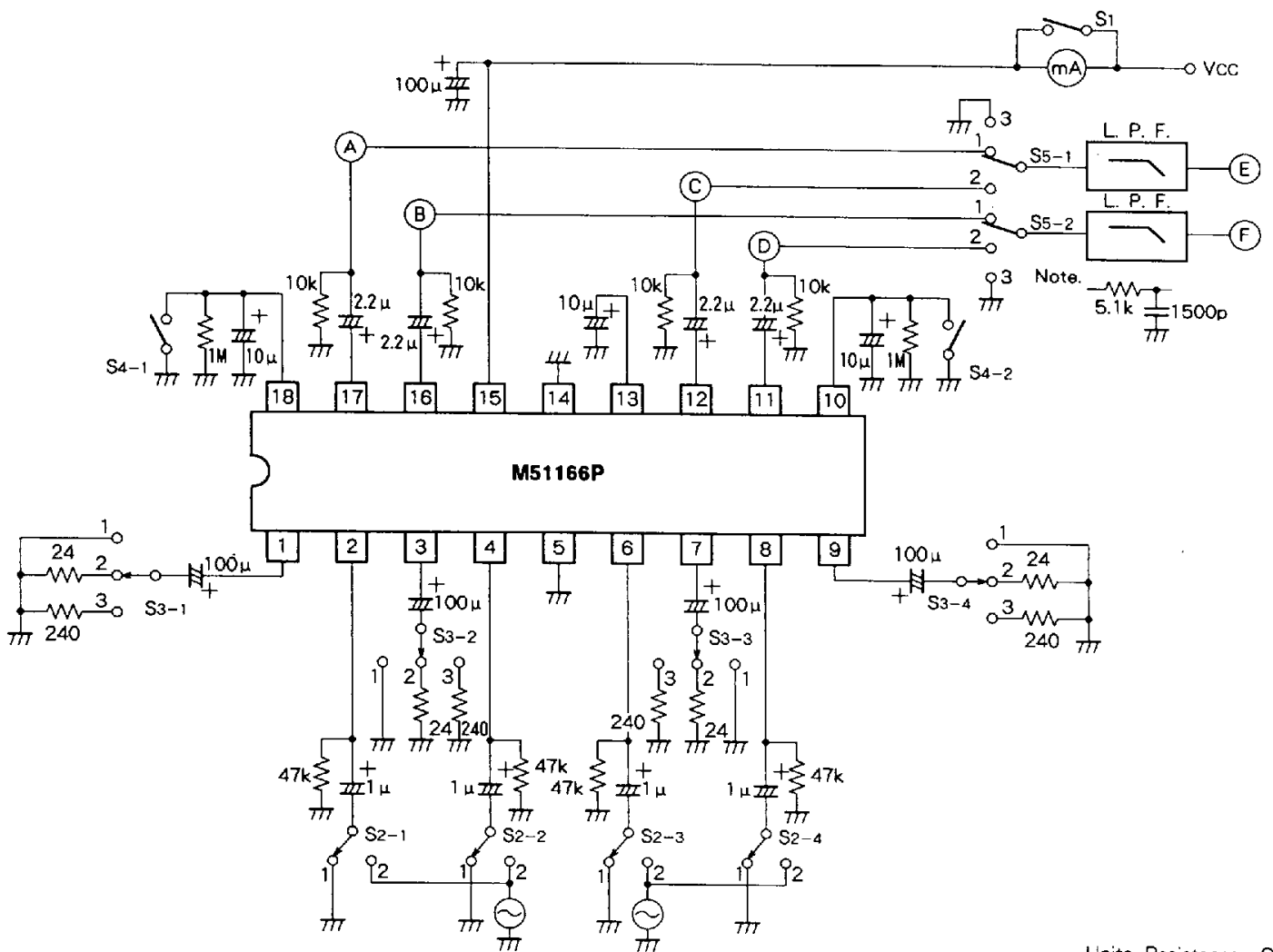
**MAXIMUM OUTPUT VOLTAGE VS.
LOAD RESISTANCE**



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TEST CIRCUIT



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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 _{5-1,2}	
I _{cc0}		OFF	1	3	ON	3	mA
G _{vo}	V _i = -80dBV	ON	2	1	↑	↑	A,B,C,D
G _{vc}	V _i = -52dBV (2.5mVrms)	↑	↑	3	↑	↑	↑
THD	V _i = -52dBV (2.5mVrms)	↑	↑	↑	↑	↑	↑
V _o	THD = 3%	↑	↑	↑	↑	↑	↑
N _i	20Hz to 20kHz BPF	↑	1	3	ON	1/2	E,F
ALC _A	R _e = 240 Ω	↑	2	2	OFF	3	A/B,C/D
ALC _o ALC _{THD}	Output voltage and distortion V _i = -50dBV	↑	↑	↑	↑	↑	↑
ALC _B	Output voltage ratio V _i = -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

