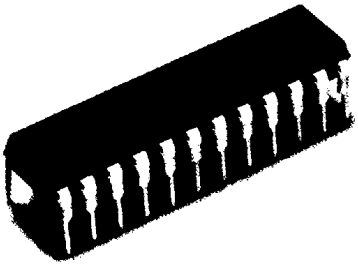
M62415P/FP

2CH 4 MODE PRESET EQUALIZER

DESCRIPTION

The M62415 is preset equalizer IC's developed for stereo set, radio cassette,and audio equipment.

Output charactor of 4 modes, "Normal, Rock, Pops and Classic".The selection one can be choiced via 4 control terminals.

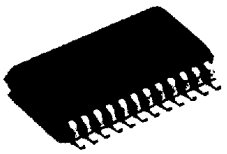


Outline 24P4D(P)

2.54mm pitch 300mil DIP
(6.3mm×29.2mm×3.3mm)

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) = 4.5μVrms (typ)
- Low distortion THD = 0.005% (typ)



Outline 24P2Q-A(FP)

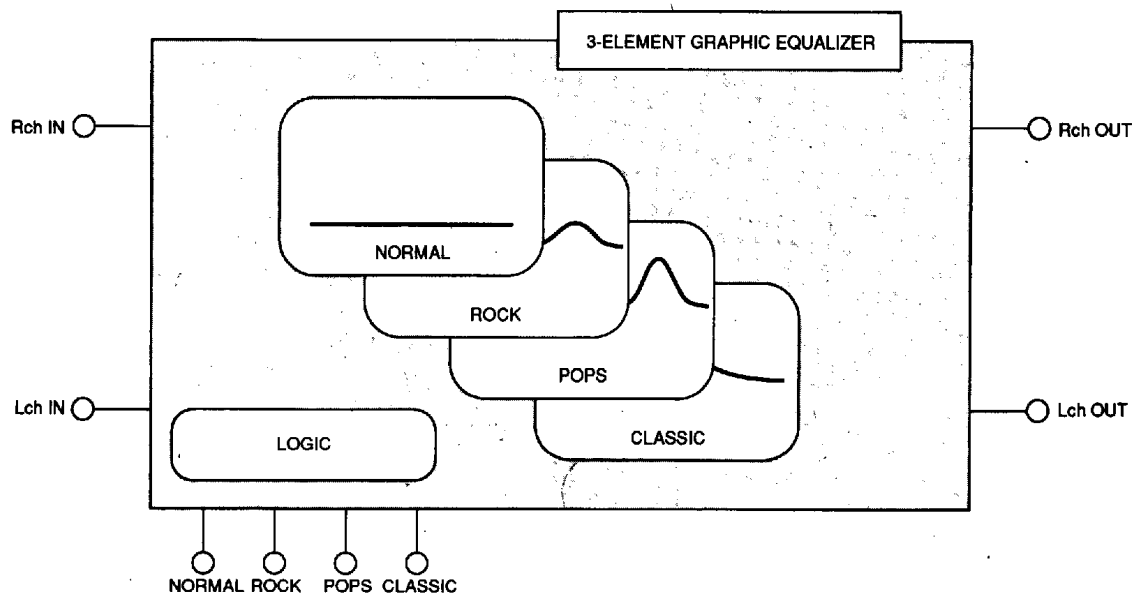
0.8mm pitch 300mil SSOP
(5.3mm×10.1mm×1.8mm)

