

M5226P/FP

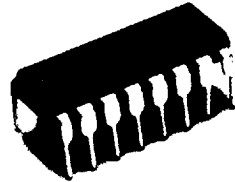
5-ELEMENT GRAPHIC EQUALIZER IC

DESCRIPTION

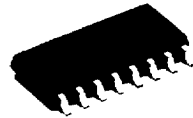
The M5226 is a 5-element graphic equalizer IC best suited to audio systems. It has a built-in 5-element resonance circuits with transistor system and an output OP amp. The IC can be used in hybrid ICs and compact sets of high-density assemblies. Its applications include radio cassette tape players, car audio systems, and music centers.

FEATURES

- The number of part can be reduced drastically for compact size.
- Graphic equalizer can be easily composed
- Low distortion THD = 0.02% (typ)
@ Flat input short
- Low noise $V_{NO} = 5 \mu V_{rms}$ (typ)
@ $f = 1kHz$, Flat
- Large allowable input voltage $V_i = 2.3V_{rms}$ (typ)
@ $V_{cc} = 9V$, $f = 1kHz$, Flat



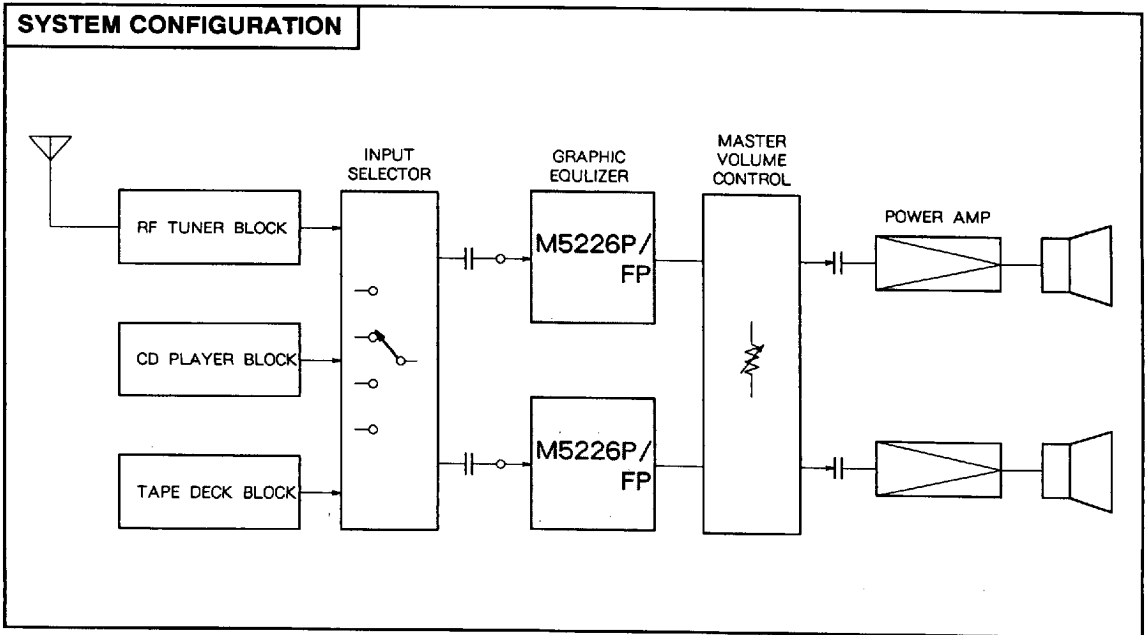
Outline 16P4(P)
2.54mm pitch 300mil DIP
(6.3mm x 19.0mm x 3.3mm)



Outline 16P2S-A(FP)
1.27mm pitch 225mil SOP
(4.4mm x 10.0mm x 1.5mm)

RECOMMENDED OPERATING CONDITIONS

- Supply voltage range $V_{cc} = 4$ to $20V$
- Rated supply voltage $V_{cc} = 20V$
- Rated power dissipation $700mW$ (P)
 $550mW$ (FP)

