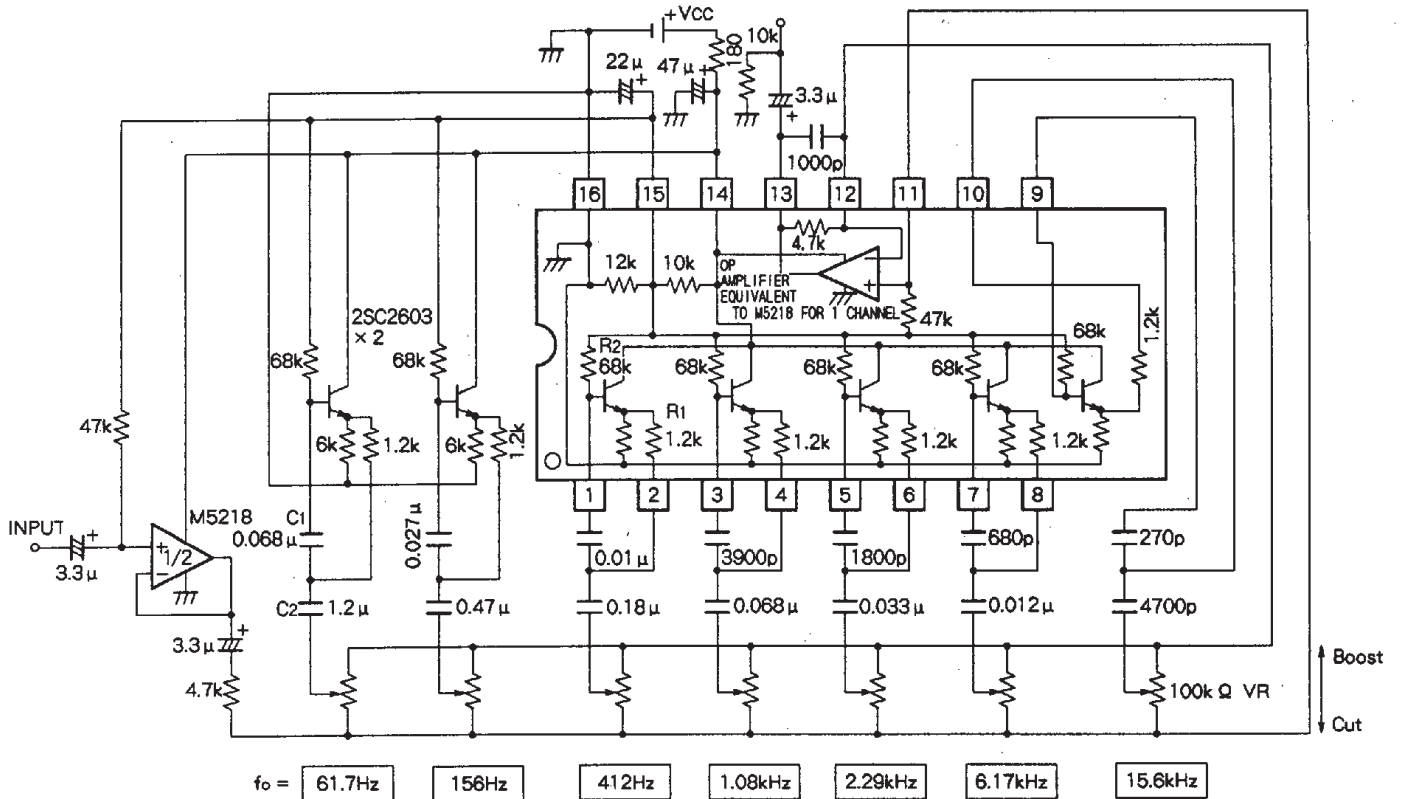


# M5226P/FP

## 5-ELEMENT GRAPHIC EQUALIZER IC

### APPLICATION EXAMPLE (7-ELEMENT)



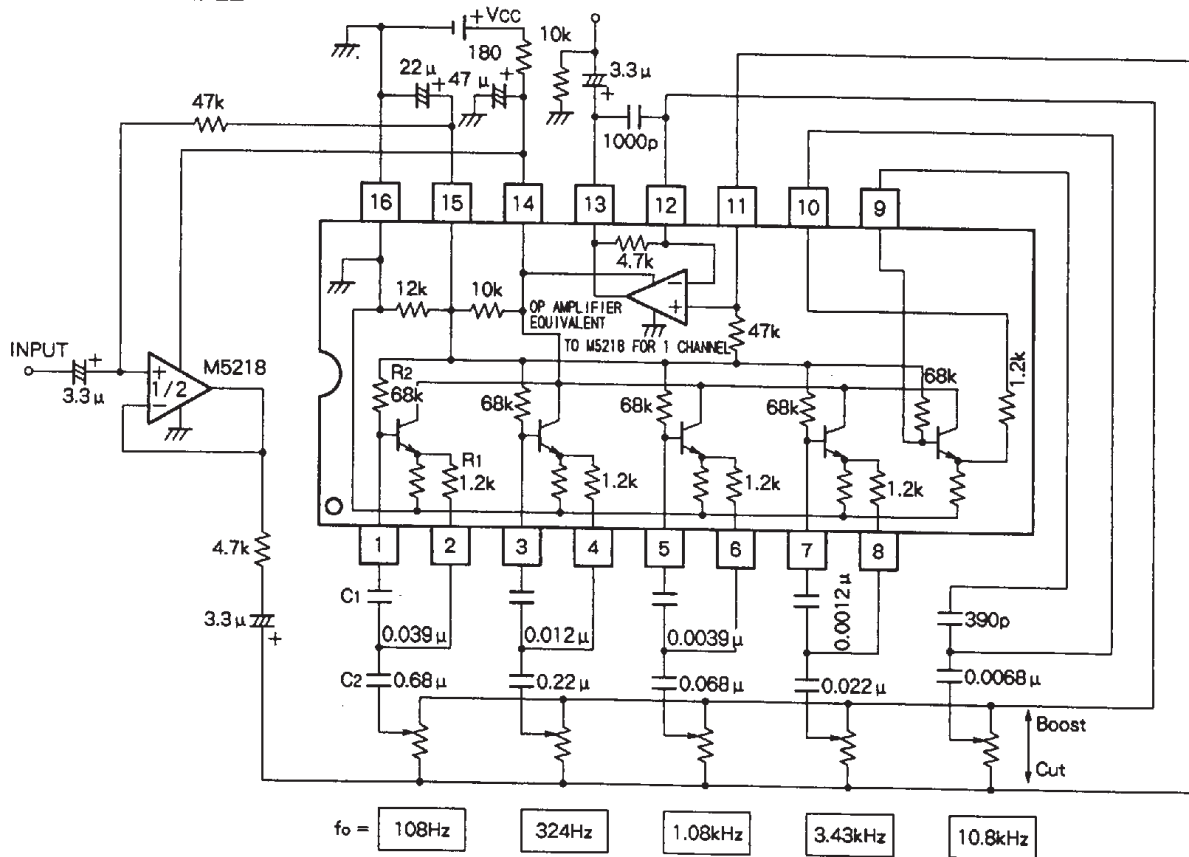
$$\text{RESONANCE FREQUENCY } f_0 = \frac{1}{2\pi\sqrt{C_1 \cdot C_2 \cdot R_1 \cdot R_2}} \text{ (Hz)}$$

