

M62415P/FP

2CH 4 MODE PRESET EQUALIZER

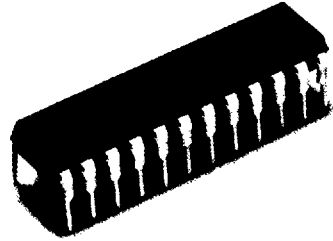
DESCRIPTION

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.

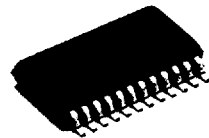
FEATURES

- 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} (flot) = $4.5\mu V_{rms}$ (typ)
- Low distortion THD = 0.005% (typ)



Outline 24P4D(P)

2.54mm pitch 300mil DIP
(6.3mmX29.2mmX3.3mm)

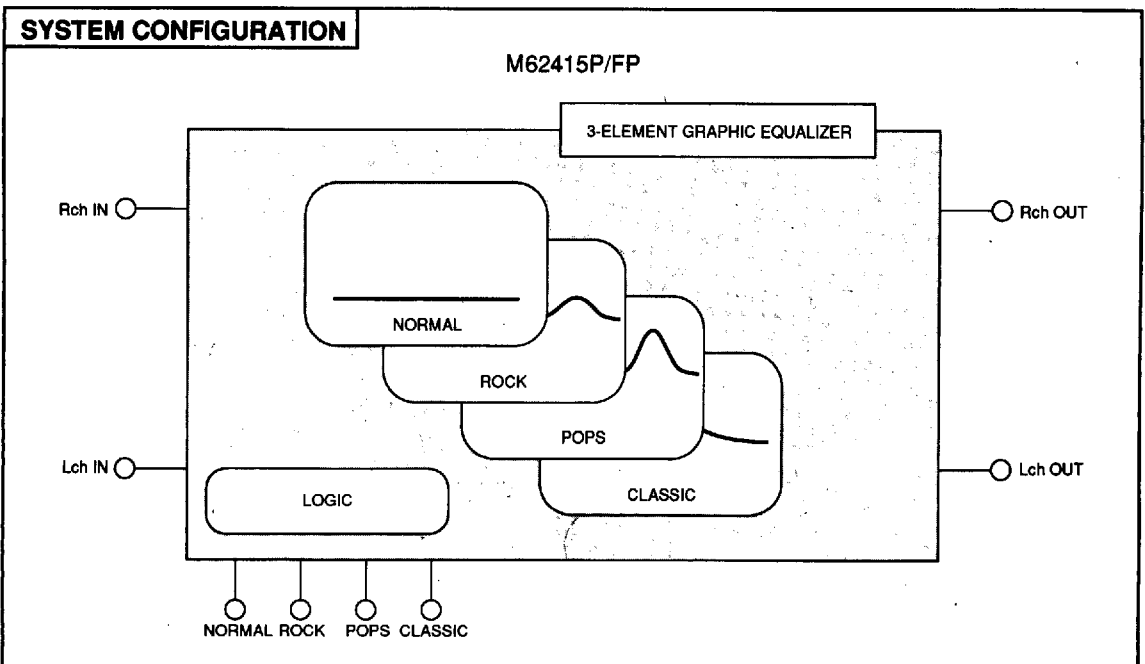


Outline 24P2Q-A(FP)

0.8mm pitch 300mil SSOP
(5.3mmX10.1mmX1.8mm)