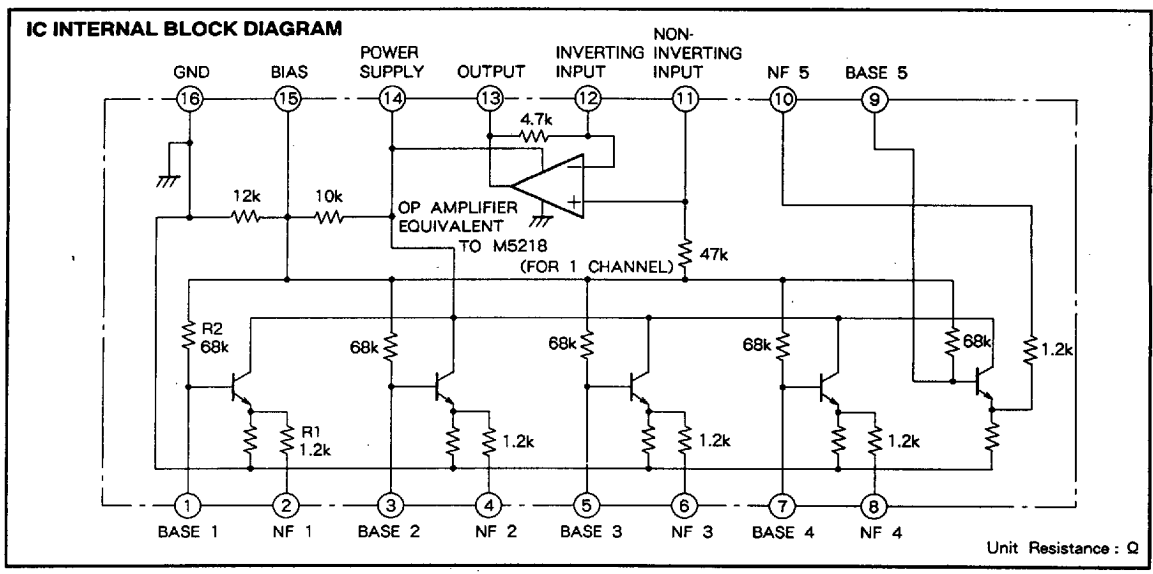
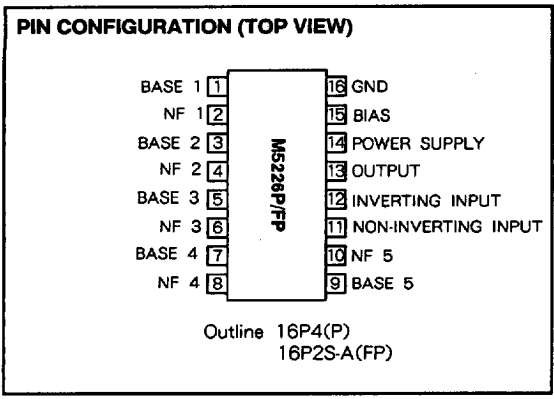


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M5226P/FP

5-ELEMENT GRAPHIC EQUALIZER IC



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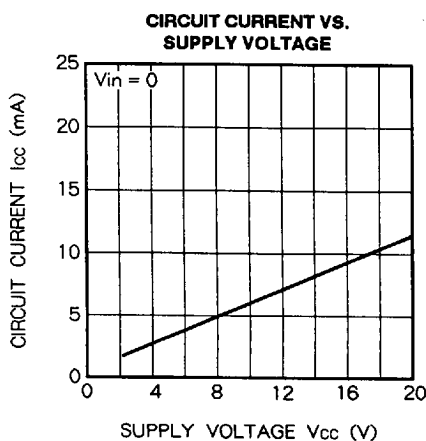
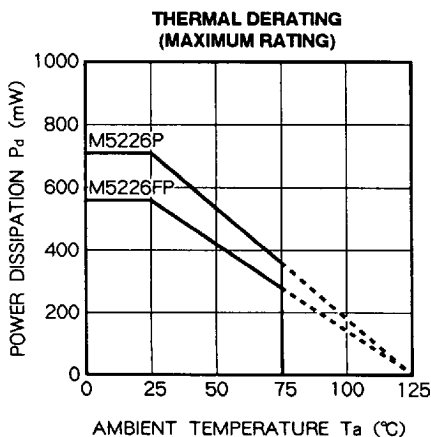
ABSOLUTE MAXIMUM RATINGS (Ta = 25°C, unless otherwise noted)