Units Resistance : Ω  
Capacitance : F

# M5226P/FP

## 5-ELEMENT GRAPHIC EQUALIZER IC

### APPLICATION EXAMPLE

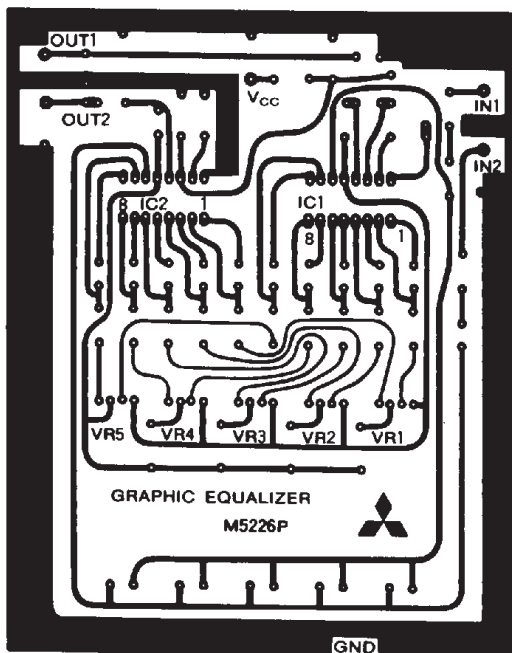


$$\text{RESONANCE FREQUENCY } f_o = \frac{1}{2 \pi \sqrt{C_1 \cdot C_2 \cdot R_1 \cdot R_2}} \text{ (Hz)}$$

