

M5226P/FP

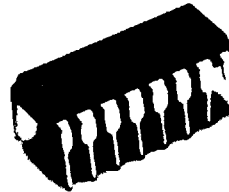
5-ELEMENT GRAPHIC EQUALIZER IC

DESCRIPTION

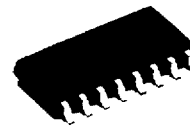
The M5226 is a 5-element graphic equalizer IC best suited to audio systems. It has a built-in 5-element resonance circuits with transistor system and an output OP amp. The IC can be used in hybrid ICs and compact sets of high-density assemblies. Its applications include radio cassette tape players, car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



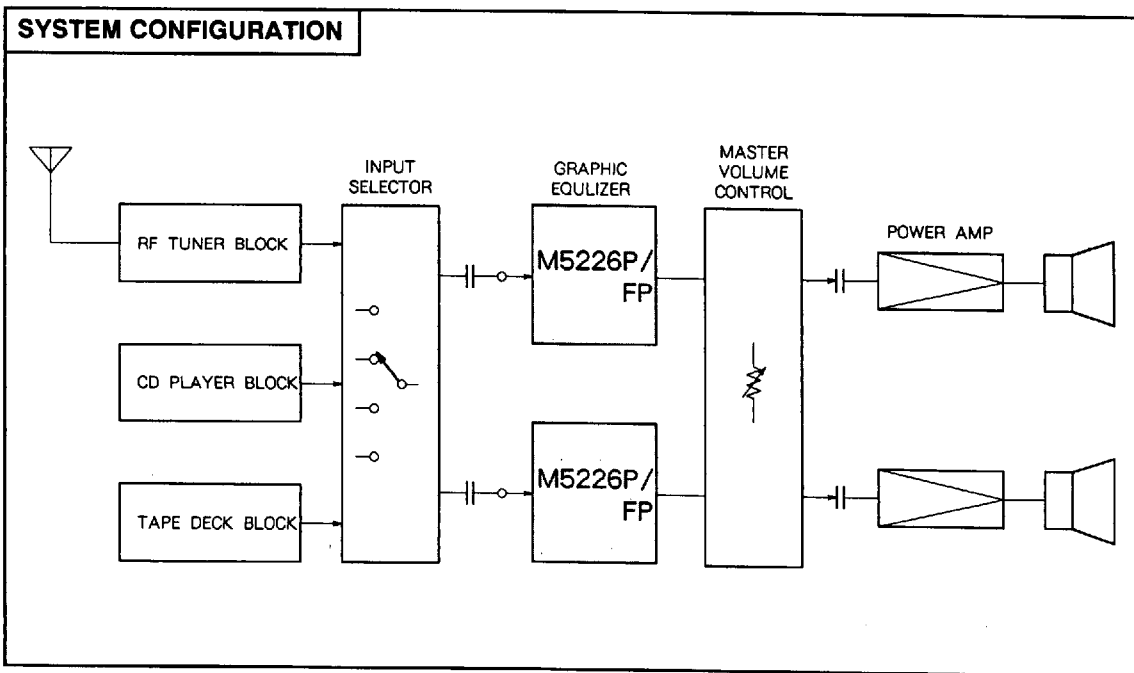
Outline 16P4(P)
2.54mm pitch 300mil DIP
(6.3mm x 19.0mm x 3.3mm)



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)



