

# M62415P/FP

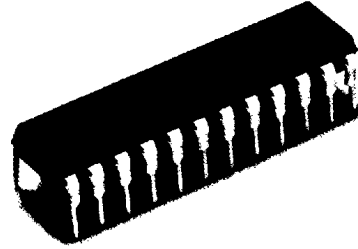
## 2CH 4 MODE PRESET EQUALIZER

### DESCRIPTION

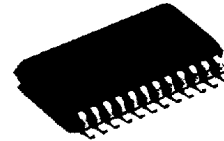
The M62415 is preset equalizer IC's developed for stereo set, radio cassette, and audio equipment. Output character of 4 modes, "Normal, Rock, Pops and Classic". The selection one can be choiced via 4 control terminals.

### FEATURES

- Sound controller of preset typ for 3-element graphic equalizer.
- It can be controlled by 4-easy control switches.
- Equiped with output ports for drive in LED.
- These function housed in 24-pin dual inline package (300mil DIP)
- Low noise  $V_{no} (f_{lot}) = 4.5\mu V_{rms} (typ)$
- Low distortion  $THD = 0.005\% (typ)$



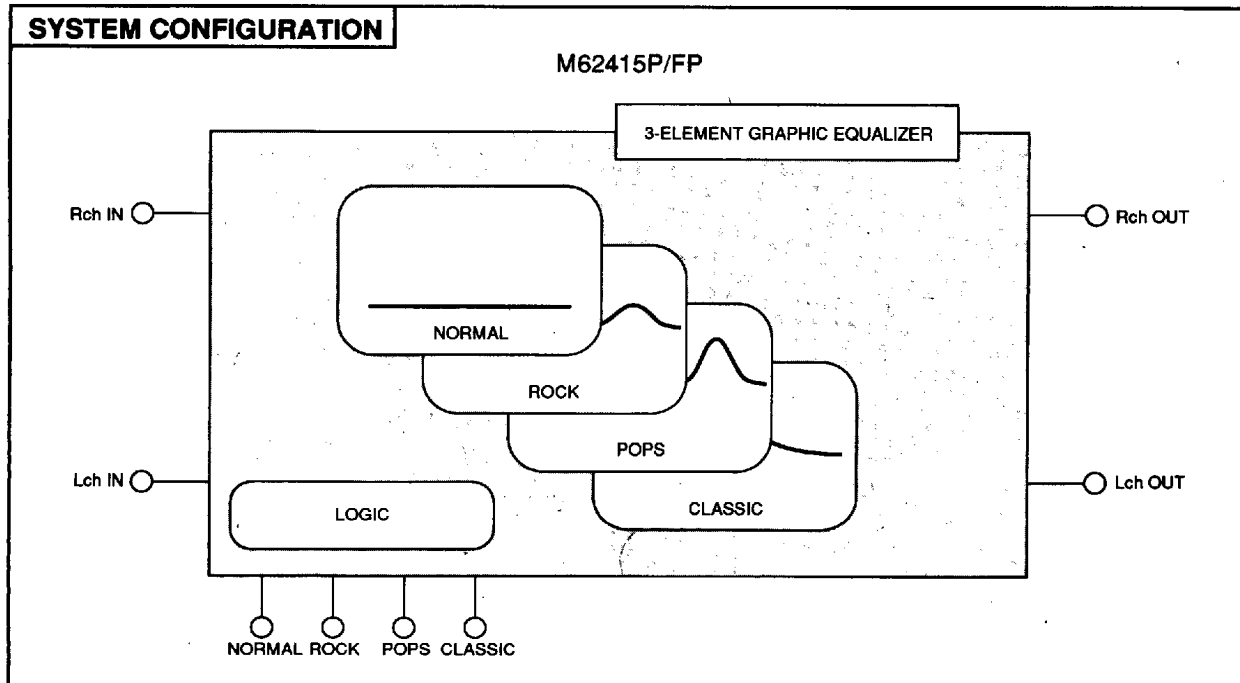
Outline 24P4D(P)  
2.54mm pitch 300mil DIP  
(6.3mm×29.2mm×3.3mm)



