

VM201

LOW-NOISE, FERRITE HEAD, SERVO PREAMPLIFIER

July, 1992

FEATURES

- IBM - Compatible
- Low Noise 0.7 nV/√Hz Typical
- Wide Bandwidth: 40 MHz
- Wide Supply Range: -7 V to -13.2 V
- Low Output Offset Voltage: ±50 mV Typical

DESCRIPTION

The VM201 is a low-noise, wide-bandwidth differential amplifier. The VM201 has open collector outputs.

ABSOLUTE MAXIMUM RATINGS

Power Supply Voltages:

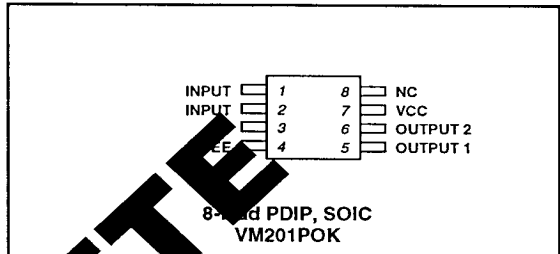
V _{CC} , V _{EE}	14V
Differential Input Voltage	5V
Output Voltage	6V
Storage Temperature Range	-65 to +150°C
Lead Temperature (Soldering 60 Sec.)	300°C
Operating Temperature Range	-55° to +125°C
Junction Temperature	150°C
Thermal Characteristics, θ_{JA} :	
8-lead PDIP, SOIC	18°C/W

RECOMMENDED OPERATING CONDITIONS

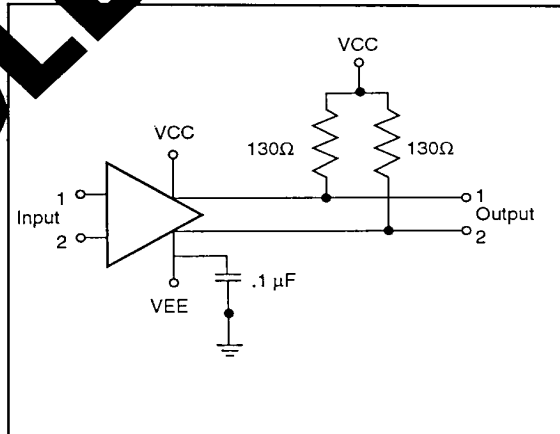
DC Power Supply Voltage:

V _{CC} , V _{EE}	-7V to -13.2V
Input Signal, V _{IN}	25mVp-p
Operating Junction Temperature	25° to +125°C

CONNECTION DIAGRAM



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ELECTRICAL CHARACTERISTICS Unless otherwise specified, $T_A = 25^\circ\text{C}$, $V_{CC} - V_{EE} = 8.3\text{V}$.

PARAMETER	SYM	CONDITIONS	MIN	TYP	MAX	UNITS
Differential Voltage Gain	A_V	$V_{IN} = 1\text{mVp-p}$, $f = 1\text{MHz}$	80	100	120	V/V
Gain Variation		100KHz to 10MHz			± 0.5	dB
Bandwidth	BW	$V_{IN} = 1\text{mVp-p}$	30	40		MHz
Differential Input Voltage	V_{DIFF}			7		mVp-p
Undistorted Differential Output	V_{UDO}		600			mVp-p
Differential Output Offset Voltage	V_{OS}	Input shorted together	-400	± 50	400	mVp-p
Input Noise Voltage	e_{in}	$f = 100\text{KHz}$ to 10MHz		0.70	1.2	nV/ $\sqrt{\text{Hz}}$
Common Mode Output Voltage	V_{OCM}	Input shorted together Output shorted together	$V_{CC} - 0.5$	$V_{CC} - 0.65$	$V_{CC} - 0.8$	V
Common Mode Rejection Ratio	CMMR	$V_{IN} = 100\text{mVp-p}$, $f = 1\text{MHz}$	50	70		dB
Power Supply Rejection Ratio	PSSR	$V_{EE} = 100\text{mVp-p}$, $f = 1\text{MHz}$	60	67		dB
Differential Input Resistance	R_{IN}		800	1000	1200	Ω
Differential Input Capacitance	C_{IN}			15	25	pF
Power Supply Current	I_{EE}	$V_{EE} = -8.3\text{V}$		19	30	mA

ELECTRICAL CHARACTERISTICS vs SUPPLY VOLTAGE Unless otherwise specified, $T_A = 25^\circ\text{C}$, $V_{CC} - V_{EE} = -7.3$ to -13.2V .

PARAMETER	SYM	CONDITIONS	MIN	TYP	MAX	UNITS
Differential Voltage Gain	ΔA_V			0.82	1.2	%/V
Differential Output Offset Voltage	ΔV_{OS}			0.86	3	mV/V
Common Mode Output Voltage	ΔC_{MOV}			9	15	mV/V
Supply Current	ΔI_{EE}			0.6	1.5	mA/V

ELECTRICAL CHARACTERISTICS vs TEMPERATURE Unless otherwise specified, $T_A = 25^\circ\text{C}$, $V_{CC} - V_{EE} = -8.3$.

PARAMETER	SYM	CONDITIONS	MIN	TYP	MAX	UNITS
Differential Voltage Gain	ΔA_V	$15^\circ\text{C} \leq T_A \leq 100^\circ\text{C}$		0.11	0.23	%/ $^\circ\text{C}$
Differential Output Offset Voltage	ΔV_{OS}	$15^\circ\text{C} \leq T_A \leq 100^\circ\text{C}$		0.03	0.5	mV/ $^\circ\text{C}$
Common Mode Output Voltage	ΔC_{MOV}	$15^\circ\text{C} \leq T_A \leq 100^\circ\text{C}$		0.86	1.5	mV/ $^\circ\text{C}$
Supply Current	ΔI_{EE}	$15^\circ\text{C} \leq T_A \leq 100^\circ\text{C}$		0.03	0.5	mA/ $^\circ\text{C}$