

M62415P/FP

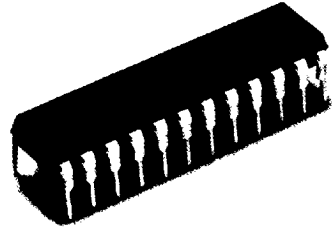
2CH 4 MODE PRESET EQUALIZER

DESCRIPTION

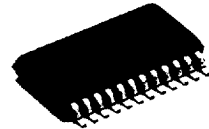
The M62415 is preset equalizer IC's developed for stereo set, radio cassette, and audio equipment. Output character of 4 modes, "Normal, Rock, Pops and Classic". The selection one can be choiced via 4 control terminals.

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 $V_{no} (f_{10t}) = 4.5\mu V_{rms} (typ)$
- Low distortion $THD = 0.005\% (typ)$



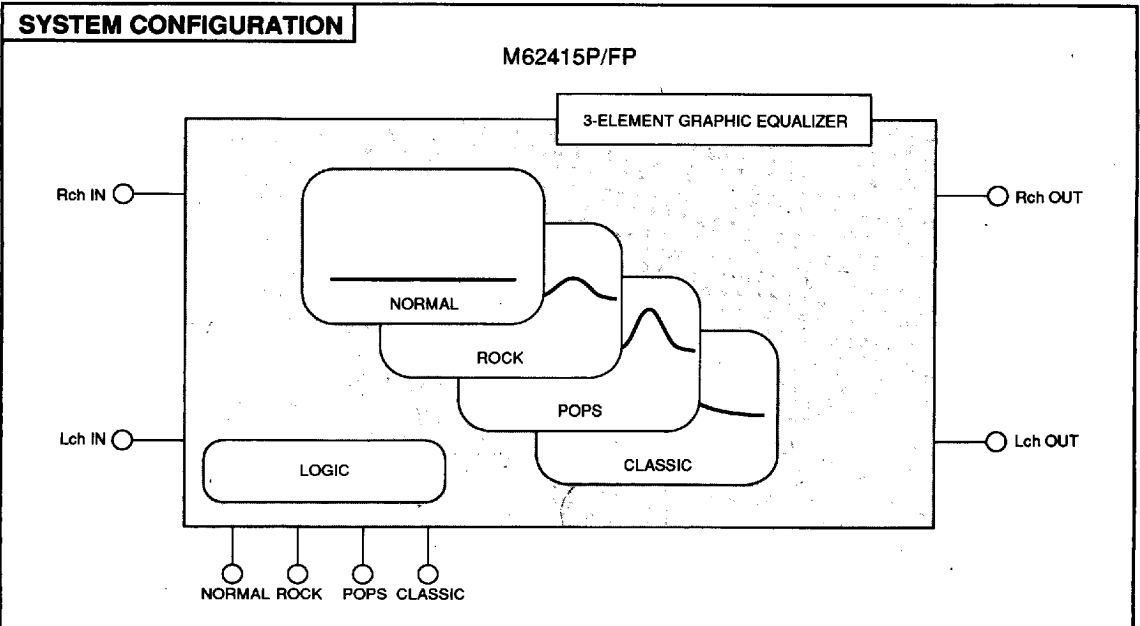
Outline 24P4D(P)
2.54mm pitch 300mil DIP
(6.3mm×29.2mm×3.3mm)