Symbol	Parameter	Ratings	Unit
V _{cc}	Supply voltage	20	V
I _{LP}	Load current	30	mA
P _d	Power dissipation	550(FP)/1000(DIP)	mW
T _{opr}	Operating temperature	-20 to +75	°C
T _{stg}	Storage temperature	-55 to +125	°C

ELECTRICAL CHARACTERISTICS (Ta = 25°C, V_{cc} = 9V)

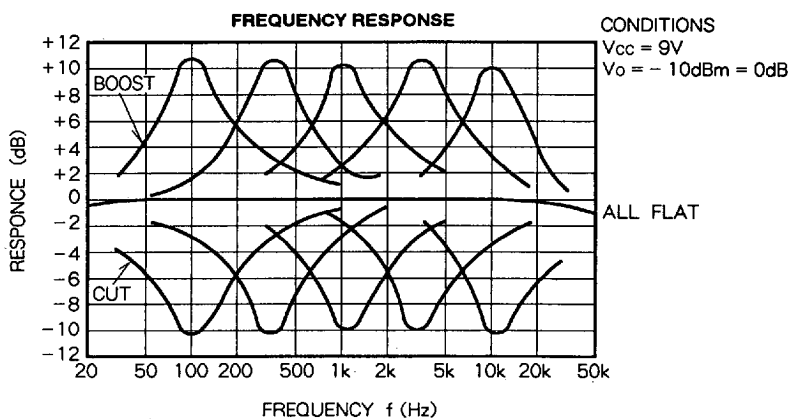
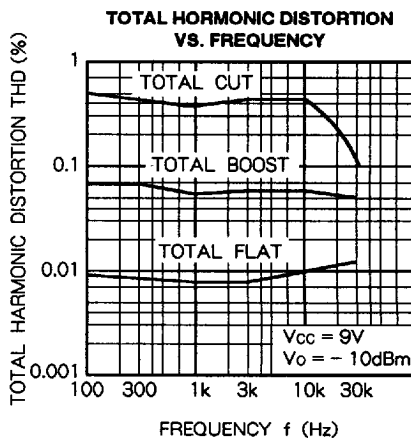
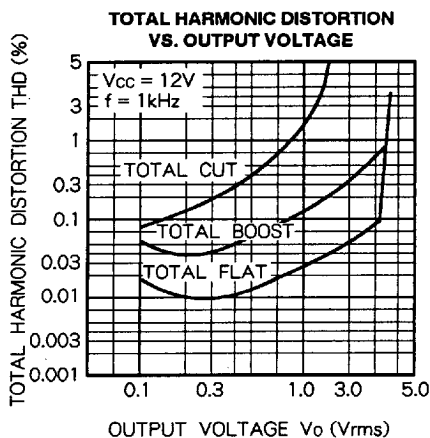
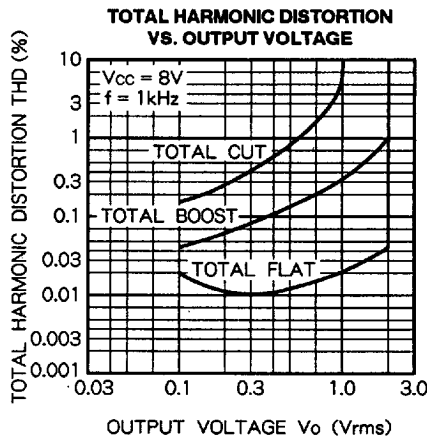
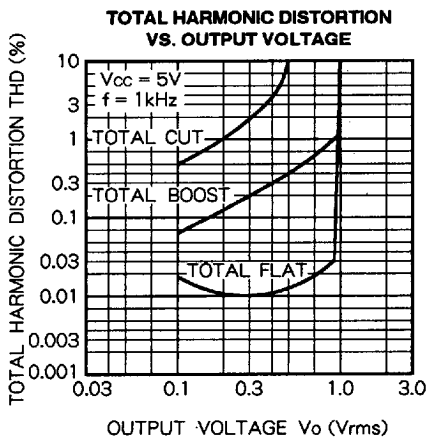
Symbol	Parameter		f (Hz)	Test conditions	Limits			Unit
					Min	Typ	Max	
I _{cc}	Circuit current		-	V _{in} = 0	3.0	5.2	8.0	mA
G _{v(FLAT)}	Voltage gain	Flat	1k	V _{in} = -10dBm	-3.8	-0.8	+2.2	dB
G _{v(BOOST)}		Boost	108	V _{in} = -10dBm	7.2	9.7	11.2	
			343		7.2	9.7	11.2	
			1.08k		7.2	9.7	11.2	
			3.43k		7.2	9.7	11.2	
			10.8k		7.2	9.7	11.2	
G _{v(CUT)}		Cut	108	V _{in} = -10dBm	-12.8	-11.3	-8.8	
			343		-12.8	-11.3	-8.8	
			1.08k		-12.8	-11.3	-8.8	
			3.43k		-12.8	-11.3	-8.8	
	10.8k		-12.8		-11.3	-8.8		
THD	Total harmonic distortion		1k	V _{in} = 1V _{rms}	-	0.02	0.1	%
V _{no}	Output noise voltage		Input short BW: 10Hz to 30kHz (3dB) flat		-	5.0	20	μV _{rms}