Outline 24P2Q-A(FP)  
0.8mm pitch 300mil SSOP  
(5.3mm×10.1mm×1.8mm)

### RECOMMENDED OPERATING CONDITIONS

Supply voltage range .....  $V_{cc} = 6.0$  to  $13.0$  V  
Rated supply voltage .....  $V_{cc} = 9.0$  V

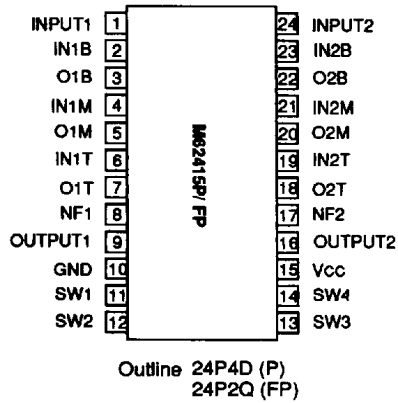


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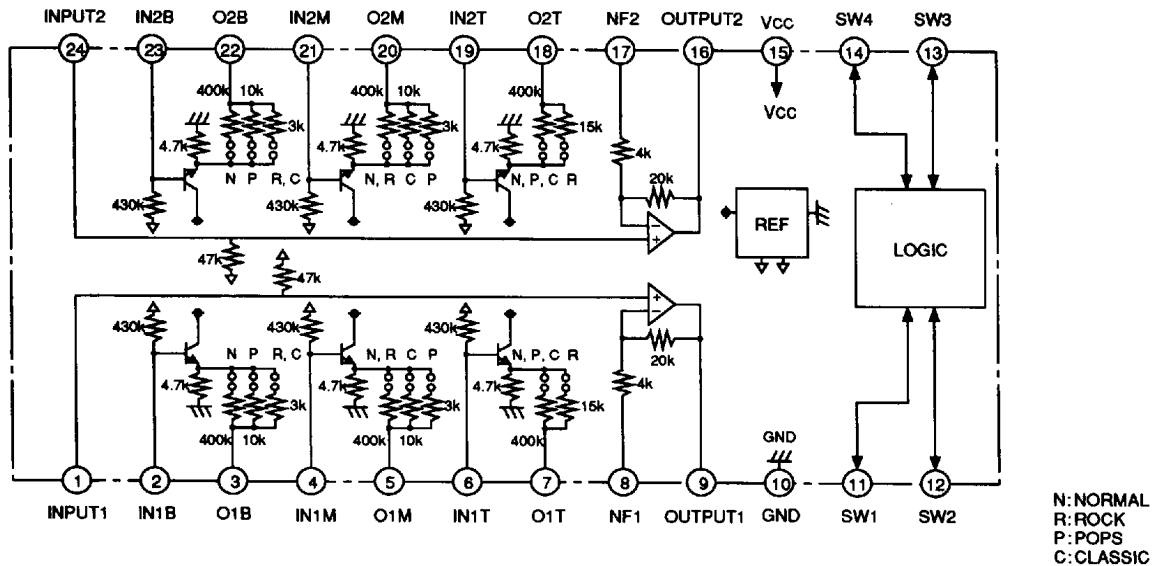
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2CH 4 MODE PRESET EQUALIZER

## PIN CONFIGURATION (TOP VIEW)



## IC INTERNAL BLOCK DIAGRAM



Unit Resistance : Ω

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

Symbol	Parameter	Ratings	Unit
Vcc	Supply voltage	14	V
Kθ	Thermal derating Ta ≥ 25°C	11.5	mW/°C
Pd	Power dissipation	1150	mW
Topr	Operation temperature range	-20 to +75	°C
Tstg	Storage temperature	-40 to +125	°C

