M5223/M5N358P

DUAL SINGLE POWER SUPPLY OPERATIONAL AMPLIFIERS

DESCRIPTION

The M5223/M5N358P are a semiconductor integrated circuit designed as a dual operational amplifier which permits single power supply operation.

The device comes in a compact 8-pin SIL or DIL package and it contains two circuits for yielding a high internal phase compensation and high performance. For both input and output operation is possible from the GND level and this makes it possible for the device to be used widely as a general-purpose operational amplifier in the motor control circuits of such equipment as cassette decks, turntables, VTRs and digital audio disc players as well as in automotive electronic products and communications equipment. It can also be employed as a simple comparator.

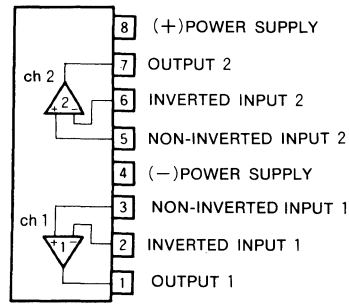
FEATURES

- Wide common input voltage range and operation permitted with GND level input ····· $V_I = 0.3 \sim 36V$
- Output voltage level can be reduced to near the GND level
- Wide operating supply voltage range and single power supply operation possible ····· $V_{CC} = 3V \sim 36V$(max.)
- High voltage gain ····· $G_{VO} = 100dB$(typ.)
- High allowable power dissipation ····· $P_d = 800mW$(SIL), 625mW (DIL)

APPLICATION

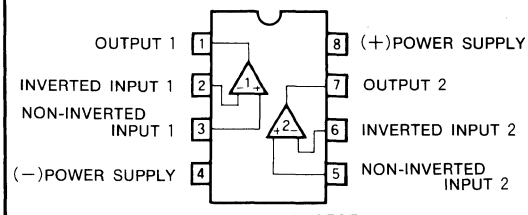
General-purpose amplifier in control circuits of cassette decks, turntables, VTRs, video disc players and audio disc players; general-purpose amplifier in automotive electronic products, communications equipment and copying machines. General-purpose amplifier in radio-controlled and electronic toys, and electronic games.

PIN CONFIGURATION (TOP VIEW)

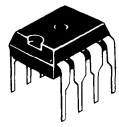


M5223L
Outline 8P5

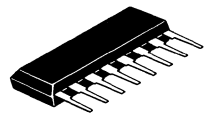
PIN CONFIGURATION (TOP VIEW)



M5223P/M5N358P
Outline 8P4

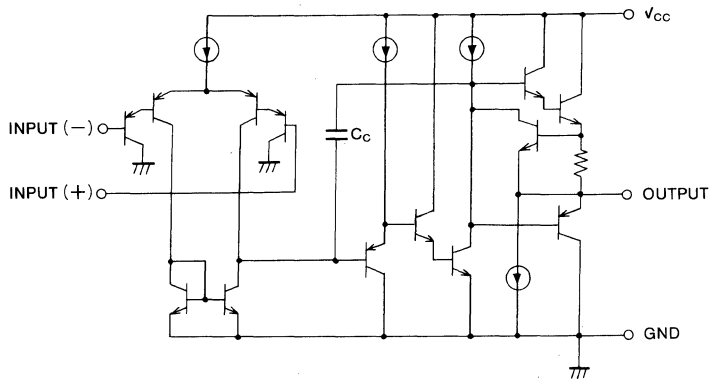


8-pin molded plastic DIL



8-pin molded plastic SIL

EQUIVALENT CIRCUIT



Two circuits are featured in the circuit on the left.

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

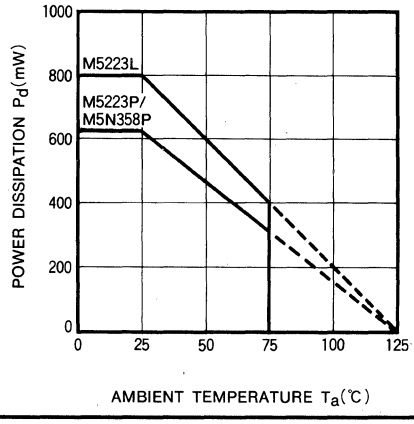
Symbol	Parameter	Conditions	Limits	Unit
V_{CC}	Supply voltage		36(±18)	V
I_{LP}	Load current		50	mA
V_{id}	Differential input voltage		36	V
V_I	Input voltage		−0.3～+36	V
P_d	Power dissipation		800(SIL)	mW
			625(DIL)	
K_θ	Thermal derating	T_a≧25℃	8(SIL)	mW/℃
			6.25(DIL)	
T_{opr}	Ambient temperature		−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	—	0.7	1.2	mA
V_{IO}	Input offset voltage	R_S≦50kΩ	—	2	7	mV
I_{IO}	Input offset current		—	5	50	nA
I_{IB}	Input bias current		—	30	250	nA
C_{SR}	Channel separation	f=1kHz	—	120	—	dB
G_{VO}	Open loop voltage gain	R_L≧2kΩ	90	100	—	dB
V_{OH}	Maximum output voltage	R_L≧2kΩ	12.0	13.5	—	V
V_{OL}		R_L≦2kΩ	—	0.9	1.8	V
V_{CM}	Common input voltage width		−0.3	—	13.5	V
CMRR	Common mode rejection ratio	R_S≦50kΩ	—	85	—	dB
SVRR	Supply voltage rejection ratio	R_S≦50kΩ	—	100	—	dB
P_d	Power dissipation		—	10.5	18	mW
SR	Slew rate	G_V=0dB, R_L=2kΩ	—	0.6	—	V/μs
I_{source}	Output source current		20	40	—	mA
I_{sink}	Output sink current		10	20	—	mA

TYPICAL CHARACTERISTICS

THERMAL DERATING (MAXIMUM RATING)



VOLTAGE GAIN VS FREQUENCY RESPONSE