TYPICAL CHARACTERISTICS



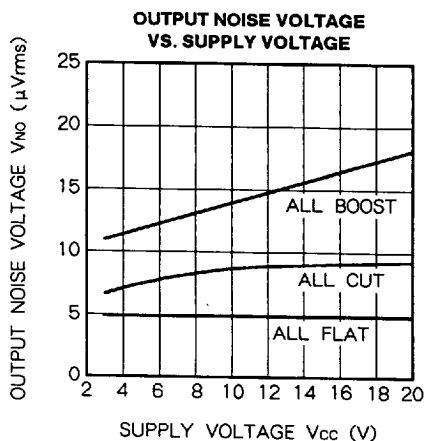
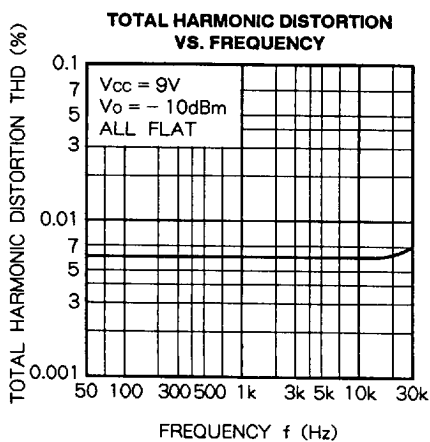
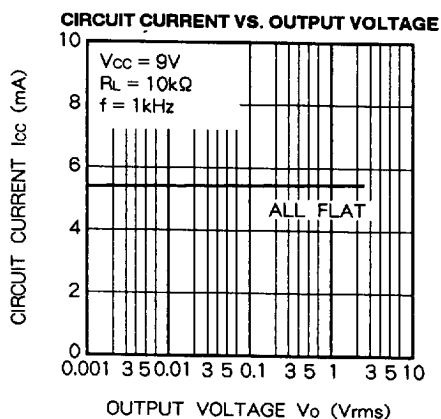
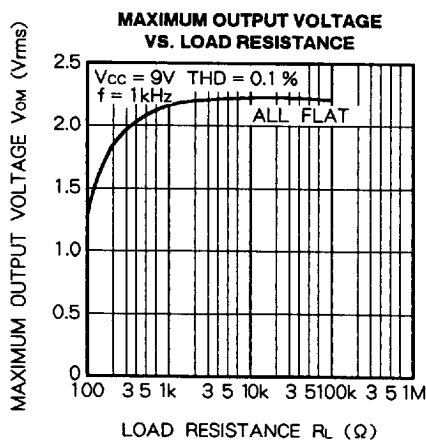
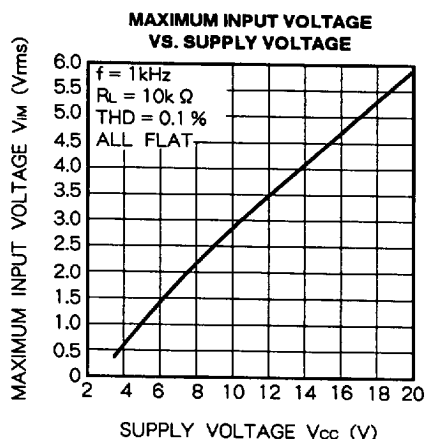
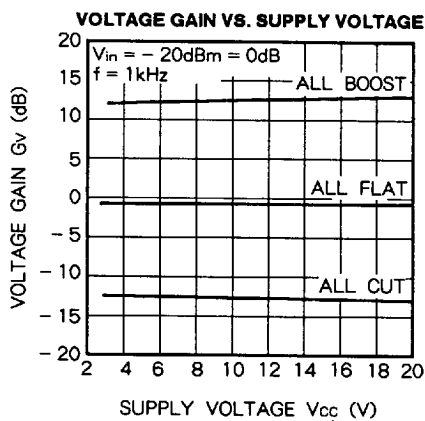