RECOMMENDED OPERATING CONDITIONS

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

SYSTEM CONFIGURATION

M62415P/FP



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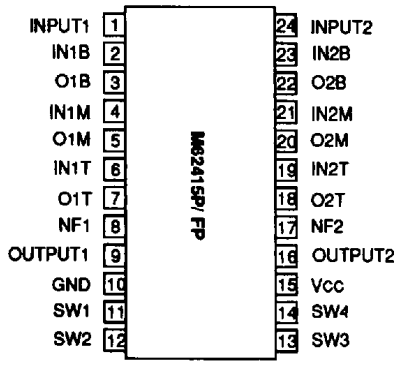
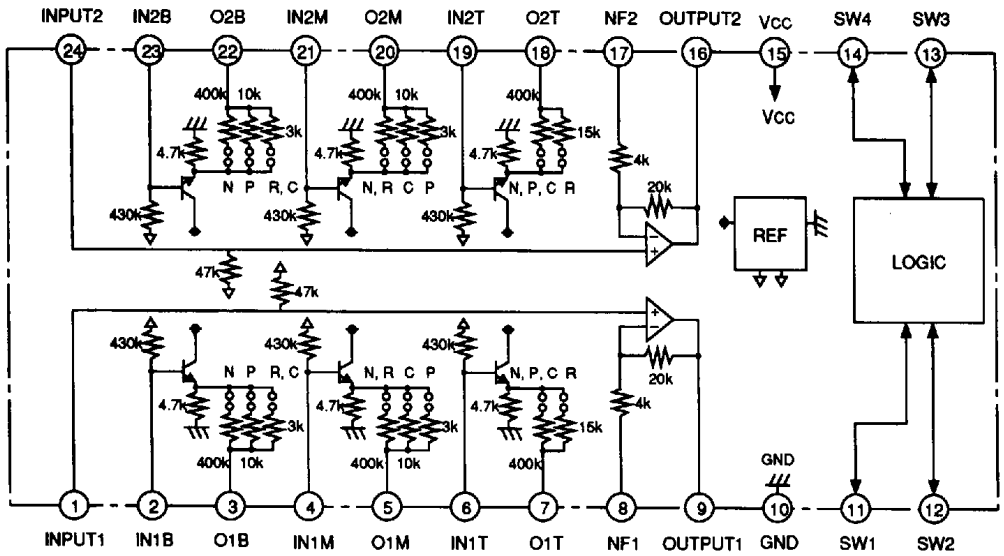
PIN CONFIGURATION (TOP VIEW)



Outline 24P4D (P)
24P2Q (FP)

IC INTERNAL BLOCK DIAGRAM



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

Unit Resistance : Ω

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

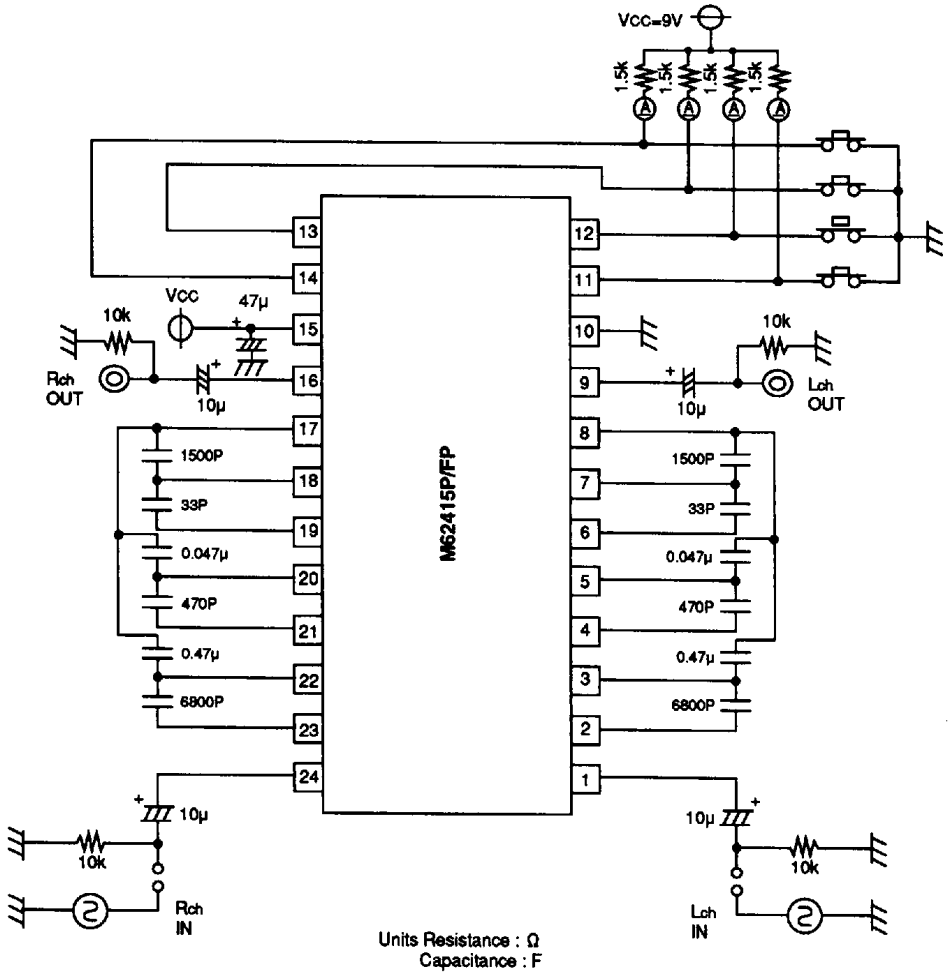
Symbol	Parameter	Ratings	Unit
V_{CC}	Supply voltage	14	V
K_θ	Thermal derating Ta≧25℃	11.5	mW/℃
P_d	Power dissipation	1150	mW
T_{opr}	Operage temperature range	−20 to +75	°C
T_{stg}	Storage temperature	−40 to +125	°C