**ELECTRICAL CHARACTERISTICS** (Vcc = 9 V, Ta = 25°C, unless otherwise noted)

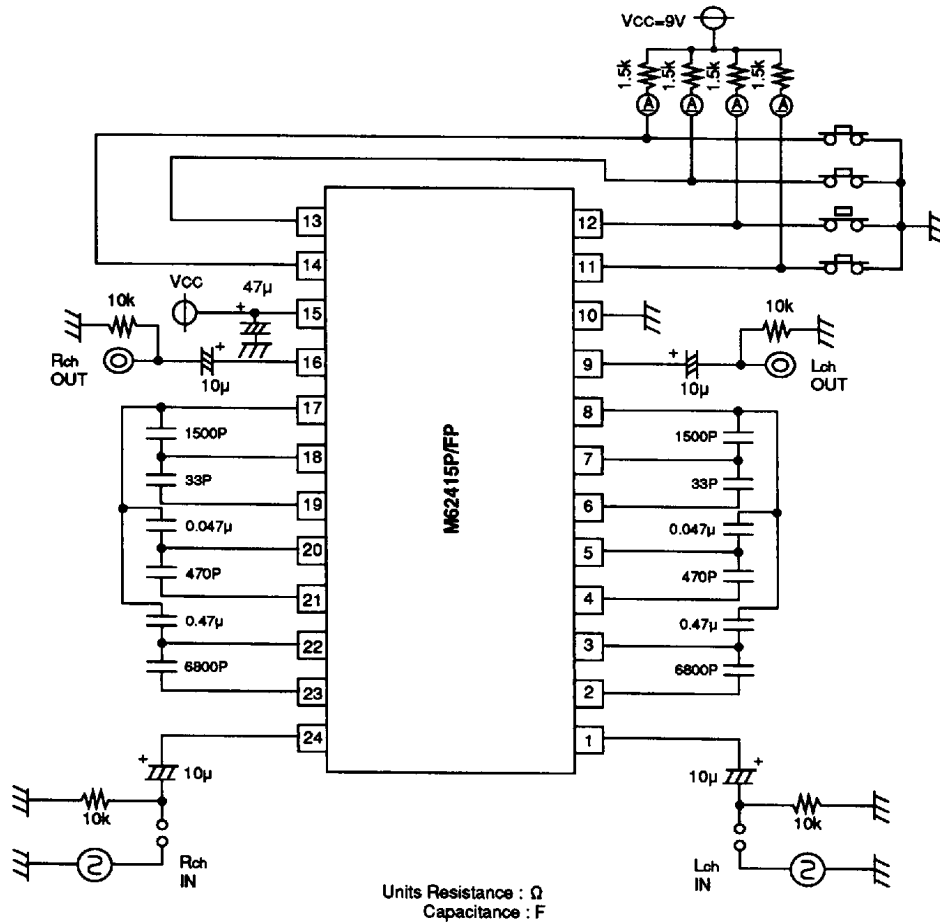
Symbol	Parameter		Test conditions	Limits			Unit
				Min	Typ	Max	
I <sub>DD</sub>	Circuit current		Vcc = 9V	14	23	32	mA
G(Normal)B	Normal	BASS	f = 80Hz	-2	1	4	dB
G(Normal)M		MID	f = 1kHz	-2	1	4	dB
G(Normal)T		TREBLE	f = 10kHz	-2	1	4	dB
G(ROCK)B	ROCK	BASS	f = 80Hz	8	11	14	dB
G(ROCK)M		MID	f = 1kHz	-1	2	5	dB
G(ROCK)T		TREBLE	f = 10kHz	3	6	9	dB
G(POPS)B	POPS	BASS	f = 80Hz	3	6	9	dB
G(POPS)M		MID	f = 1kHz	8	11	14	dB
G(POPS)T		TREBLE	f = 10kHz	0	3	6	dB
G(CLASSIC)B	CLASSIC	BASS	f = 80Hz	8	11	14	dB
G(CLASSIC)M		MID	f = 1kHz	4	7	10	dB
G(CLASSIC)T		TREBLE	f = 10kHz	-1	2	5	dB
V <sub>OM</sub>	Maximum output voltage		THD = 1%, f = 1kHz, Normal mode	2	2.5	-	V <sub>rms</sub>
THD	Total harmonic distortion		f = 1kHz, V <sub>o</sub> = 0.5V <sub>rms</sub> Normal mode	-	0.005	0.05	%
V <sub>NO</sub>	Output noise voltage		R <sub>g</sub> = 10kΩ, BW : IHF-A Normal mode	-	4.5	10.0	μV <sub>rms</sub>
C <sub>Sep</sub>	Channel separation		f = 1kHz, R <sub>g</sub> = 10kΩ, Normal mode BW : DIN AUDIO	-	-80	-65	dB
I <sub>LED</sub>	Maximum LED drive current		Seted switches, R <sub>p</sub> = 1.5kΩ	4.5	5.6	-	mA

Note. These are forbid that switches operate at the same time.