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



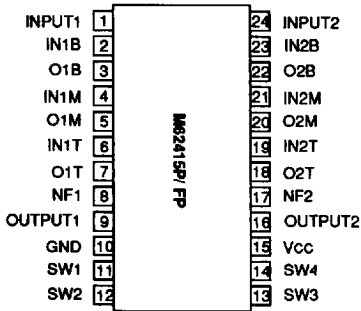
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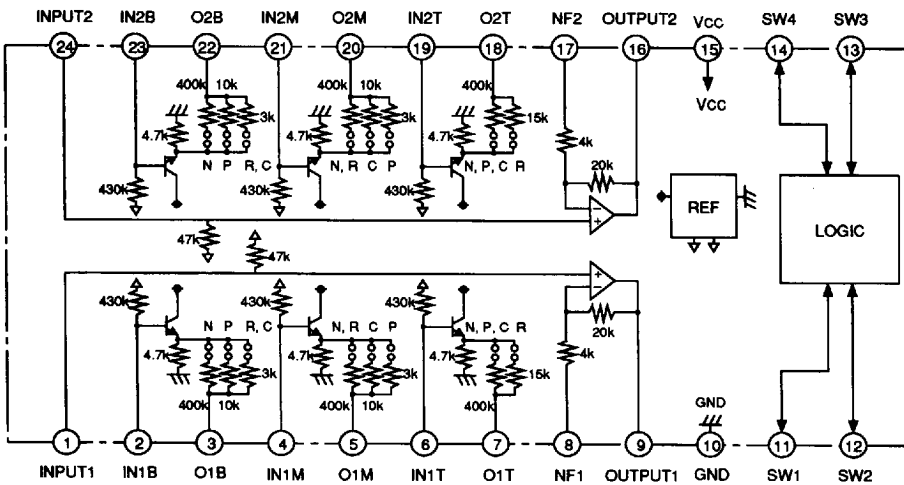
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PIN CONFIGURATION (TOP VIEW)



Outline 24P4D (P)
24P2Q (FP)

IC INTERNAL BLOCK DIAGRAM



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

Unit Resistance : Ω

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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}	Operage 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.

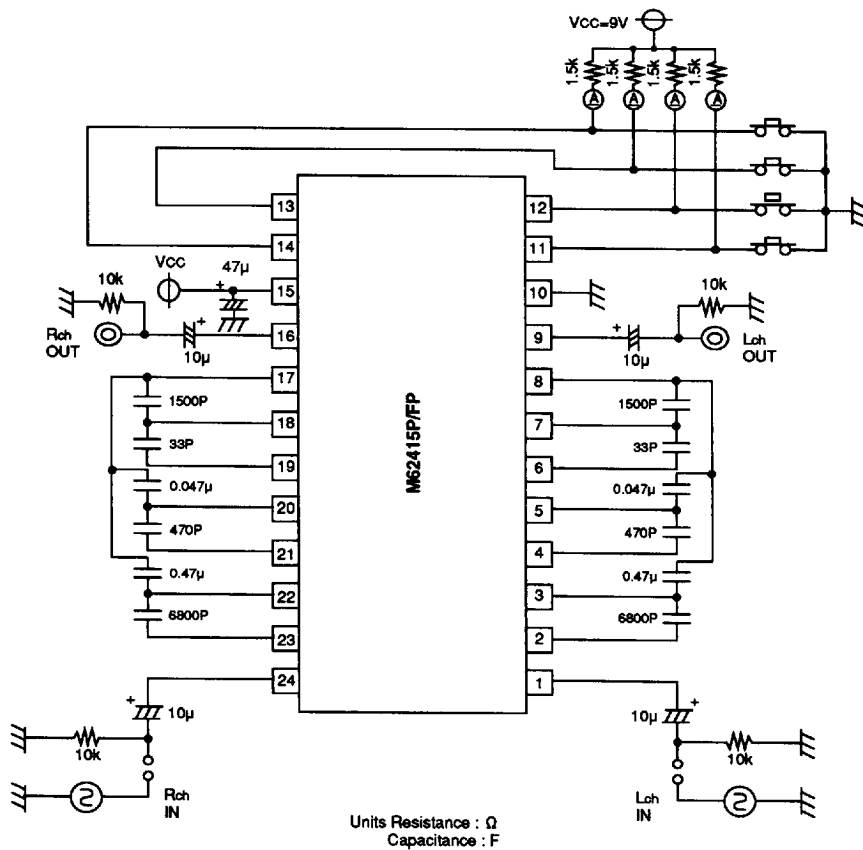
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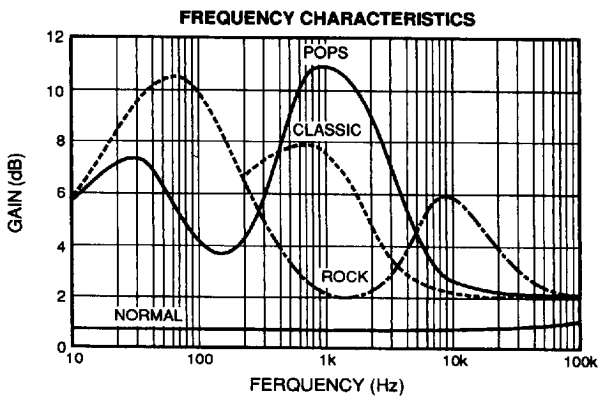
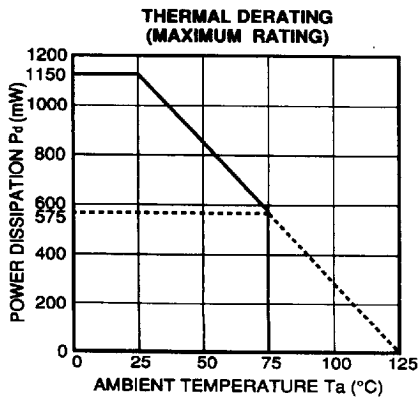
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TEST CIRCUIT