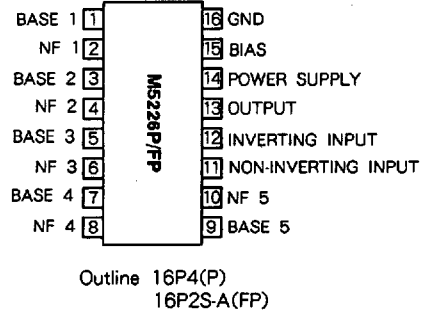
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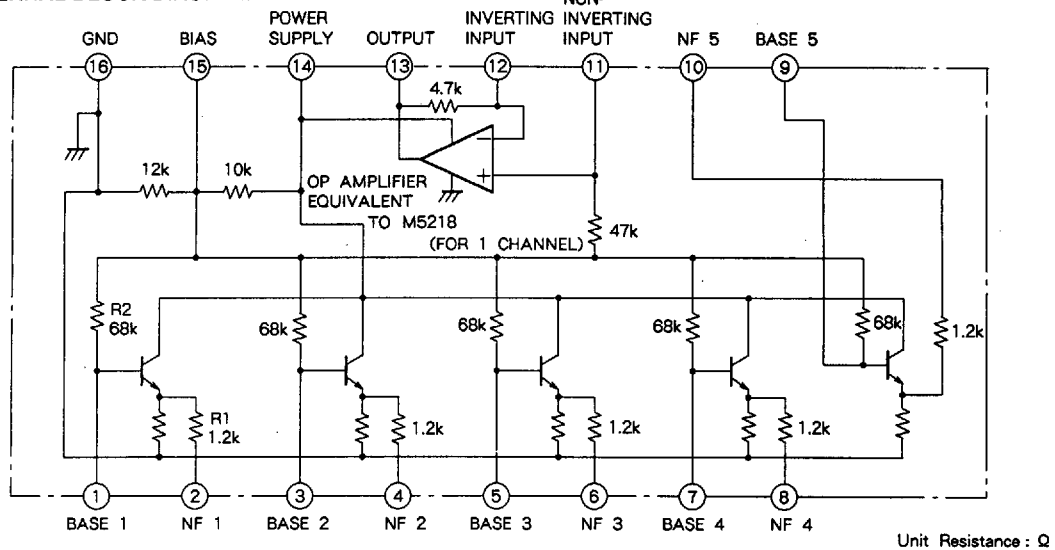
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PIN CONFIGURATION (TOP VIEW)



IC INTERNAL BLOCK DIAGRAM



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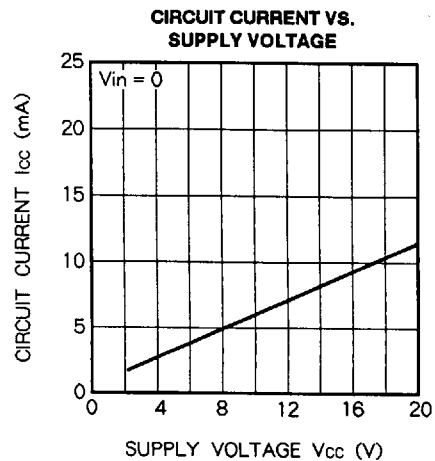
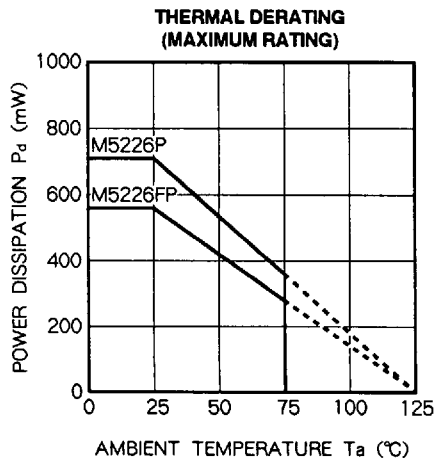
ABSOLUTE MAXIMUM RATINGS (Ta = 25 °C, unless otherwise noted)

Symbol	Parameter	Ratings	Unit
Vcc	Supply voltage	20	V
ILP	Load current	30	mA
Pa	Power dissipation	550(FP)/1000(DIP)	mW
Topr	Operating temperature	- 20 to + 75	°C
Tstg	Storage temperature	- 55 to + 125	°C

ELECTRICAL CHARACTERISTICS (Ta = 25 °C, Vcc = 9V)