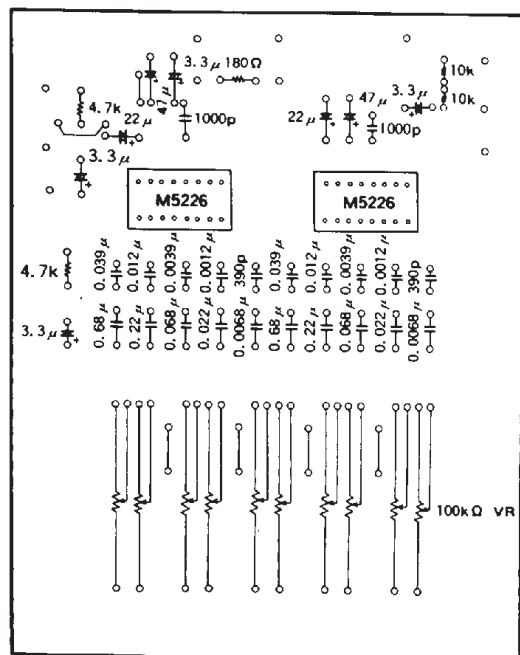
Units Resistance :  $\Omega$   
Capacitance : F

### PRINTED CIRCUIT BOARD FOR CIRCUIT TESTING (TYPICAL APPLICATION EXAMPLE)

PC BOARD PARTS-PLACEMENT DIAGRAM  
(COPPER FOIL SIDE)



PC BOARD PARTS-PRACEMENT-DIAGRAM  
(PARTS SIDE)