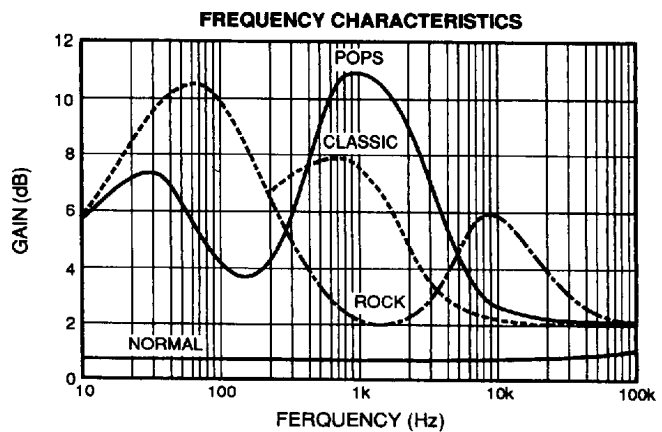
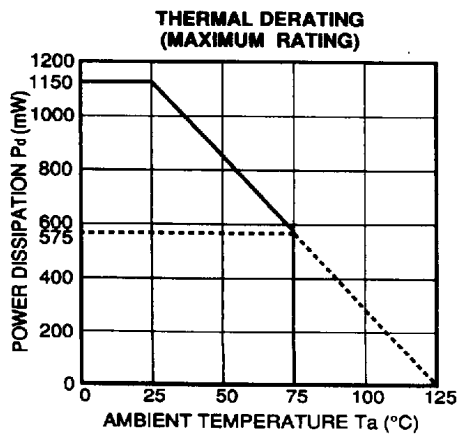
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TEST CIRCUIT



TYPICAL CHARACTERISTICS

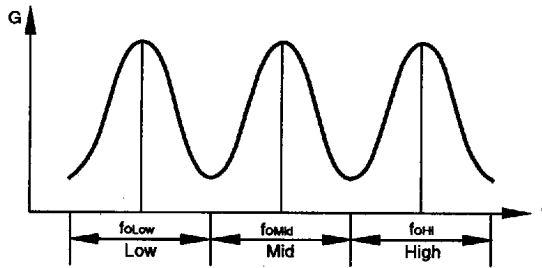


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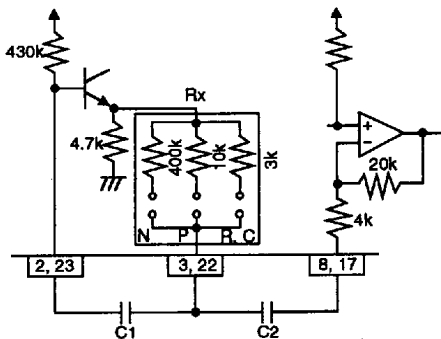
APPLICATION NOTE