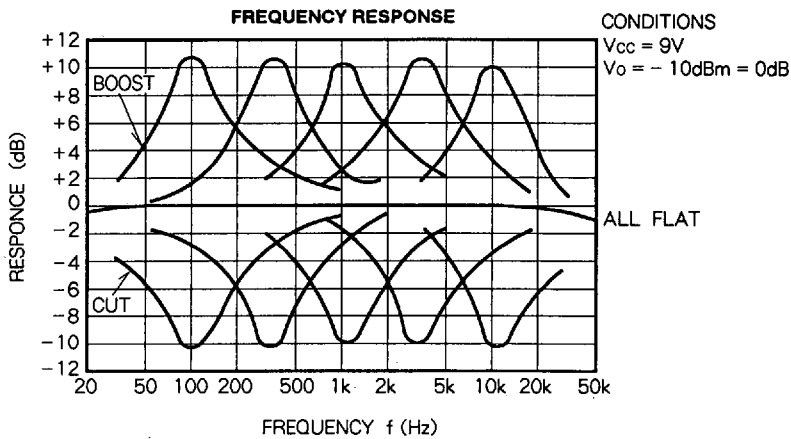
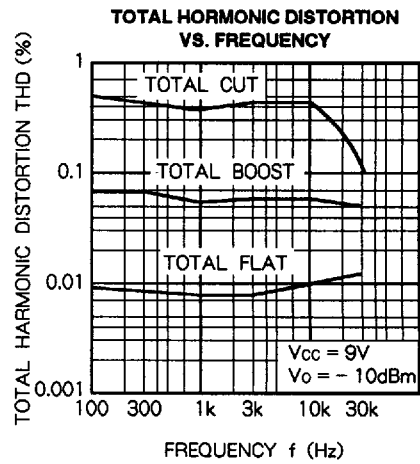
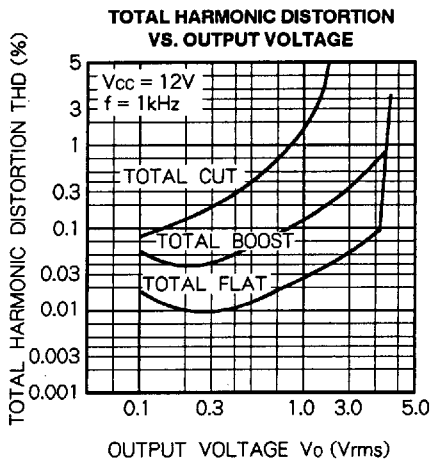
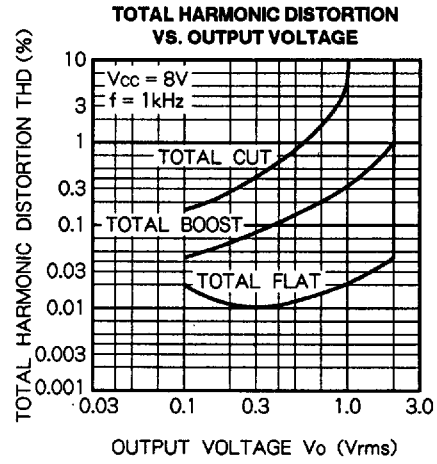
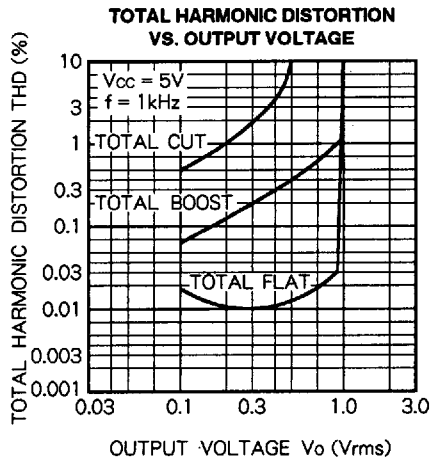
Symbol	Parameter		f (Hz)	Test conditions	Limits			Unit
					Min	Typ	Max	
Icc	Circuit current		-	Vin = 0	3.0	5.2	8.0	mA
GV(FLAT)	Voltage gain	Flat	1k	Vin = - 10dBm	- 3.8	- 0.8	+ 2.2	dB
GV(BOOST)		Boost	108	Vin = - 10dBm	7.2	9.7	11.2	
			343		7.2	9.7	11.2	
			1.08k		7.2	9.7	11.2	
			3.43k		7.2	9.7	11.2	
			10.8k		7.2	9.7	11.2	
GV(CUT)		Cut	108	Vin = - 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	Vin = 1Vrms	-	0.02	0.1	%
Vno	Output noise voltage		Input short BW: 10Hz to 30kHz (3dB) flat		-	5.0	20	µVrms