ELECTRICAL CHARACTERISTICS (V_{CC} = 9 V, Ta = 25℃, unless otherwise noted)

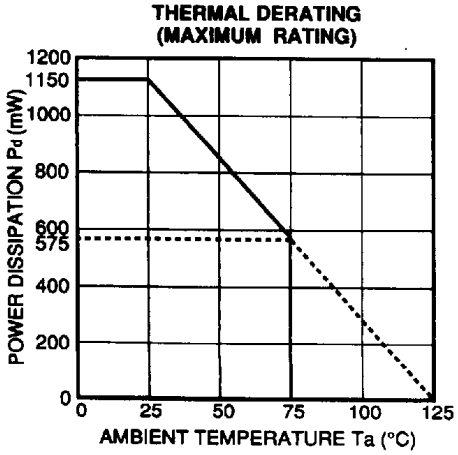
Symbol	Parameter			Test conditions	Limits			Unit
					Min	Typ	Max	
I_{DD}	Circuit current			V_{CC} = 9V	14	23	32	mA
G(Normal)B	Pre set mode	Normal	BASS	f = 80Hz	−2	1	4	dB
G(Normal)M			MID	f = 1kz	−2	1	4	dB
G(Normal)T			TREBLE	f = 10kHz	−2	1	4	dB
G(ROCK)B		ROCK	BASS	f = 80Hz	8	11	14	dB
G(ROCK)M			MID	f = 1kz	−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 = 1kz	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 = 1kz	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			Rg = 10kΩ, BW : IHF-A Normal mode	–	4.5	10.0	μV_{rms}
CS_{ep}	Channel separation			f = 1kHz, Rg = 10kΩ, Normal mode BW : DIN AUDIO	–	−80	−65	dB
I_{LED}	Maximum LED drive current			Seted switchs, Rp = 1.5kΩ	4.5	5.6	–	mA

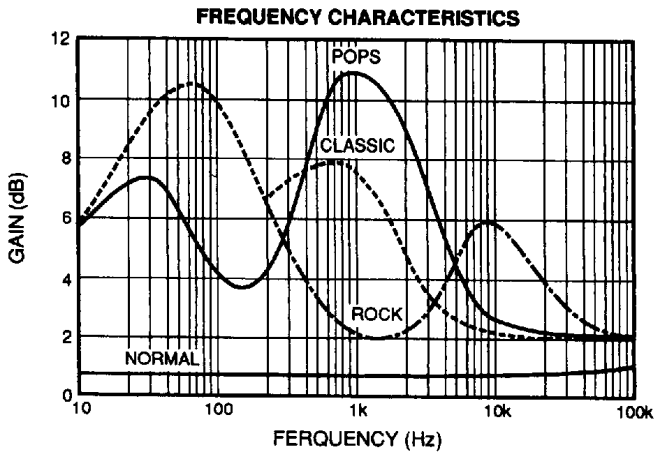
Note. These are forbid that switchs operate at the same time.

