M5221L, P, FP/M5T082P

DUAL J-FET INPUT OPERATIONAL AMPLIFIERS

DESCRIPTION

The M5221/M5T082P are semiconductor integrated circuits designed as high-performance dual operational amplifiers which adopt J-FETs in the input stage.

The devices come in an 8-pin SIP, DIP or FP and contain two circuits for yielding a high input impedance, high slew rate, low bias current and other excellent characteristics. They can be widely used as a general-purpose operational amplifiers in stereo equipment, tape decks, digital audio disc players and other similar products as well as in VCRs, video disc players and video related players.

FEATURES

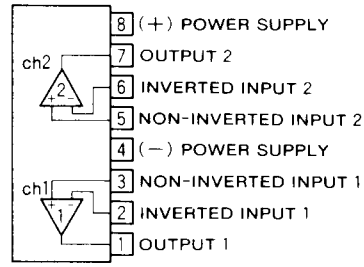
- High input impedance due to J-FET input ..... R_i=1000MΩ (typ.)
- High slew rate ..... SR=13V/μs (typ.)
- High gain, low distortion ..... G_{VO}=106dB, THD=0.007% (G_V=40dB @f=1kHz) (typ.)
- High laod current, high power dissipation ..... I_{LP}=±50mA, P_d=800mW (SIP) P_d=625mW (DIP) P_d=440mW (FP)

APPLICATION

General-purpose operational amplifier in stereo equipment, tape decks and digital audio disc players, VCRs and video disc players.

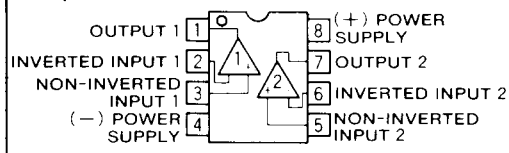
PIN CONFIGURATION (TOP VIEW)

SIP



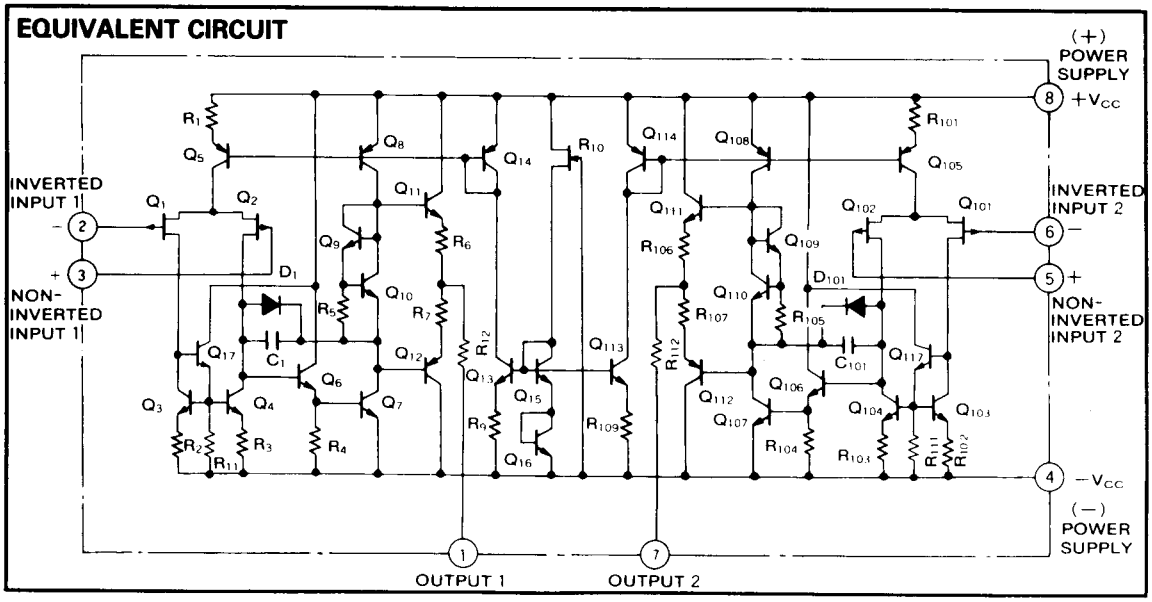
Outline 8P5 (M5221L)

DIP, MINI FLAT



Outline 8P4 (M5221P)
8P2S (M5221FP)