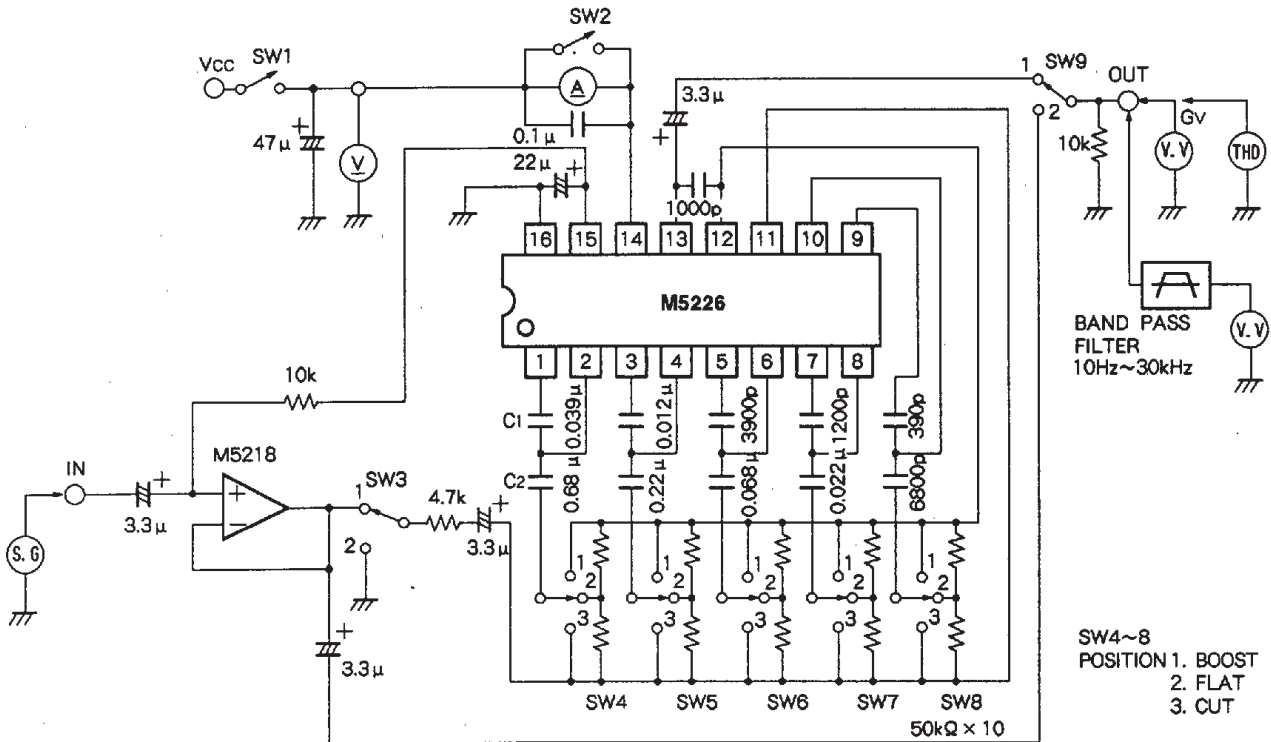


6249826 0022431 600

M5226P/FP

5-ELEMENT GRAPHIC EQUALIZER IC

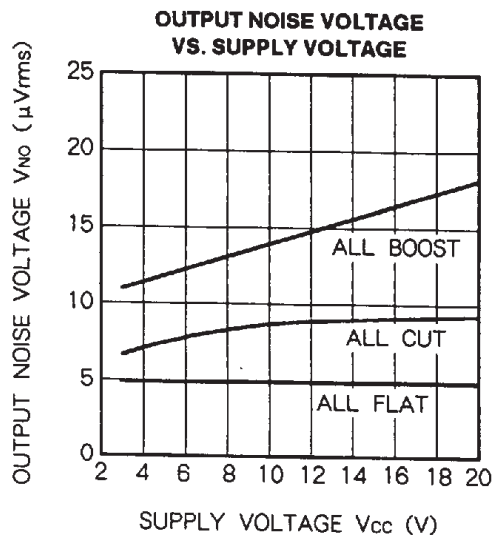
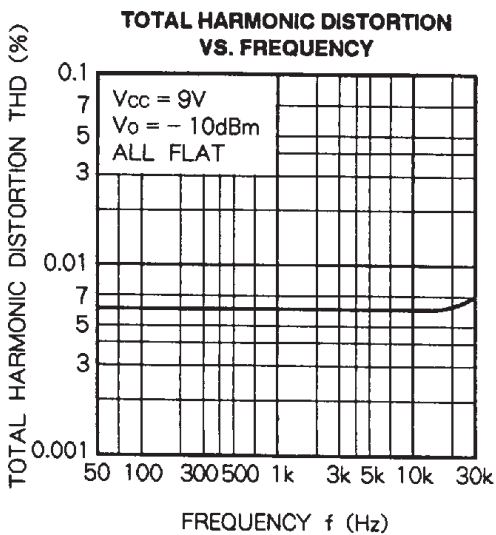
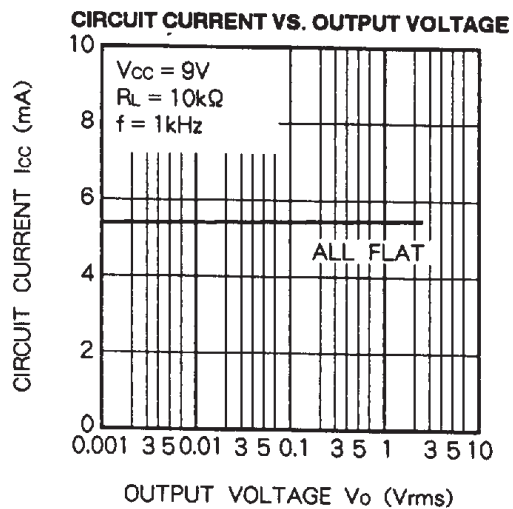
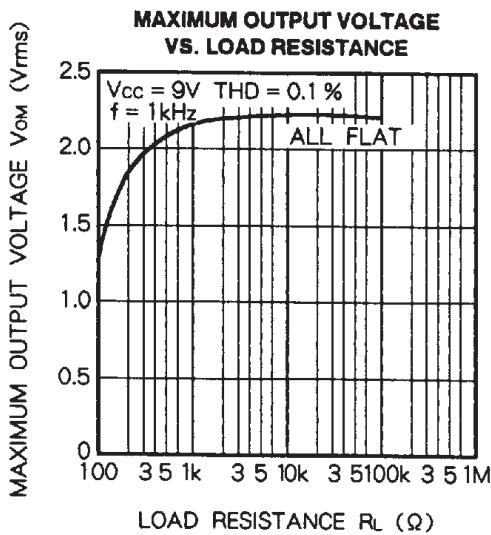
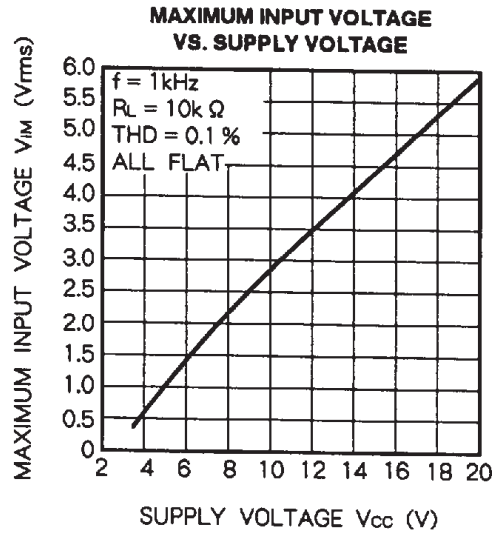
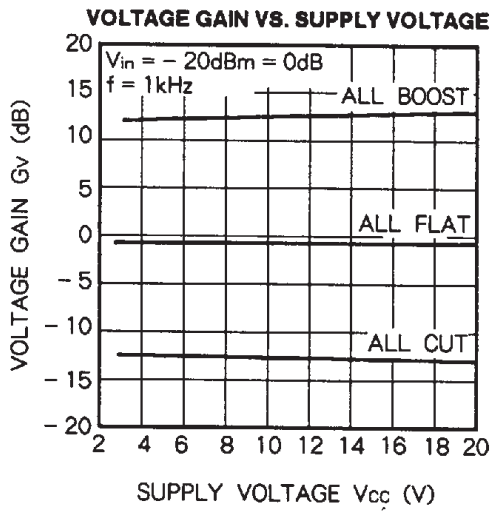
TEST CIRCUIT (Circuit current  $I_{cc}$ , Voltage gain  $G_v$ , Total harmonic distortion THD, Output noise voltage  $V_{NO}$ )