TEST CIRCUIT



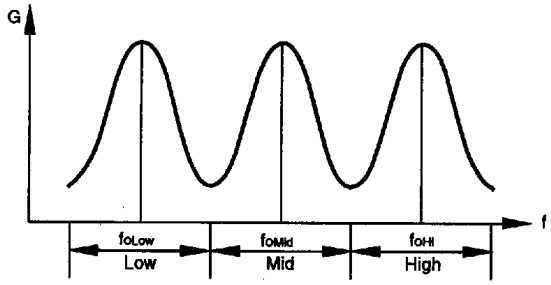
TYPICAL CHARACTERISTICS





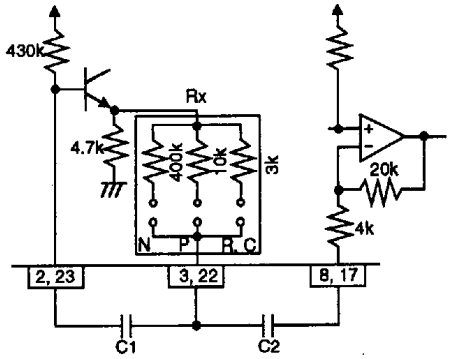
APPLICATION NOTE

Frequency characteristics



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

(1)Low band

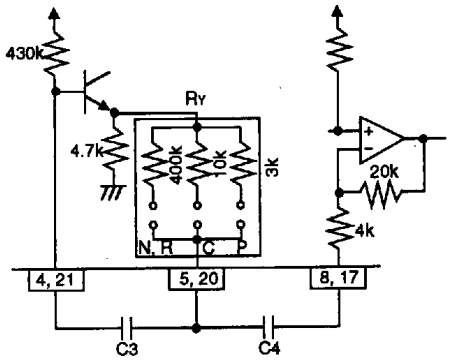


$$f_{oLow} \simeq \frac{1}{2\pi\sqrt{C1 \cdot C2 \cdot Rx \cdot 430k}} \text{ [Hz]}$$

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

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

(2)Mid band

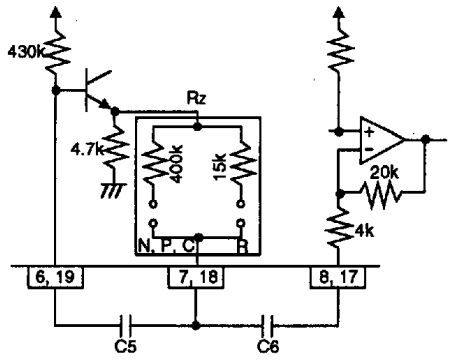


$$f_{oMid} \simeq \frac{1}{2\pi\sqrt{C3 \cdot C4 \cdot R_Y \cdot 430k}} \text{ [Hz]}$$