EQUIVALENT CIRCUIT



DUAL J-FET INPUT OPERATIONAL AMPLIFIERS

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

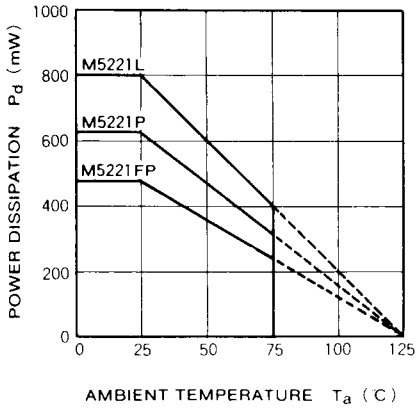
Symbol	Parameter	Conditions	Ratings	Unit
V_{CC}	Supply voltage		±18	V
I_{LP}	Load current		±50	mA
V_{id}	Differential input voltage		±30	V
V_{ic}	Common input voltage		±15	V
P_d	Power dissipation		800(SIP)/625(DIP)/440(FP)	mW
K_θ	Thermal derating	T_a≧25℃	8(SIP)/6.25(DIP)/4.4(FP)	mW/℃
T_{opr}	Operating temperature		−20～+75	℃
T_{stg}	Storage temperature		−55～+125	℃

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

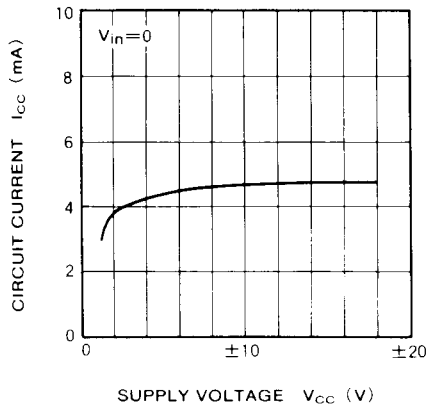
Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I_{CC}	Circuit current	V_{in}=0		3.0	6.0	mA
V_{IO}	Input offset voltage	R_S≦10kΩ		5.0	15.0	mV
I_{IO}	Input offset current			5	200	pA
I_{IB}	Input bias current			30	400	pA
R_{in}	Input resistance			10^3		MΩ
G_{VO}	Open loop voltage gain	R_L≧2kΩ, V_O=±10V	86	106		dB
V_{OM}	Maximum output voltage	R_L≧10kΩ	±12	±14		V
		R_L≧2kΩ	±10	±13		
V_{CM}	Common input voltage width		±10	±12		V
CMRR	Common mode rejection ratio	R_S≦10kΩ	70	76		dB
SVRR	Supply voltage rejection ratio	R_S≦10kΩ		30	150	μV/V
P_d	Power dissipation			90	180	mW
SR	Slew rate	G_V=0dB, R_L=2kΩ		13		V/μs
f_T	Gaing bandwidth product			3		MHz
V_{NI}	Input-referred noise voltage	R_S=100Ω, BW=10Hz～ 30kHz		2.2		μVrms

TYPICAL CHARACTERISTICS

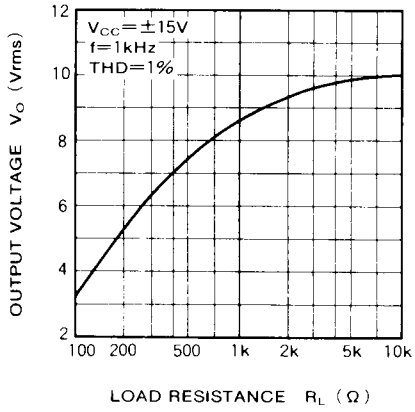
THERMAL DERATING (MAXIMUM RATING)