TYPICAL CHARACTERISTICS



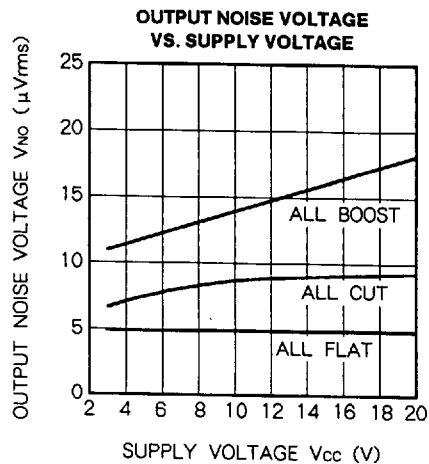
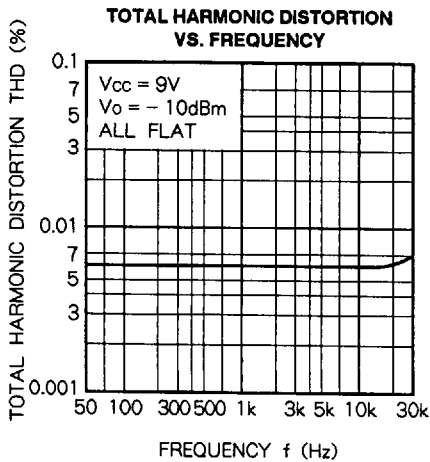
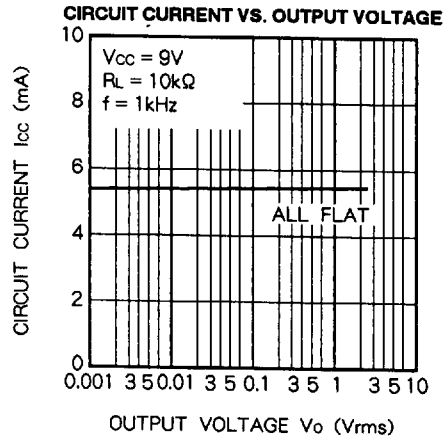
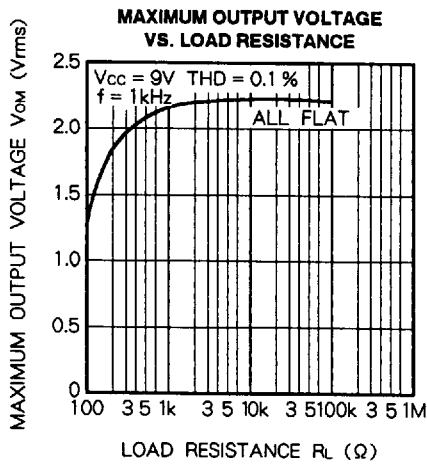