$$Q_{Mid} \simeq \sqrt{\frac{C3 \cdot Rx \cdot 430k}{C4\,(R_Y + 4k)^2}}$$

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

(3)HI band

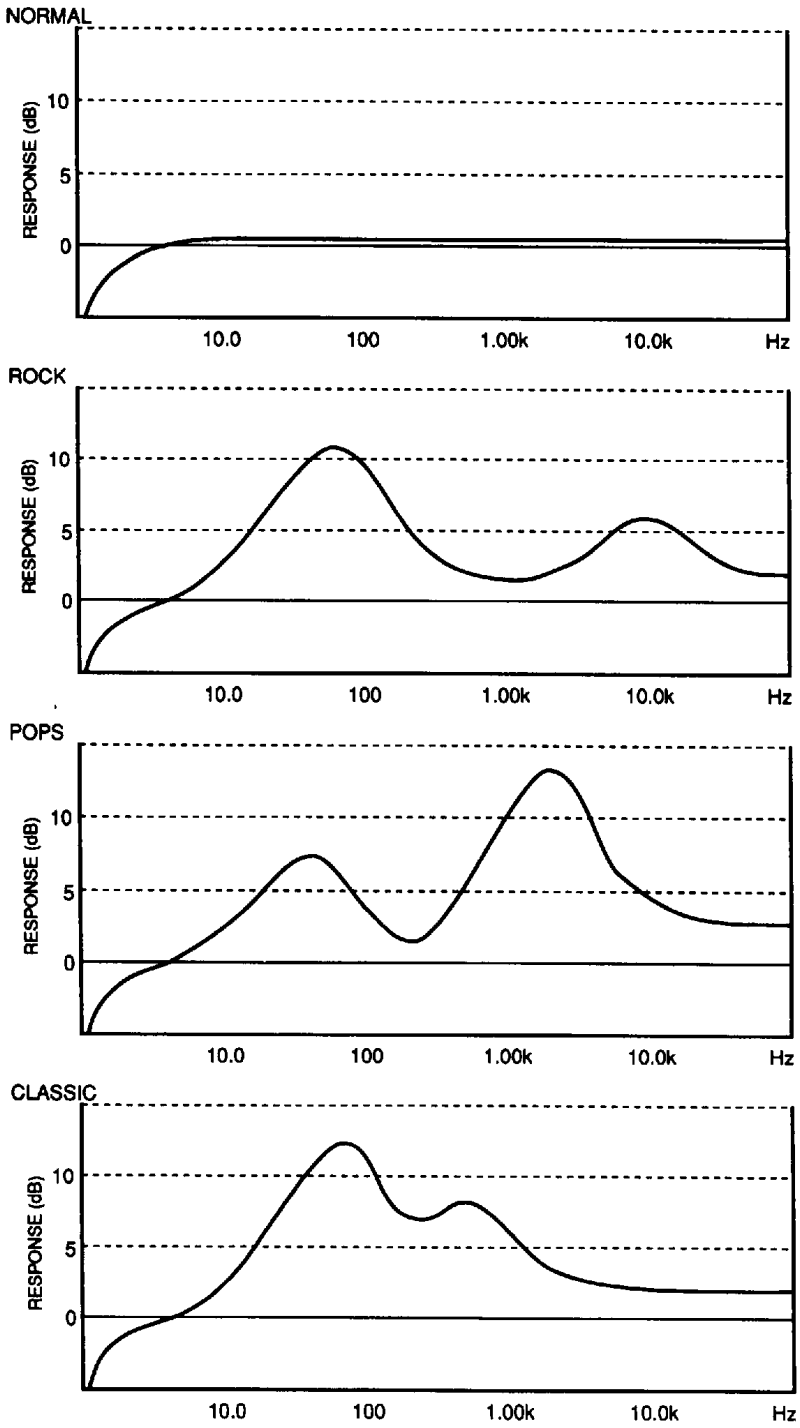


$$f_{oHi} \simeq \frac{1}{2\pi\sqrt{C5 \cdot C6 \cdot Rz \cdot 430k}} \text{ [Hz]}$$

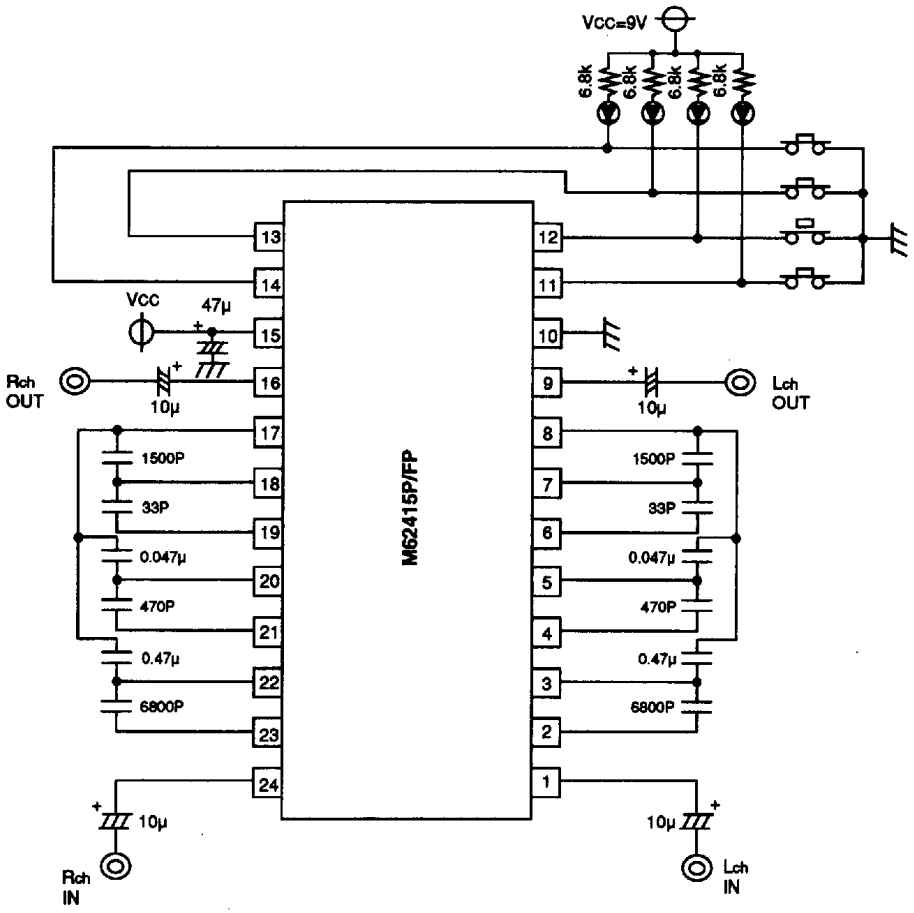
$$Q_{Hi} \simeq \sqrt{\frac{C5 \cdot Rz \cdot 430k}{C6\,(Rz + 4k)^2}}$$

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

SOUND CONTROL SPECK



APPLICATION EXAMPLE



Units Resistance : Ω
Capacitance : F