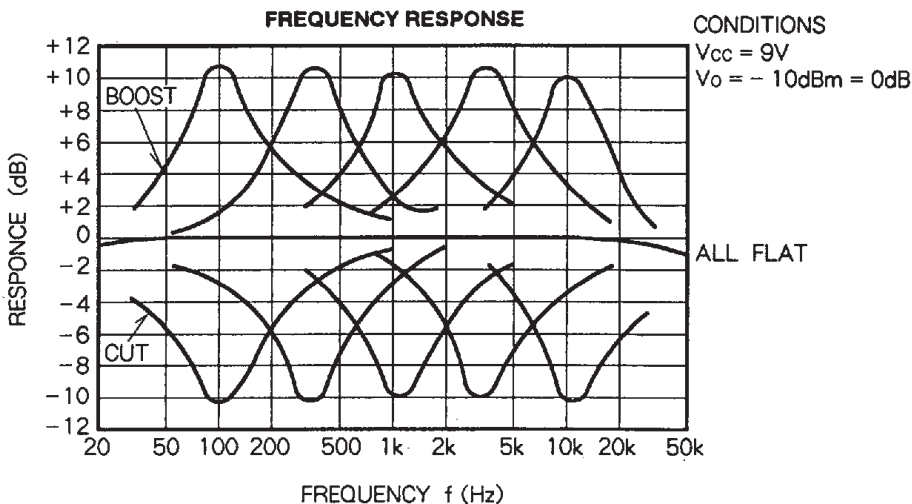
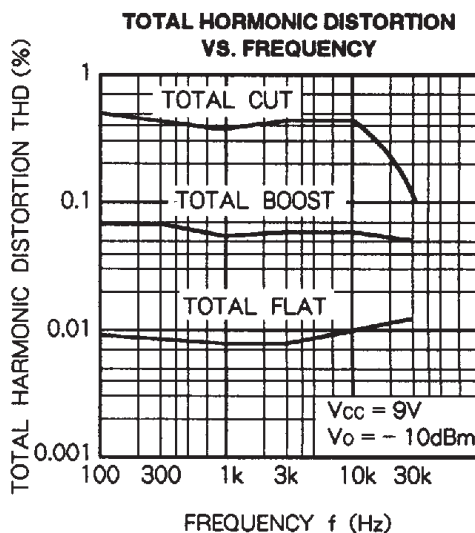
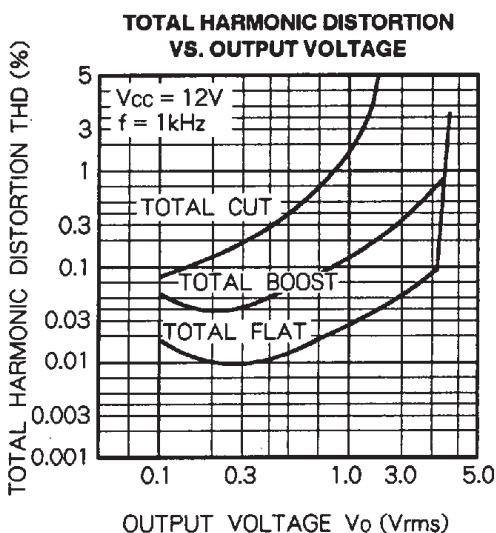
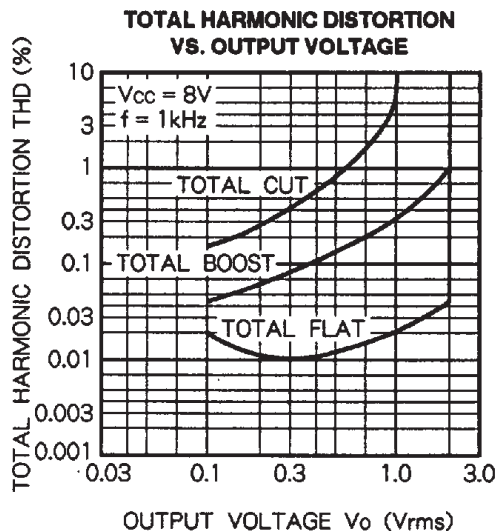
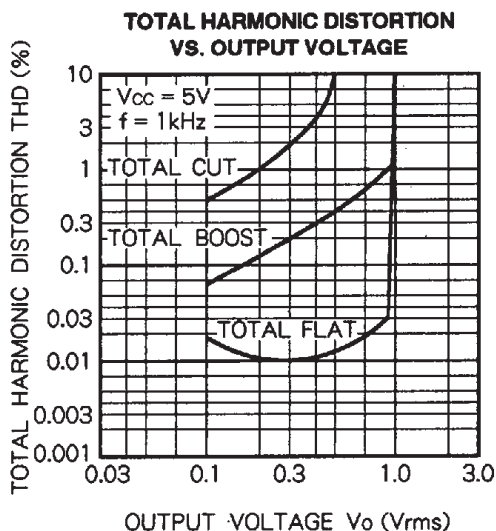