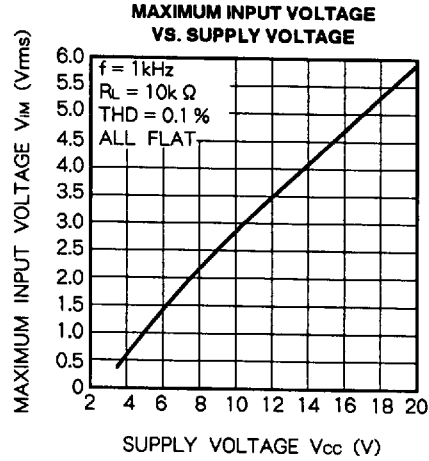
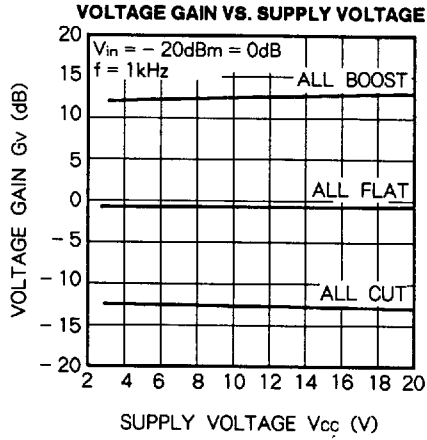
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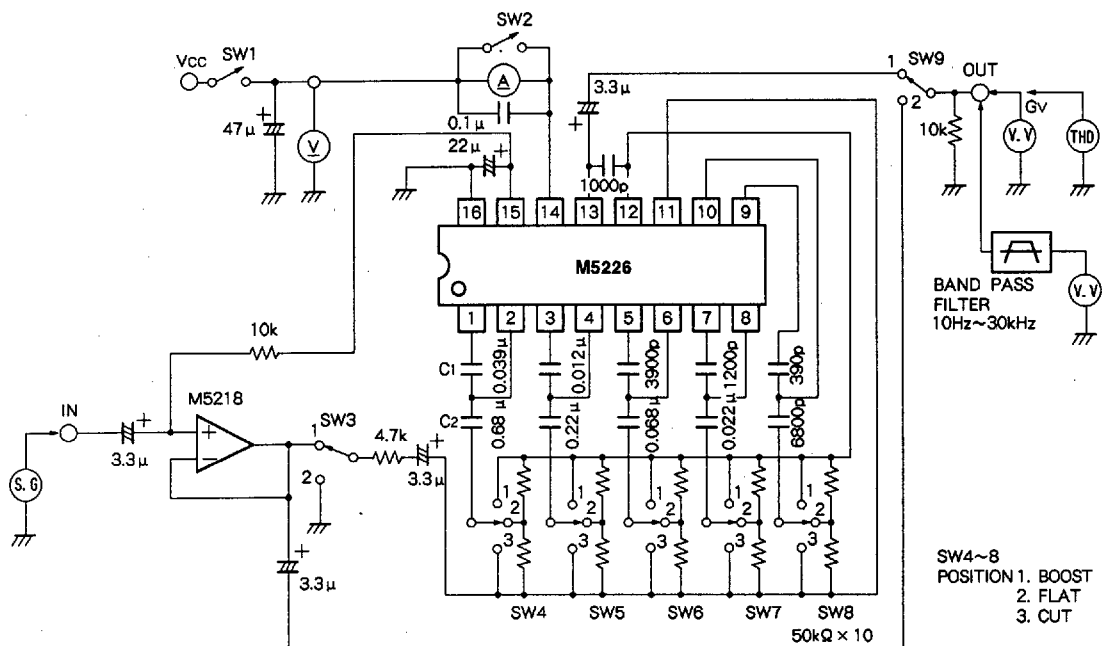