Frequency characteristics



N:NORMAL  
R:ROCK  
C:CLASSIC  
P:POPS

(1)Low band

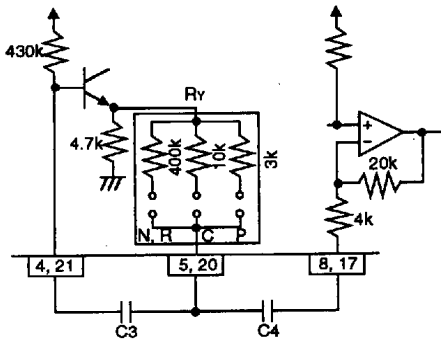


$$foLow = \frac{1}{2\pi\sqrt{C1 \cdot C2 \cdot Rx \cdot 430k}} \text{ [Hz]}$$

$$QLow = \sqrt{\frac{C1 \cdot Rx \cdot 430k}{C2 (Rx + 4k)^2}}$$

$$GRock = 20\log \frac{20k + 4k + Rx}{4k + Rx} \text{ [dB]}$$

(2)Mid band

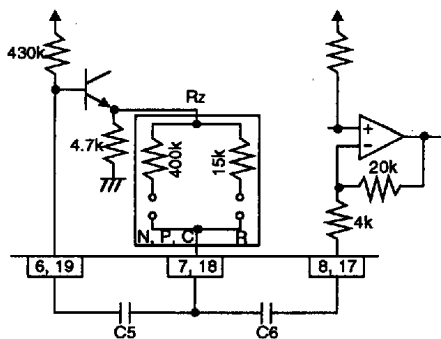


$$foMid = \frac{1}{2\pi\sqrt{C3 \cdot C4 \cdot Ry \cdot 430k}} \text{ [Hz]}$$

$$QMid = \sqrt{\frac{C3 \cdot Ry \cdot 430k}{C4 (Ry + 4k)^2}}$$

$$GMid = 20\log \frac{20k + 4k + Ry}{4k + Ry} \text{ [dB]}$$

(3)HI band



$$foHi = \frac{1}{2\pi\sqrt{C5 \cdot C6 \cdot Rz \cdot 430k}} \text{ [Hz]}$$

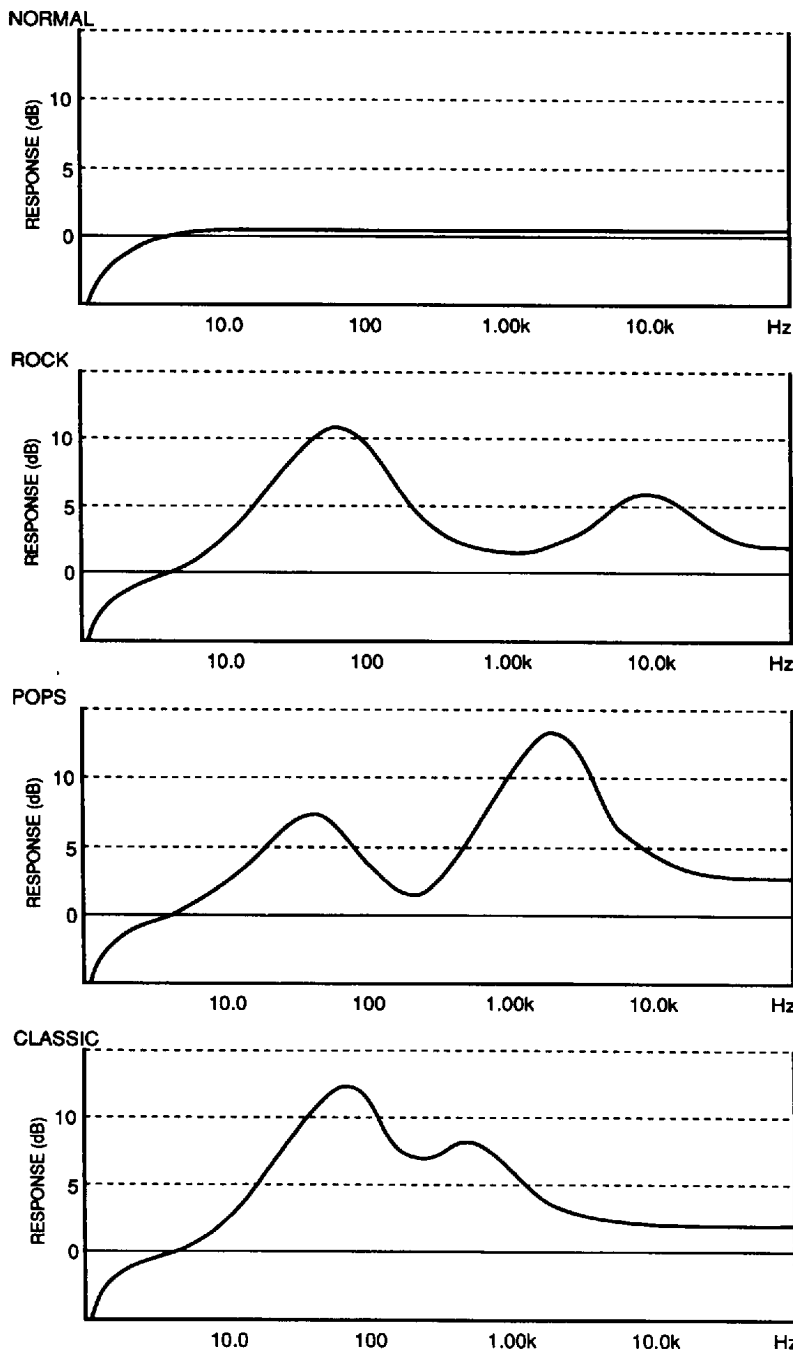
$$QHi = \sqrt{\frac{C5 \cdot Rz \cdot 430k}{C6 (Rz + 4k)^2}}$$

