M5216

DUAL LARGE-CURRENT OPERATIONAL AMPLIFIERS (DUAL POWER SUPPLY TYPE)

DESCRIPTION

The M5216 is a semiconductor integrated circuit designed as a high-output and high-speed operational amplifier for use in high-performance headphone amplifiers and mixer amplifiers found in cassette decks.

The device comes in an 8-pin SIL or DIL package and it contains two circuits for yielding a high internally phase-compensated gain, a high current capacity and a high slew rate. It can be widely used as a general-purpose dual amplifier in electronic equipment. In addition, it can be used in a single power supply format and employed in conditions where the supply voltage is low. These are features which make this device ideal for headphone amplifiers in portable products.

FEATURES

- Large current capacity ..... $I_{LP} = \pm 100mA$
- High power output ..... $P_O = 40mW$(typ.)
  $P_O = 27mW$(typ.)
- High slew rate, high f_T· SR = 3.5V/us, f_T = 10MHz(typ.)
- Low noise(R_S = 1kΩ)FLAT ..... $V_{NI} = 1.7uVrms$(typ.)
- Low supply voltage drive possible ..... $V_{CC} = 4V(\pm 2V)$
- High allowable power ··· P_d = 800mW(SIL), 625mW(DIL)

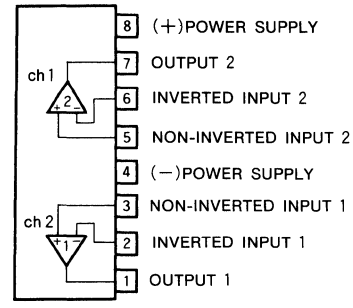
APPLICATION

High-performance headphone amplifiers in VTRs, tape decks and stereo cassette tape recorders with built-in radios; mixer amplifiers, public address equipment, electronic musical instruments; also as a high-current, high-speed, general-purpose operating amplifier in other electronic products and equipment.

RECOMMENDED OPERATING CONDITIONS

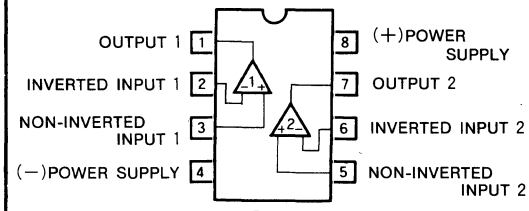
Supply voltage range ..... ±2V~±16V(dual power supply)
+4V~+32V(single power supply)
Rated supply voltage ..... ±15V

PIN CONFIGURATION (TOP VIEW)

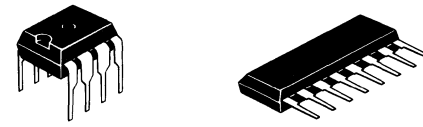


M5216L
Outline 8P5

PIN CONFIGURATION (TOP VIEW)

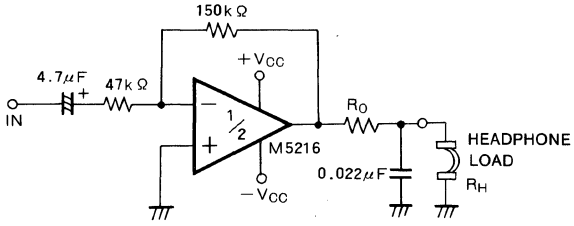


M5216P
Outline 8P4



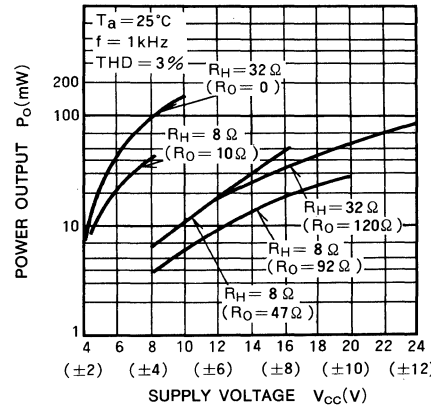
8-pin molded plastic DIL 8-pin molded plastic SIL

APPLICATION EXAMPLE IN HEADPHONE AMPLIFIER



Note : For a single power supply system, the level of the (+) input pin should be shifted to $V_{CC}/2$ potential and the output should be AC-coupled through a capacitor.

HEADPHONE AMPLIFIER CIRCUIT P_O VS V_{CC}



M5216

DUAL LARGE-CURRENT OPERATIONAL AMPLIFIERS (DUAL POWER SUPPLY TYPE)

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

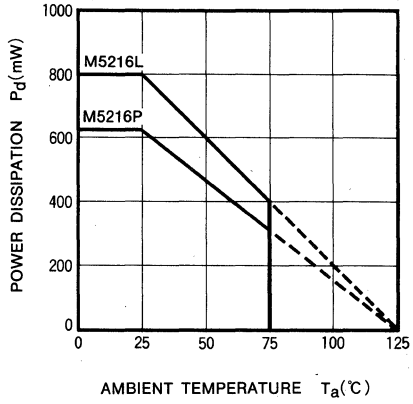
Symbol	Parameter	Conditions	Limits	Unit
V_{CC}	Supply voltage		±18	V
I_{LP}	Load current		±100	mA
V_{id}	Differential input voltage		±30	V
V_{ic}	Common input voltage		±15	V
P_d	Power dissipation		800(M5216L)	mW
			625(M5216P)	
K_θ	Thermal derating	T_a≧25℃	8(M5216L)	mW/℃
			6.25(M5216P)	
T_{opr}	Ambient temperature		−20～+75	℃
T_{stg}	Storage temperature		−55～+125	℃

ELECTRICAL CHARACTERISTICS (T_a=25℃, V_{CC}=±15V)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I_{CC}	Circuit current	V_{IN}=0	—	7.5	12.0	mA
V_{IO}	Input offset voltage	R_S≦10kΩ	—	0.5	6.0	mV
I_{IO}	Input offset current		—	5	200	nA
I_{IB}	Input bias current		—	—	500	nA
R_{in}	Input resistance		0.3	5	—	MΩ
G_{VO}	Open loop voltage gain	R_L≧2kΩ, V_O=±10V	86	110	—	dB
V_{OM}	Maximum output voltage	R_L≧2kΩ	±12	±13.5	—	V
		R_L≧150Ω	±10.5	±11	—	V
V_{CM}	Common input voltage width		±12	±14	—	V
CMRR	Common mode rejection ratio	R_S≦10kΩ	70	90	—	dB
SVRR	Supply voltage rejection ratio	R_S≦10kΩ	—	30	150	μV/V
P_d	Power dissipation		—	225	360	mW
SR	Slew rate	G_V=0dB, R_L=2kΩ	—	3.0	—	V/μs
f_T	Gain bandwidth product		—	10	—	MHz
V_{IN}	Input referred noise voltage	R_S=1kΩ, BW : 10Hz～30Hz	—	1.8	—	μVrms

TYPICAL CHARACTERISTICS

THERMAL DERATING (MAXIMUM RATING)



VOLTAGE GAIN VS FREQUENCY RESPONSE