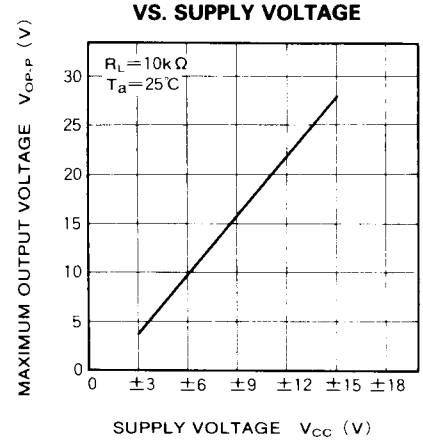
CIRCUIT CURRENT VS. SUPPLY VOLTAGE



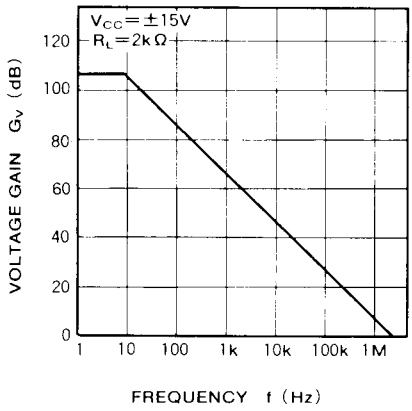
OUTPUT VOLTAGE VS. LOAD RESISTANCE



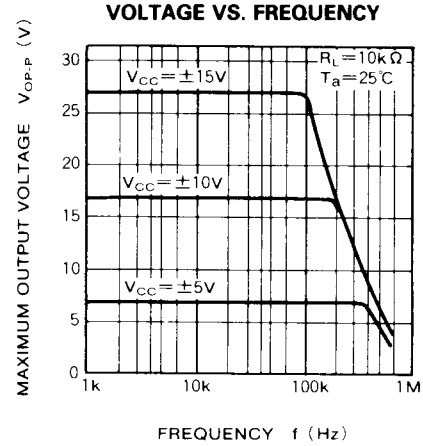
MAXIMUM OUTPUT VOLTAGE VS. SUPPLY VOLTAGE



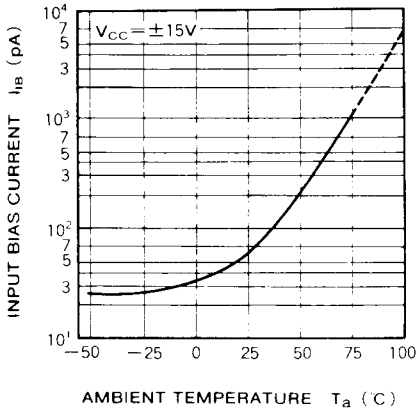
VOLTAGE GAIN VS. FREQUENCY RESPONSE



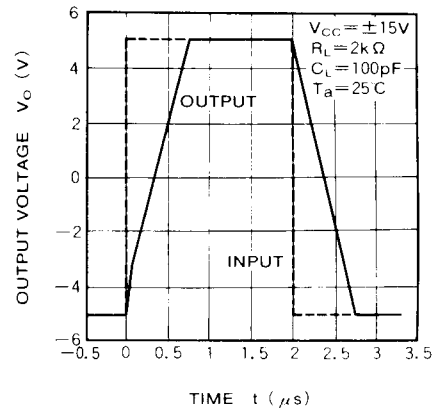
MAXIMUM OUTPUT VOLTAGE VS. FREQUENCY



INPUT BIAS CURRNET VS. AMBIENT TEMPERATURE

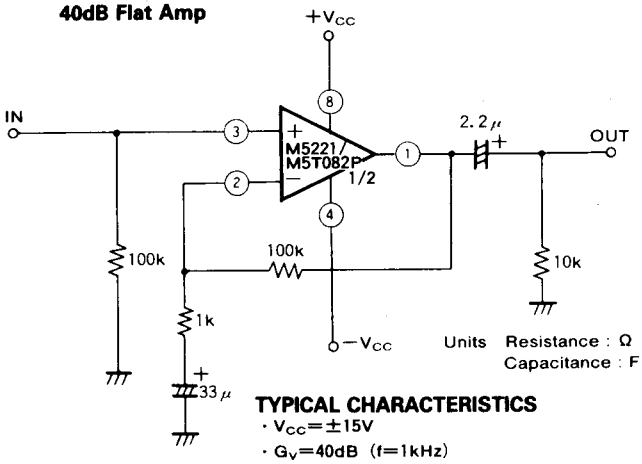


SLEW RATE (SR) CHARACTERISTICS



APPLICATION CIRCUIT

40dB Flat Amp

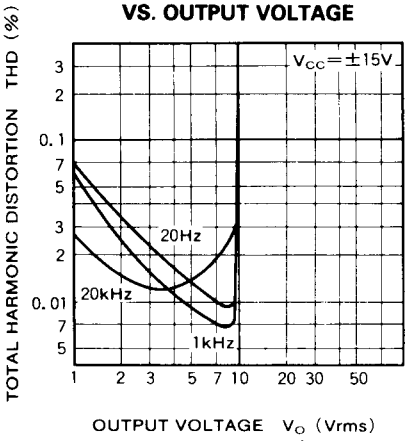


Units Resistance : Ω
Capacitance : F

TYPICAL CHARACTERISTICS

- V_{CC}=±15V
- G_V=40dB (f=1kHz)
- V_O=9.5Vrms (f=1kHz, THD=0.1%)
- THD=0.007% (f=1kHz, V_O=7Vrms)

TOTAL HARMONIC DISTORTION VS. OUTPUT VOLTAGE



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