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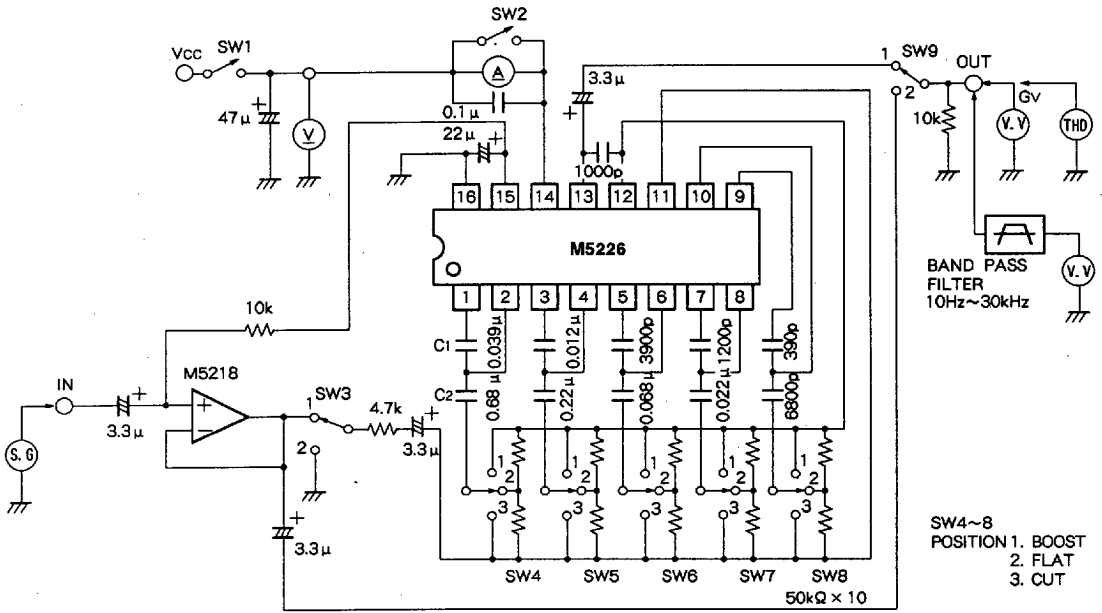
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M5226P/FP

5-ELEMENT GRAPHIC EQUALIZER IC

TEST CIRCUIT (Circuit current I_{cc} , Voltage gain G_v , Total harmonic distortion THD, Output noise voltage V_{no})



