1.0 ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings †

$V_{DD} - V_{SS}$ 7.0V
Current at Analog Input Pins ($V_{IN}+$, $V_{IN}-$).....±2 mA
Analog Inputs ($V_{IN}+$, $V_{IN}-$) †† ..... V_{SS} – 1.0V to V_{DD} + 1.0V
All Other Inputs and Outputs ..... V_{SS} – 0.3V to V_{DD} + 0.3V
Difference Input Voltage ..... $|V_{DD} - V_{SS}|$
Output Short Circuit Current .....Continuous
Current at Output and Supply Pins .....±30 mA
Storage Temperature .....–65°C to +150°C
Maximum Junction Temperature (T_J).....+150°C
ESD Protection On All Pins (HBM; MM) ..... ≥ 4 kV; 200V

† Notice: Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at those or any other conditions above those indicated in the operational listings of this specification is not implied. Exposure to maximum rating conditions for extended periods may affect device reliability.

†† See **Section 4.1.2 "Input Voltage and Current Limits"**.

DC ELECTRICAL SPECIFICATIONS

Electrical Characteristics: Unless otherwise indicated, T_A = +25°C, V_{DD} = +1.8V to +5.5V, V_{SS} = GND, V_{CM} = $V_{DD}/2$, V_L = $V_{DD}/2$, R_L = 10 kΩ to V_L, and $V_{OUT} \approx V_{DD}/2$ (refer to Figure 1-1).

Parameters	Sym	Min	Typ	Max	Units	Conditions
Input Offset						
Input Offset Voltage	V_{OS}	-4.5	—	+4.5	mV	$V_{CM} = V_{SS}$ **(Note 1)**
Input Offset Drift with Temperature	$\Delta V_{OS}/\Delta T_A$	—	±2.0	—	µV/°C	T_A= -40°C to +125°C, $V_{CM} = V_{SS}$
Power Supply Rejection Ratio	PSRR	—	86	—	dB	$V_{CM} = V_{SS}$
Input Bias Current and Impedance						
Input Bias Current:	I_B	—	±1.0	—	pA	
Industrial Temperature	I_B	—	19	—	pA	T_A = +85°C
Extended Temperature	I_B	—	1100	—	pA	T_A = +125°C
Input Offset Current	I_{OS}	—	±1.0	—	pA	
Common Mode Input Impedance	Z_{CM}	—	10^{13}||6	—	Ω||pF	
Differential Input Impedance	Z_{DIFF}	—	10^{13}||3	—	Ω||pF	
Common Mode						
Common Mode Input Range	V_{CMR}	V_{SS} – 0.3	—	V_{DD} + 0.3	V	
Common Mode Rejection Ratio	CMRR	60	76	—	dB	V_{CM} = -0.3V to 5.3V, V_{DD} = 5V
Open-Loop Gain						
DC Open-Loop Gain (Large Signal)	A_{OL}	88	112	—	dB	V_{OUT} = 0.3V to V_{DD} – 0.3V, $V_{CM} = V_{SS}$
Output						
Maximum Output Voltage Swing	V_{OL}, V_{OH}	V_{SS} + 25	—	V_{DD} – 25	mV	V_{DD} = 5.5V, 0.5V Input Overdrive
Output Short Circuit Current	I_{SC}	—	±6	—	mA	V_{DD} = 1.8V
		—	±23	—	mA	V_{DD} = 5.5V
Power Supply						
Supply Voltage	V_{DD}	1.8	—	6.0	V	**Note 2**
Quiescent Current per Amplifier	I_Q	50	100	170	µA	I_O = 0, V_{DD} = 5.5V, V_{CM} = 5V

Note 1: MCP6001/1R/1U/2/4 parts with date codes prior to December 2004 (week code 49) were tested to ±7 mV minimum/maximum limits.

2: All parts with date codes November 2007 and later have been screened to ensure operation at V_{DD} = 6.0V. However, the other minimum and maximum specifications are measured at 1.8V and 5.5V.