TEST CIRCUIT SWITCH MATRIX

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
	$f = 10.8\text{kHz}$	ON	1	2	2	2	1	2
$G_v(CUT)$	$f = 108\text{Hz}$	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
	$f = 3.43\text{kHz}$	ON	1	2	2	2	3	2
	$f = 10.8\text{kHz}$	ON	1	2	2	2	2	3
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





# M5226P/FP

## 5-ELEMENT GRAPHIC EQUALIZER IC

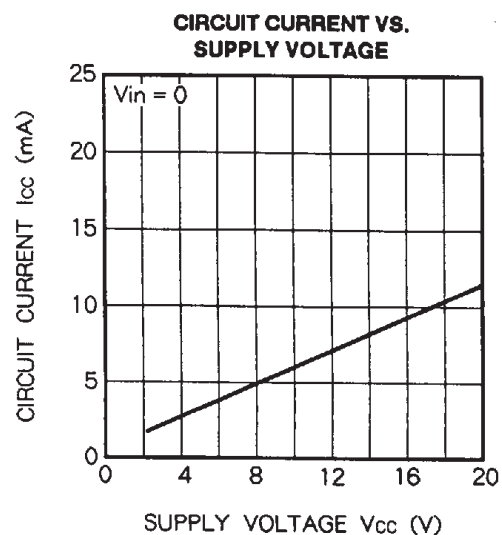
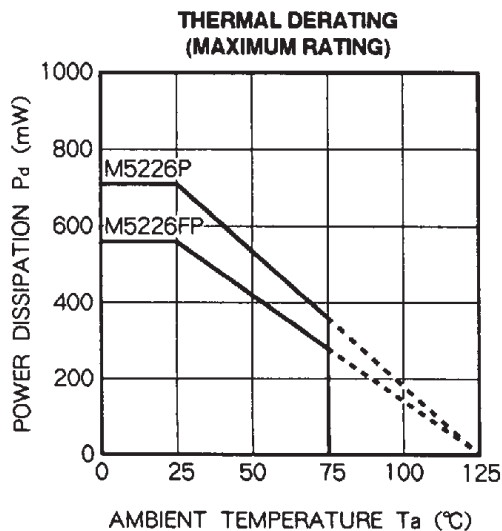
### ABSOLUTE MAXIMUM RATINGS (Ta = 25°C, unless otherwise noted)