SW4~8
POSITION 1. BOOST
2. FLAT
3. CUT

Units Resistance : Ω
Capacitance : F

TEST CIRCUIT SWITCH MATRIX

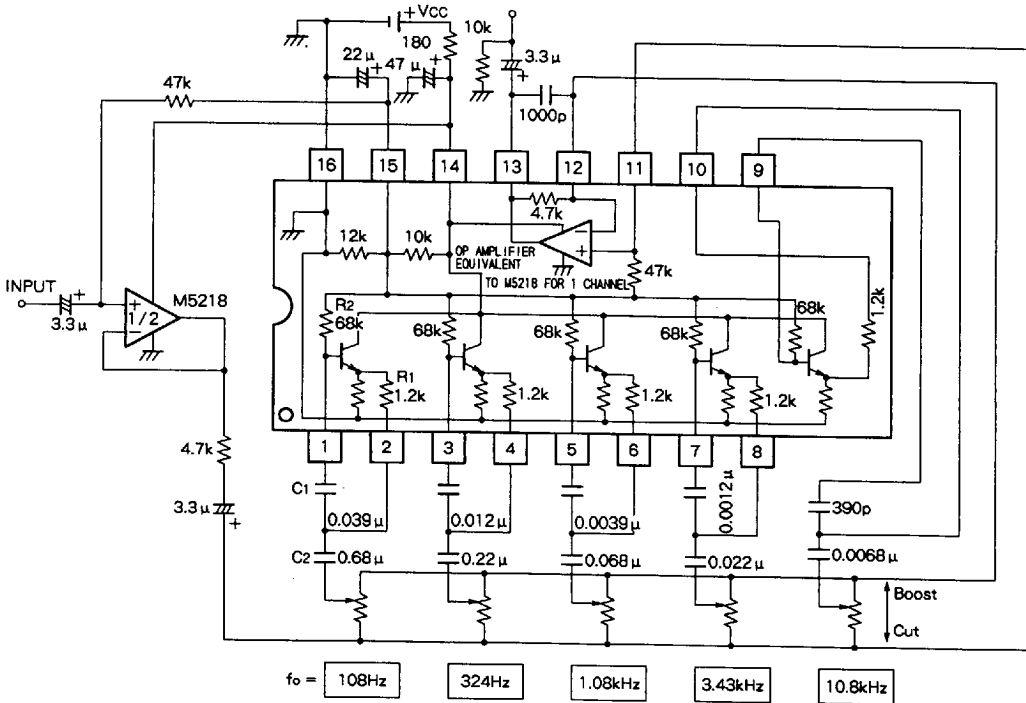
Test item	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9
I_{cc}	OFF	1	○	○	○	○	○	1
$G_v(FLAT)$	ON	1	2	2	2	2	2	1
$G_v(BOOST)$	f = 108Hz	ON	1	1	2	2	2	1
	f = 343Hz	ON	1	2	1	2	2	1
	f = 1.08kHz	ON	1	2	2	1	2	1
	f = 3.43kHz	ON	1	2	2	2	1	2
	f = 10.8kHz	ON	1	2	2	2	1	1
$G_v(CUT)$	f = 108Hz	ON	1	3	2	2	2	1
	f = 343Hz	ON	1	2	3	2	2	1
	f = 1.08kHz	ON	1	2	2	3	2	1
	f = 3.43kHz	ON	1	2	2	3	2	1
	f = 10.8kHz	ON	1	2	2	2	3	1
THD	ON	1	2	2	2	2	2	1
$V_{NO}(ALLFLAT)$	ON	2	2	2	2	2	2	1