$$GHi = 20\log \frac{20k + 4k + Rz}{4k + Rz} \text{ [dB]}$$

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SOUND CONTROL SPECK



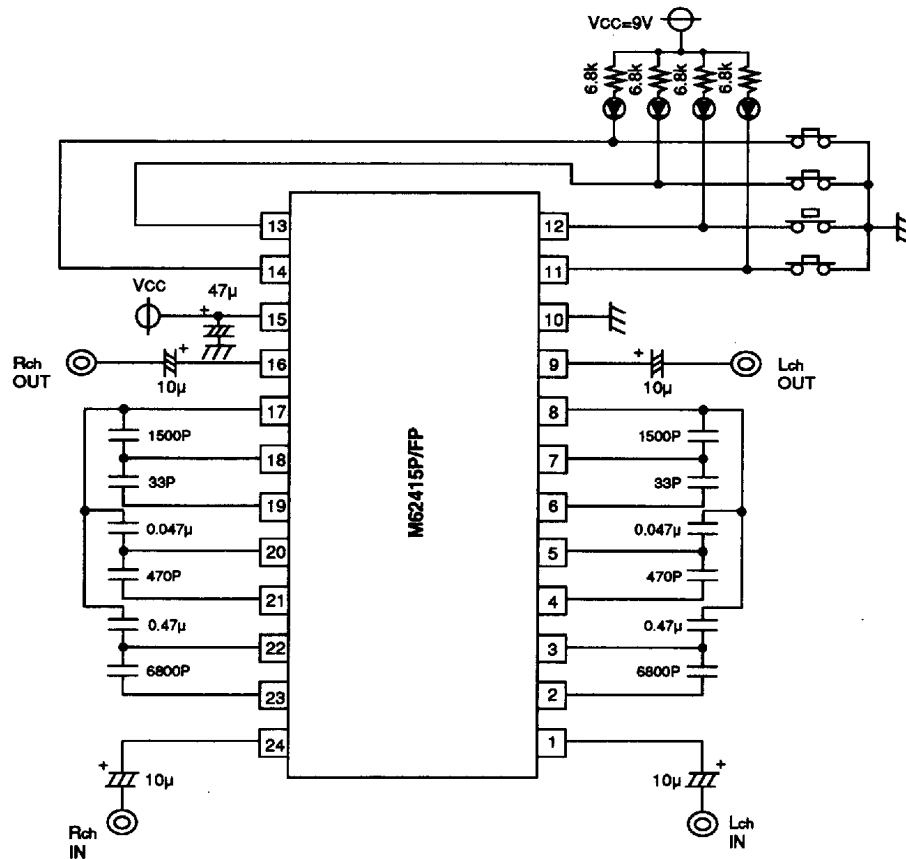
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## 2CH 4 MODE PRESET EQUALIZER

### APPLICATION EXAMPLE



Units Resistance : Ω  
Capacitance : F

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