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

### ELECTRICAL CHARACTERISTICS (Ta = 25°C, V<sub>cc</sub> = 9V)

Symbol	Parameter	f (Hz)	Test conditions	Limits			Unit
				Min	Typ	Max	
I <sub>cc</sub>	Circuit current	-	V <sub>in</sub> = 0	3.0	5.2	8.0	mA
G <sub>v(FLAT)</sub>	Flat	1k	V <sub>in</sub> = -10dBm	-3.8	-0.8	+2.2	dB
G <sub>v(BOOST)</sub>	Boost	108	V <sub>in</sub> = -10dBm	7.2	9.7	11.2	dB
		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 <sub>v(CUT)</sub>	Cut	108	V <sub>in</sub> = -10dBm	-12.8	-11.3	-8.8	dB
		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 <sub>in</sub> = 1Vrms	-	0.02	0.1	%
V <sub>no</sub>	Output noise voltage	Input short BW: 10Hz to 30kHz (3dB) flat		-	5.0	20	μVrms

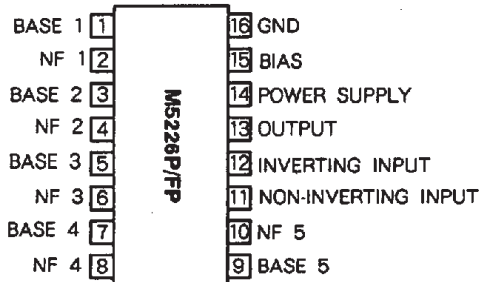
### TYPICAL CHARACTERISTICS



# M5226P/FP

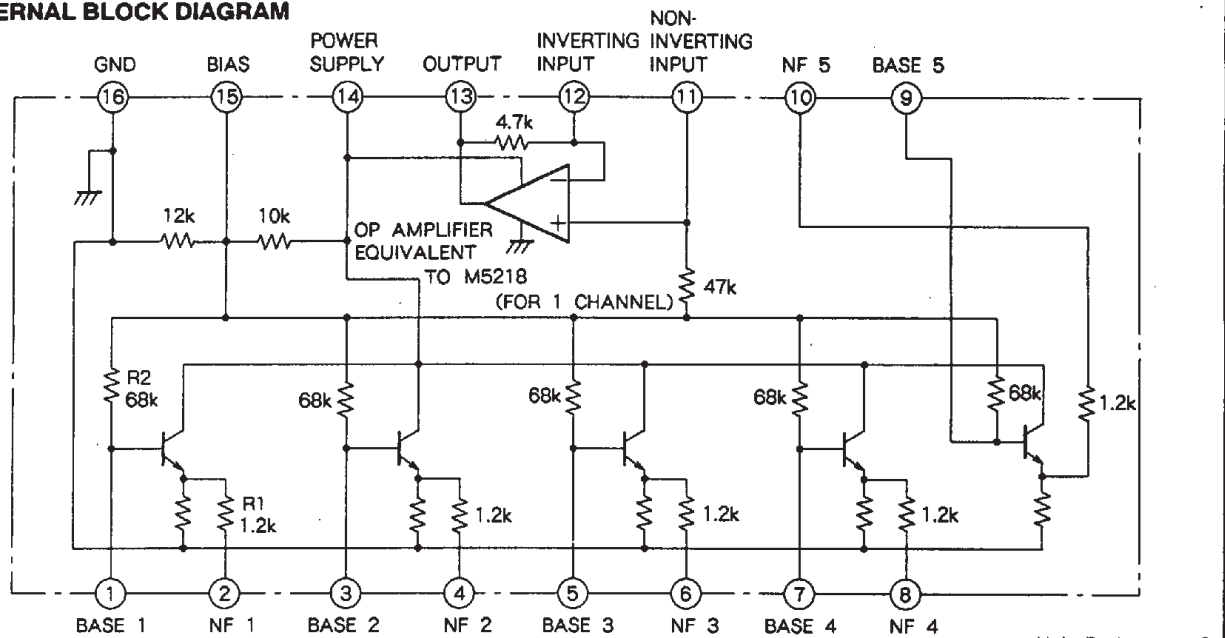
## 5-ELEMENT GRAPHIC EQUALIZER IC

### PIN CONFIGURATION (TOP VIEW)



Outline 16P4(P)  
16P2S-A(FP)