Note: The mark "○" applies to both 1 and 2

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APPLICATION EXAMPLE

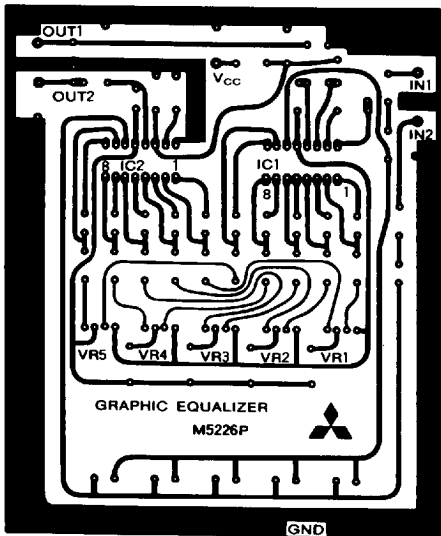


$$f_o = \frac{1}{2\pi \sqrt{C1 \cdot C2 \cdot R1 \cdot R2}} \text{ (Hz)}$$

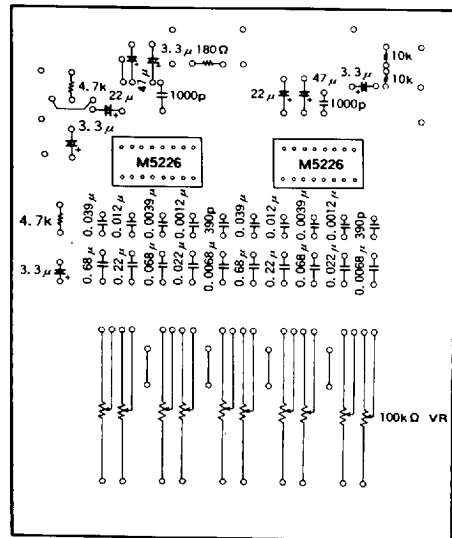
Units Resistance : Ω
Capacitance : F

PRINTED CIRCUIT BOARD FOR CIRCUIT TESTING (TYPICAL APPLICATION EXAMPLE)

PC BOARD PARTS-PLACEMENT DIAGRAM (COPPER FOIL SIDE)



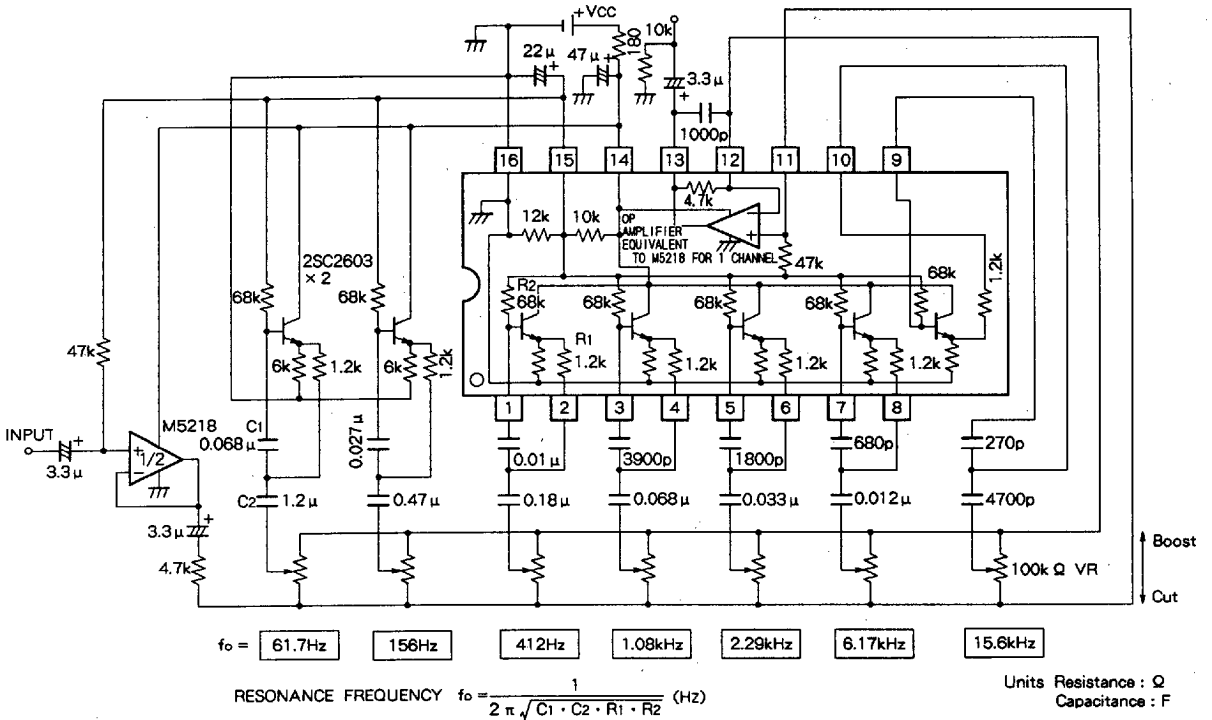
PC BOARD PARTS-PRACEM-DIAGRAM (PARTS SIDE)



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APPLICATION EXAMPLE (7-ELEMENT)



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