RECOMMENDED OPERATING CONDITIONS

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

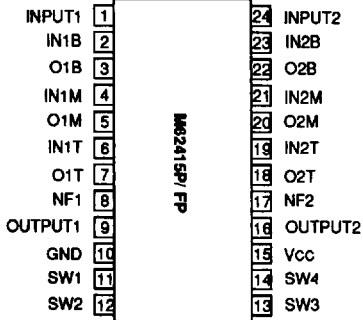


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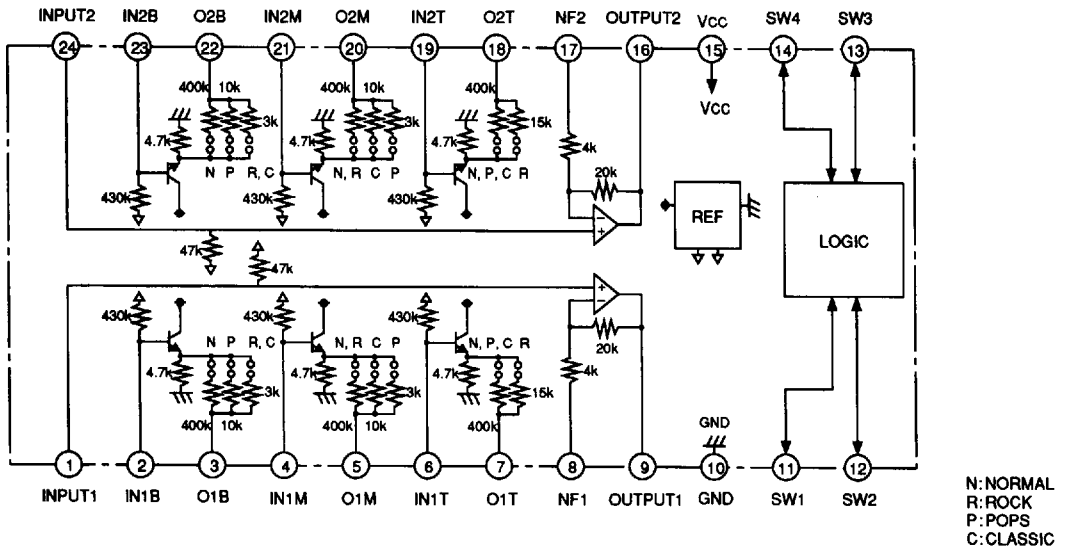
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PIN CONFIGURATION (TOP VIEW)



Outline 24P4D (P)
24P2Q (FP)

IC INTERNAL BLOCK DIAGRAM



Unit Resistance : Ω

2CH 4 MODE PRESET EQUALIZER

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

Symbol	Parameter	Ratings	Unit
V _{cc}	Supply voltage	14	V
K _θ	Thermal derating Ta ≥ 25°C	11.5	mW/°C
P _d	Power dissipation	1150	mW
T _{opr}	Operation temperature range	-20 to +75	°C
T _{stg}	Storage temperature	-40 to +125	°C

