



VTC Inc.
Value the Customer™

VM216

THIN-FILM HEAD, SERVO PREAMPLIFIER

July, 1992

FEATURES

- IBM - Compatible
- For use in Winchester Disk Drives
- Low Noise 0.7 nV/√Hz Typical
- Wide Bandwidth: 45 MHz
- Operates Over a Wide Supply Range of 7.2 V to 12.6 V Including 12.0V ($V_{CC} - V_{EE}$)
- Low Output Offset Voltage: ± 50 mV Typical
- Available in a 8-lead PDIP, SOIC

DESCRIPTION

The VM216 is a low-noise, wide-bandwidth differential amplifier. Originally designed for use in the servo system of IBM-equivalent 3380 type disk drives, the VM216 may find use in a variety of applications requiring very low noise levels and high-signal amplification.

ABSOLUTE MAXIMUM RATINGS

Power Supply Voltages:

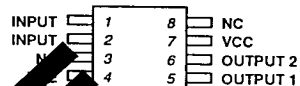
V_{CC}, V_{EE}	4V
Differential Input Voltage	4V
Output Voltage	$V_{CC} - 4V$
Storage Temperature Range	-55 to 150°C
Lead Temperature (Soldering 60 Sec.)	300°C
Operating Temperature Range	15° to 70°C
Junction Temperature	150°C
Thermal Characteristics, θ_{JA} :	
8-lead PDIP, SOIC	180°C/W

RECOMMENDED OPERATING CONDITIONS

DC Power Supply Voltage:

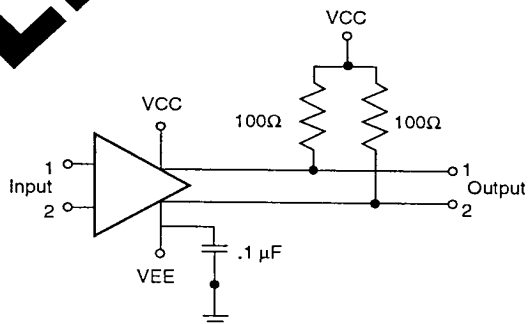
$V_{CC} - V_{EE}$	7V to 12.6V
Input Signal, V_{IN}	1mVp-p
Operating Junction Temperature	15° to +125°C

CONNECTION DIAGRAM



8-lead PDIP, SOIC
VM216POK

BLOCK DIAGRAM



ELECTRICAL CHARACTERISTICS Unless otherwise specified, $T_A = 25^\circ\text{C}$, $V_{CC} - V_{EE} = 8.3$ and 12V .

PARAMETER	SYM	CONDITIONS	MIN	TYP	MAX	UNITS
Differential Voltage Gain	A_V	$V_{IN} = 1\text{mVp-p}$, $f = 1\text{MHz}$	200	250	300	V/V
Gain Variation		$f = 100\text{KHz}$ to 10MHz			± 1	dB
Bandwidth	BW	$V_{IN} = 1\text{mVp-p}$	20	45		MHz
Differential Input Voltage	V_{DIFF}				2.5	mVp-p
Undistorted Differential Output	V_{UDO}		750			mVp-p
Operating Voltage Range	$V_{CC} - V_{EE}$			8.3, 12.0	12.6	V
Input Noise Voltage	e_{in}	$f = 100\text{KHz}$ to 10MHz		0.77	0.94	$\text{nV}/\sqrt{\text{Hz}}$
Common Mode Output Voltage	V_{OCM}		$V_{CC} - 0.5$	$V_{CC} - 0.65$	$V_{CC} - 0.8$	V
Common Mode Rejection Ratio	CMMR	$V_{IN} = 100\text{mVp-p}$, $f = 1\text{MHz}$	-60	-70		dB
Power Supply Rejection Ratio	PSSR	$V_{EE} = 100\text{mVp-p}$, $f = 1\text{MHz}$		67		dB
Differential Input Resistance	R_{IN}	$V_{IN} = 0\text{V}$	160	200	240	Ω
Differential Input Capacitance	C_{IN}			37	55	pF
Power Supply Current	I_{EE}	$V_{CC} - V_{EE} = 8.3\text{V}$		19	30	mA
		$V_{CC} - V_{EE} = 12\text{V}$		25	40	mA
Output Offset Voltage	V_{OS}	$V_{IN} = 0\text{V}$	-400	+50	400	mV
Power Supply Current	R_{OUT}		10			k Ω

 SERVO
PREAMPS

ELECTRICAL CHARACTERISTICS vs TEMPERATURE

PARAMETER	SYM	CONDITIONS	MIN	TYP	MAX	UNITS
Differential Voltage Gain	ΔA_V	$15^\circ\text{C} \leq T_A \leq 100^\circ\text{C}$		0.13	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	3	mV/ $^\circ\text{C}$
Common Mode Output Voltage	ΔC_{MOV}	$15^\circ\text{C} \leq T_A \leq 100^\circ\text{C}$		0.25	0.5	%/ $^\circ\text{C}$
Supply Current	ΔI_{EE}	$15^\circ\text{C} \leq T_A \leq 100^\circ\text{C}$		0.15	0.3	%/ $^\circ\text{C}$