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TEST CIRCUIT (Circuit current I_{cc} , Voltage gain G_v , Total harmonic distortion THD, Output noise voltage V_{no})



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)	$f = 108\text{Hz}$	ON	1	1	2	2	2	1
	$f = 343\text{Hz}$	ON	1	2	1	2	2	1
	$f = 1.08\text{kHz}$	ON	1	2	2	1	2	1
	$f = 3.43\text{kHz}$	ON	1	2	2	2	1	2
G_v (CUT)	$f = 10.8\text{kHz}$	ON	1	2	2	2	1	1
	$f = 108\text{Hz}$	ON	1	3	2	2	2	1
	$f = 343\text{Hz}$	ON	1	2	3	2	2	1
	$f = 1.08\text{kHz}$	ON	1	2	2	3	2	1
THD	$f = 3.43\text{kHz}$	ON	1	2	2	2	3	1
	$f = 10.8\text{kHz}$	ON	1	2	2	2	3	1
V_{NO} (ALLFLAT)	ON	1	2	2	2	2	2	1

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

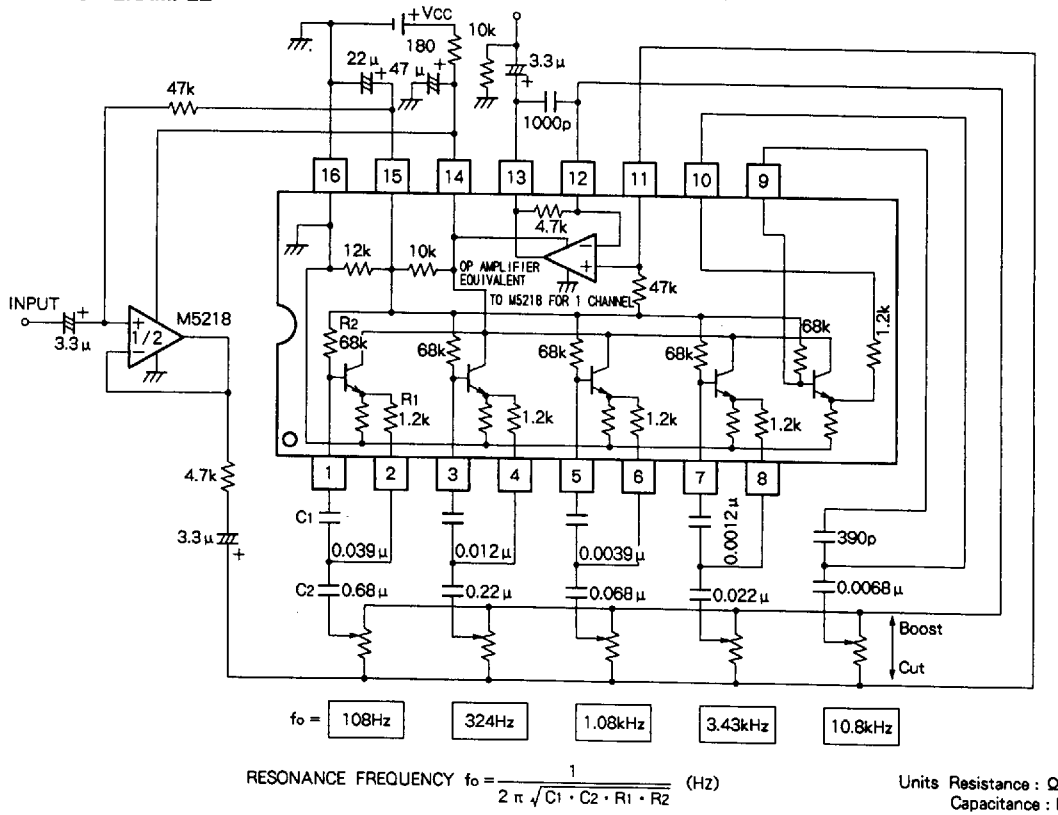
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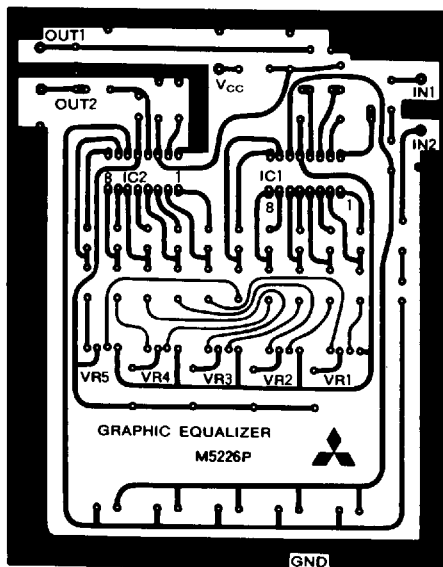
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APPLICATION EXAMPLE