### IC INTERNAL BLOCK DIAGRAM



# M5226P/FP

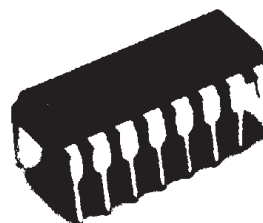
## 5-ELEMENT GRAPHIC EQUALIZER IC

### DESCRIPTION

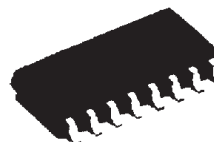
The M5226 is a 5-element graphic equalizer IC best suited to audio systems. It has a built-in 5-element resonance circuits with transistor system and an output OP amp. The IC can be used in hybrid ICs and compact sets of high-density assemblies. Its applications include radio cassette tape players, car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



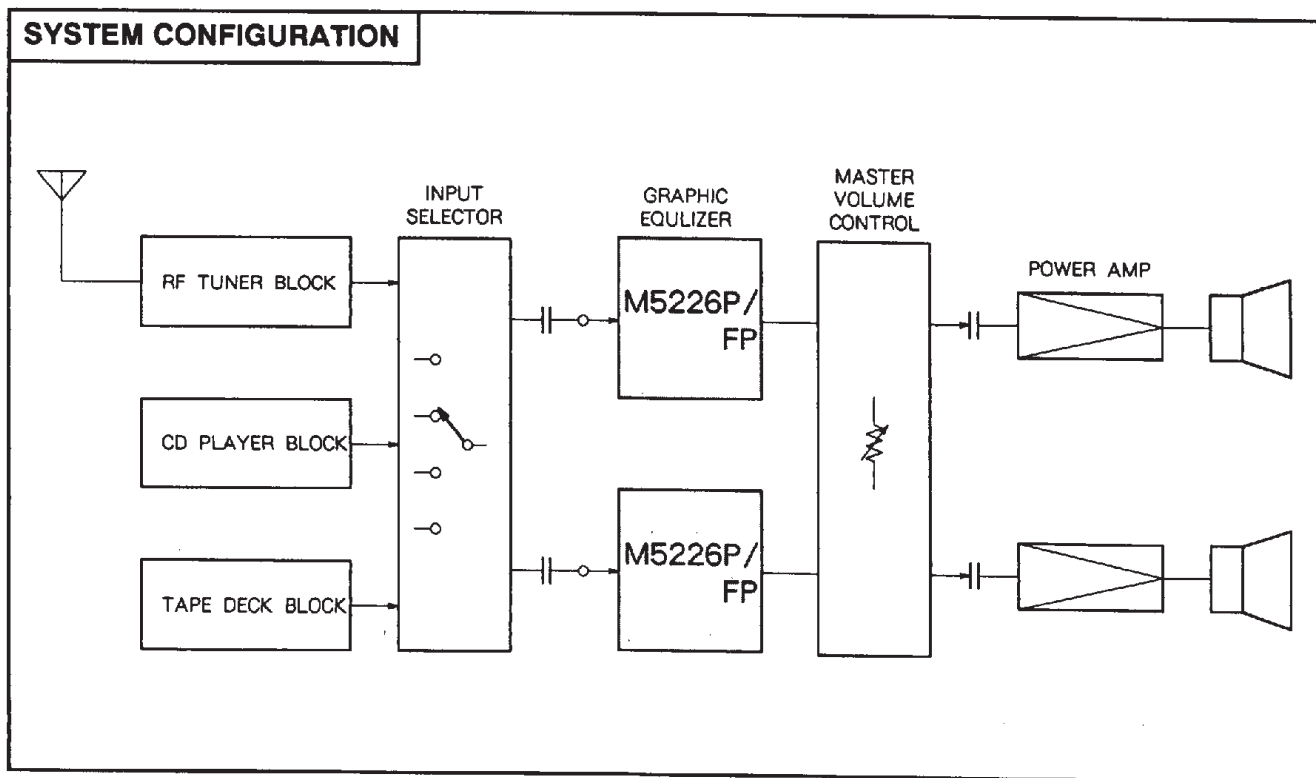
Outline 16P4(P)  
2.54mm pitch 300mil DIP  
(6.3mm x 19.0mm x 3.3mm)



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)



6249826 0022425 307