TYPICAL CHARACTERISTICS

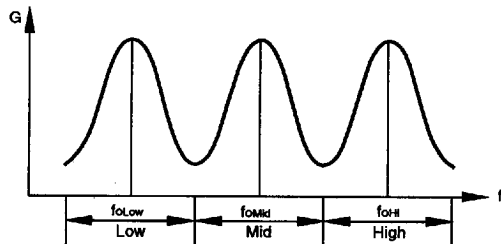


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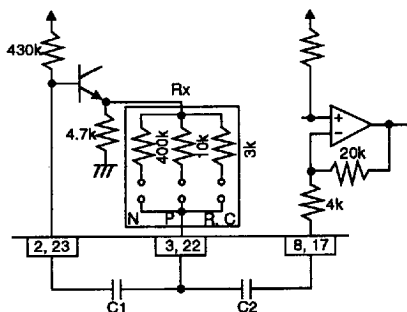
APPLICATION NOTE

Frequency characteristics



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

(1) Low band

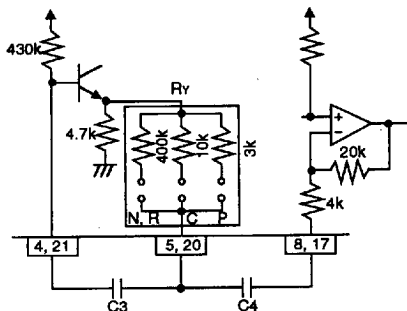


$$foLow = \frac{1}{2\pi\sqrt{C1 \cdot C2 \cdot Rx \cdot 430k}} \text{ [Hz]}$$

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

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

(2) Mid band

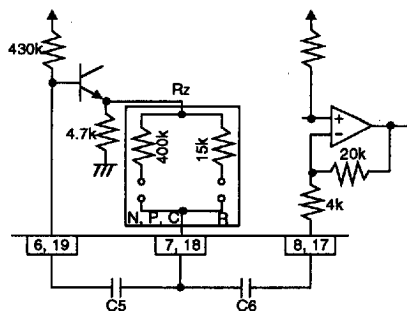


$$foMid = \frac{1}{2\pi\sqrt{C3 \cdot C4 \cdot Ry \cdot 430k}} \text{ [Hz]}$$