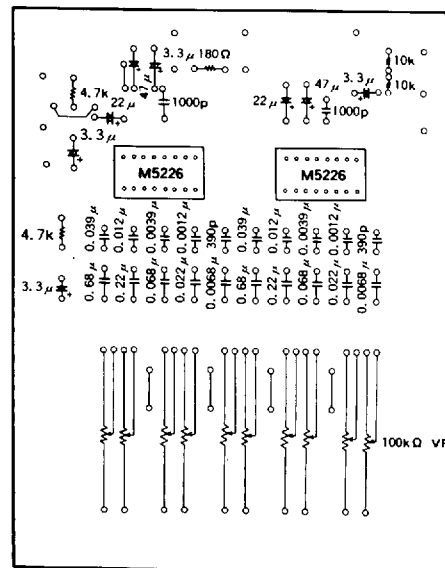


PRINTED CIRCUIT BOARD FOR CIRCUIT TESTING (TYPICAL APPLICATION EXAMPLE)

PC BOARD PARTS-PLACEMENT DIAGRAM (COPPER FOIL SIDE)



PC BOARD PARTS-PRACEMENT-DIAGRAM (PARTS SIDE)



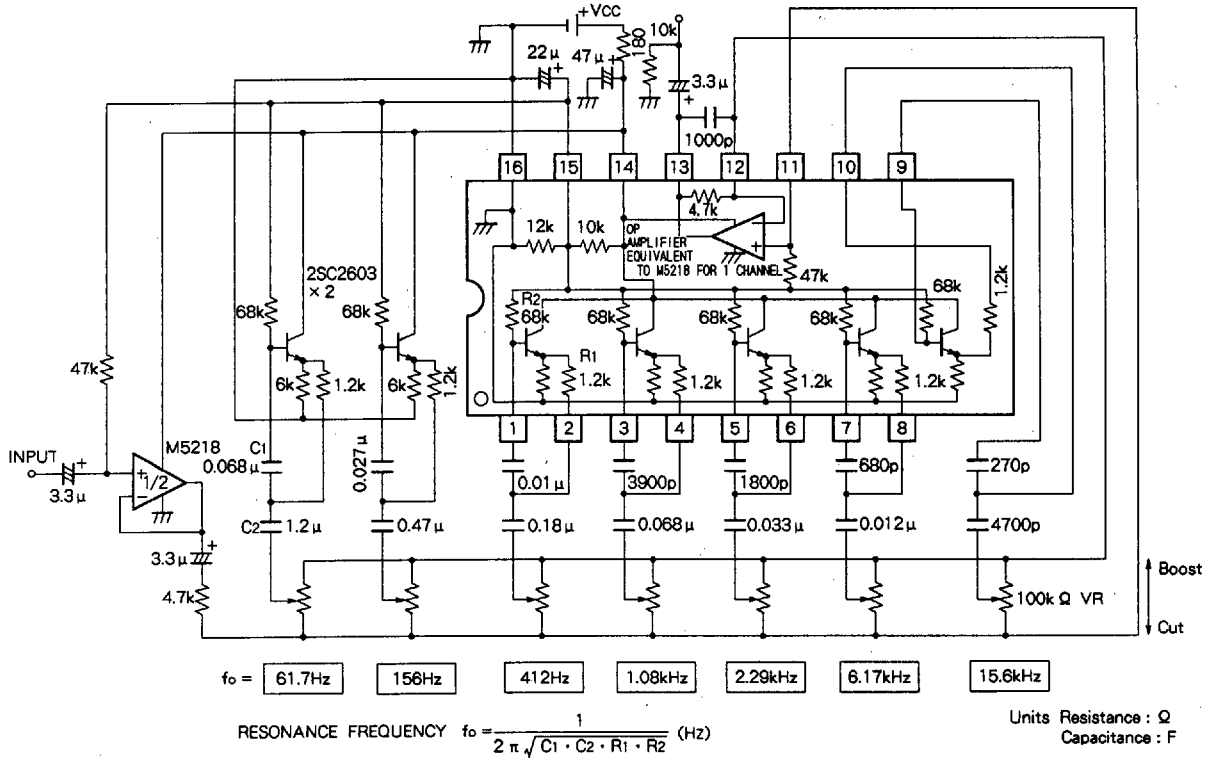
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5-ELEMENT GRAPHIC EQUALIZER IC

APPLICATION EXAMPLE (7-ELEMENT)



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