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

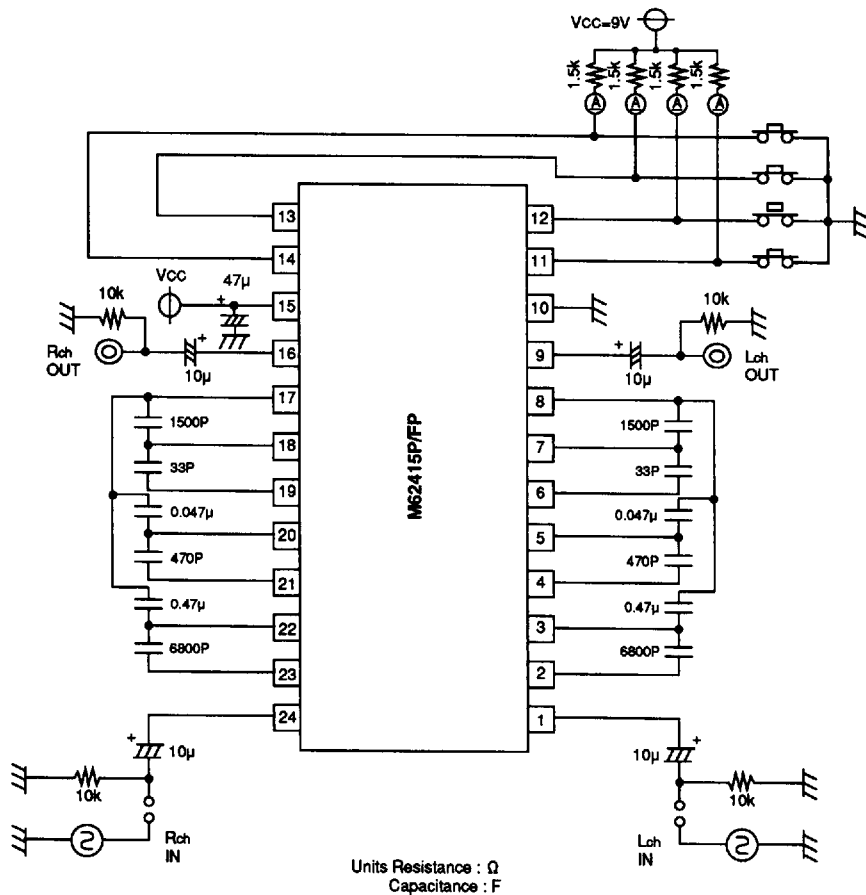
Symbol	Parameter		Test conditions	Limits			Unit
				Min	Typ	Max	
I _{DD}	Circuit current		V _{cc} = 9V	14	23	32	mA
G(Normal)B	Normal	BASS	f = 80Hz	-2	1	4	dB
G(Normal)M		MID	f = 1kHz	-2	1	4	dB
G(Normal)T		TREBLE	f = 10kHz	-2	1	4	dB
G(ROCK)B	ROCK	BASS	f = 80Hz	8	11	14	dB
G(ROCK)M		MID	f = 1kHz	-1	2	5	dB
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 _{OM}	Maximum output voltage		THD = 1%, f = 1kHz, Normal mode	2	2.5	-	V _{rms}
THD	Total harmonic distortion		f = 1kHz, V _o = 0.5V _{rms} Normal mode	-	0.005	0.05	%
V _{no}	Output noise voltage		R _g = 10kΩ, BW : IHF-A Normal mode	-	4.5	10.0	μV _{rms}
CS _{sep}	Channel separation		f = 1kHz, R _g = 10kΩ, Normal mode BW : DIN AUDIO	-	-80	-65	dB
I _{LED}	Maximum LED drive current		Seted switches, R _p = 1.5kΩ	4.5	5.6	-	mA

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

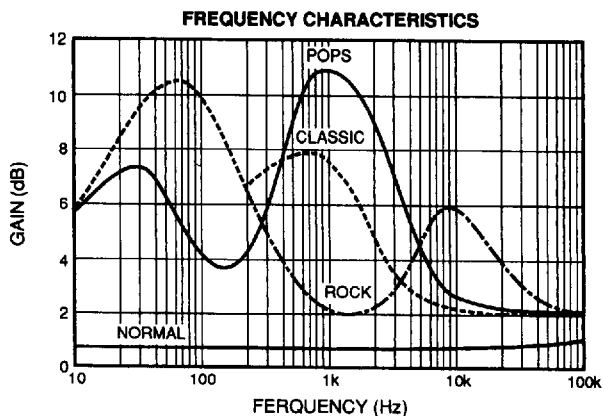
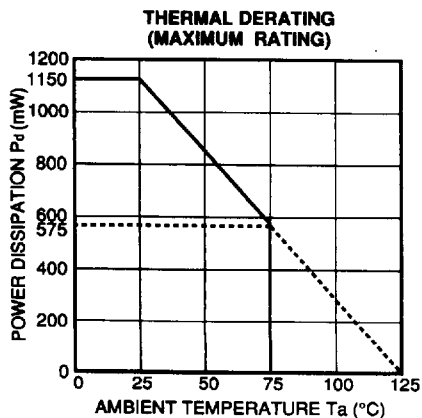
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TEST CIRCUIT