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

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

(3) Hi band



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

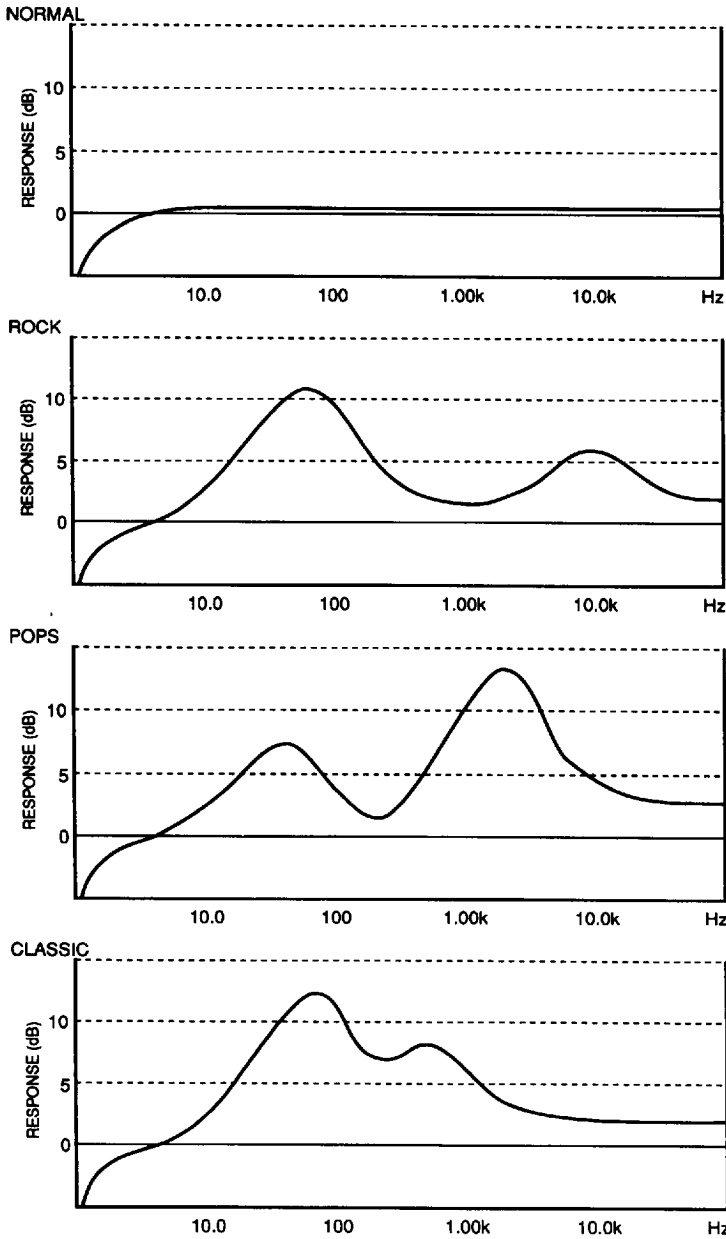
$$QHi = \sqrt{\frac{C5 \cdot Rz \cdot 430k}{C6 (Rz + 4k)^2}}$$

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

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SOUND CONTROL SPECK



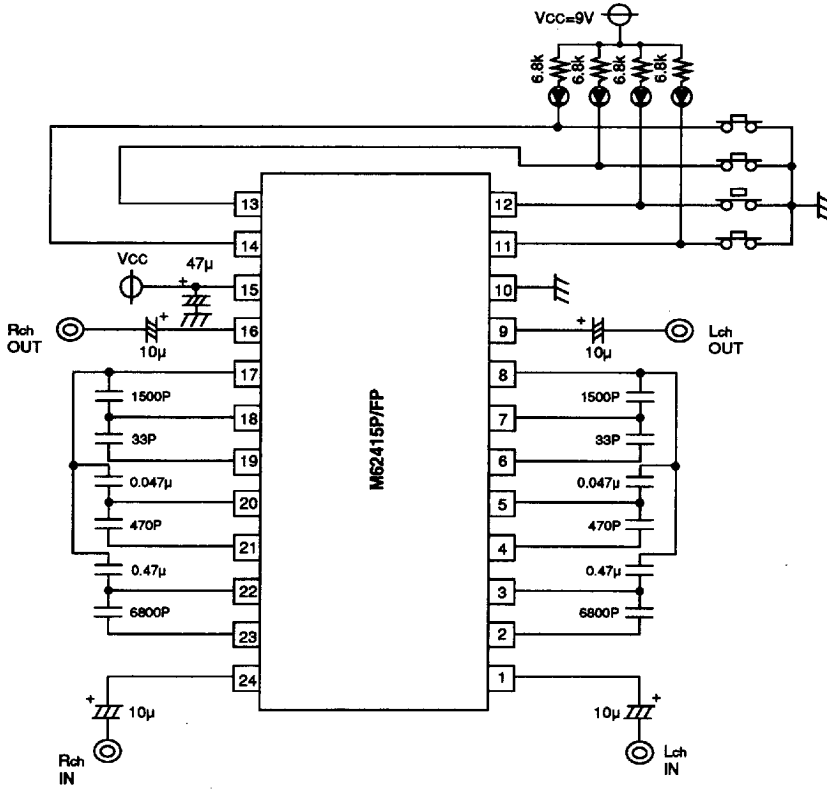
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2CH 4 MODE PRESET EQUALIZER

APPLICATION EXAMPLE



Units Resistance : Ω
 Capacitance : F

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