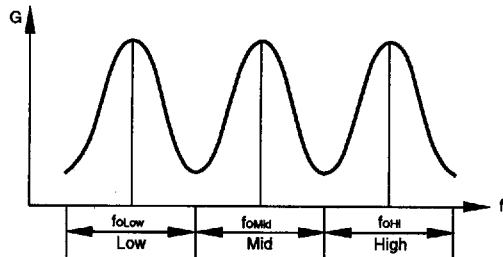
TYPICAL CHARACTERISTICS



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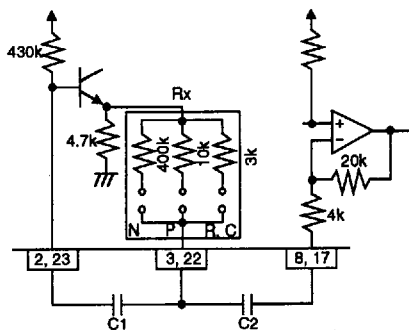
APPLICATION NOTE

Frequency characteristics



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

(1) Low band

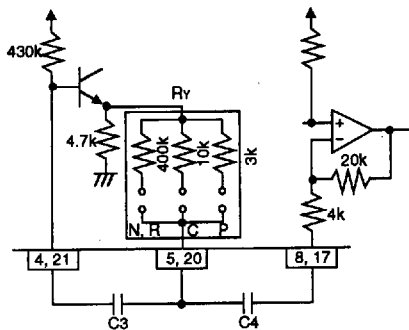


$$f_{oLow} = \frac{1}{2\pi\sqrt{C1 \cdot C2 \cdot Rx \cdot 430k}} \text{ [Hz]}$$

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

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

(2) Mid band

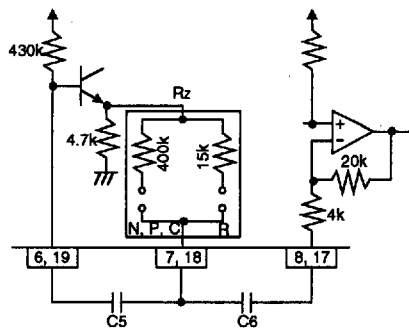


$$f_{oMid} = \frac{1}{2\pi\sqrt{C3 \cdot C4 \cdot Ry \cdot 430k}} \text{ [Hz]}$$

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

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

(3) HI band

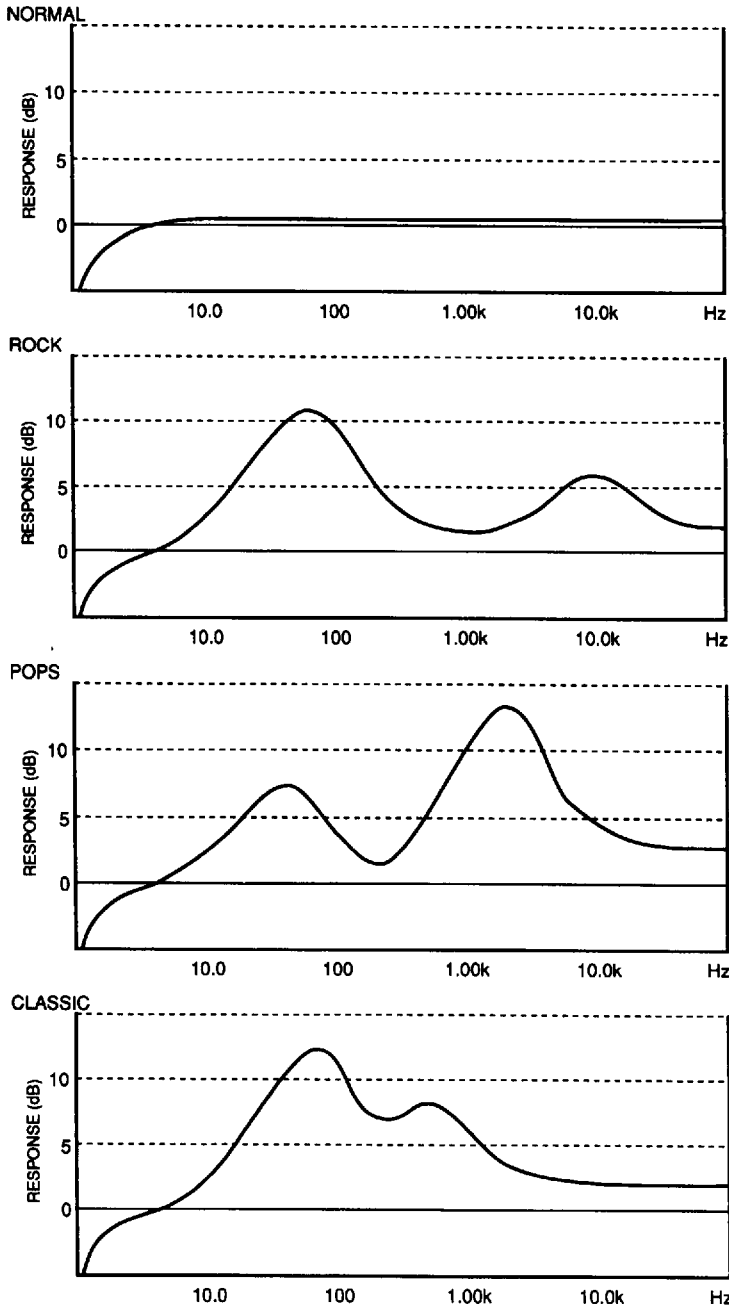


$$f_{oHi} = \frac{1}{2\pi\sqrt{C5 \cdot C6 \cdot Rz \cdot 430k}} \text{ [Hz]}$$

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

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

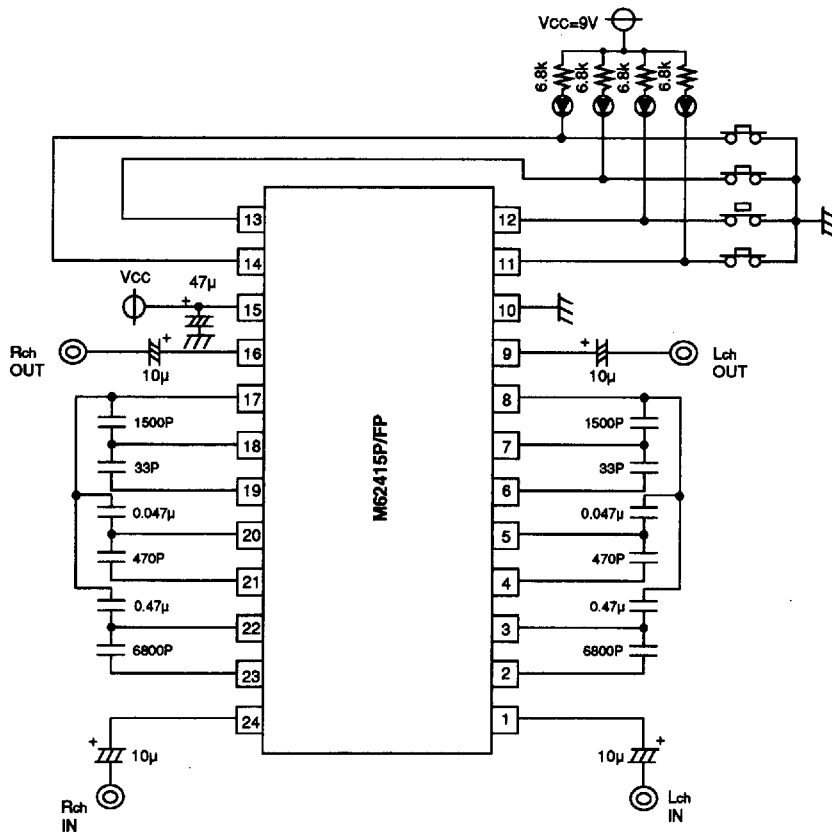
SOUND CONTROL SPECK



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APPLICATION EXAMPLE



Units Resistance : Ω
 Capacitance : F