ANALOG-OPERATIONAL AMPLIFIERS
ELECTRICAL CHARACTERISTICS TABLE (Cont'd) V_S = + 15V unless otherwise specified

PARAMETER / DEVICE	TEST CONDITIONS	V_{OS} (mV) Offset Voltage $R_S \leq 10K\Omega$			V_{OS} DRIFT ($\mu V/^\circ C$) $R_S = 0\Omega$			I_{OS} (mA) Offset Current			I_{OS} DRIFT pA/°C			I_{BIAS} (nA) Input Current		
	TEMPERATURE	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
LM324	$T_A = 25^\circ C$ $V^+ = 5V$		±2	±7[3]		N/A			±5	±50		N/A		I_{IN^+} or I_{IN^-}[4]	45nA	250nA
	$0^\circ C \leq T_A \leq 70^\circ C$			±9[3]		7				±150		10				500nA
MC1456	$T_A = 25^\circ C$		5.0	10		N/A			5.0	10		N/A			15	30
	$0^\circ C \leq T_A \leq 70^\circ C$			14		N/A				14		N/A				40
MC1556	$T_A = 25^\circ C$		2.0	4.0		N/A			1.0	2.0		N/A			0.8	15
	$-55 \leq T_A \leq 125^\circ C$			6.0		N/A			$25 \leq T_A \leq 125^\circ C$ 3.0 $-55 \leq T_A \leq 25^\circ C$ 5.0			N/A				30
MC1458	$T_A = 25^\circ C$		2.0	6.0		N/A			30	200		N/A			200	500
	$0^\circ C \leq T_A \leq 70^\circ C$			7.5		N/A				300		N/A				800
MC1558	$T_A = 25^\circ C$		1.0	5.0		N/A			30	200		N/A			200	500
	$-55 \leq T_A \leq 125^\circ C$			6.0		N/A				500		N/A				1500
µA709	$T_A = 25^\circ C$ $\pm 9 \leq V_S \leq \pm 15$		1	5		$R_S = 50\Omega$ 3.0 $R_S \leq 10K$ 6.0			50	200		N/A			200nA	500nA
	$-55^\circ C \leq T_A \leq +125^\circ C$			6					$T_A = +125^\circ C$ 20	200					$T_A = -55^\circ C$ 0.5	1.5
						N/A			$T_A = -55^\circ C$ 100	500		N/A				
µA709C	$T_A = 25^\circ C$		2	7.5		N/A			100	500		N/A			300nA	1500nA
	$0^\circ C \leq T_A \leq 70^\circ C$			10		N/A				750		N/A			N/A	
µA740	$T_A = 25^\circ C$	$R_S \leq 100K\Omega$ 30				N/A			60pA			N/A			0.1nA	2.0nA
	$0^\circ C \leq T_A \leq +70^\circ C$	30				N/A			60pA			N/A			1.1nA	1.0nA
µA741	$T_A = 25^\circ C$		1.0	5.0		N/A			10	200		N/A			80nA	500nA
	$-55^\circ C \leq T_A \leq +125^\circ C$		1.0	6.0		N/A			$T_A = +125^\circ C$ 7.0	200		N/A			$T_A = +125^\circ C$ 30	500
									$T_A = -55^\circ C$ 20	500					$T_A = -55^\circ C$ 300	1500
µA741C	$T_A = 25^\circ C$		2.0	6.0		N/A			20	200		N/A			80	500
	$0^\circ C \leq T_A \leq +70^\circ C$			7.5		N/A				300		N/A				800

ANALOG-OPERATIONAL AMPLIFIERS
ELECTRICAL CHARACTERISTICS TABLE (Cont'd) V_S = + 15V unless otherwise specified

PARAMETER / DEVICE	TEST CONDITIONS	V_{CM} (V) Common Mode Voltage Range			CMRR (dB) Common Mode Rejection Ratio $R_S \leq \pm 10K\Omega$			R_{IN} (MΩ) INPUT RESISTANCE			A_{VOL} (V/MV) LARGE SIGNAL VOLTAGE GAIN $R_L \geq 2K\Omega$ $V_{OUT} \pm 10V$ $V_S = \pm 15V$		
	TEMPERATURE	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
LM324	T_A 25°C $V^+ = 5V$		$V^+ = 30V^5$		65	85			N/A			$V^+ = 15$	
		0		V±1.5							25	100	
	$0°C \leq T_A \leq 70°C$	0		$V^+ -2$		N/A			N/A		15		
MC1456	$T_A = 25°C$	±11	±12			f = 100 Hz			f = 20 Hz		70	100	
					70	110			3.0				
	$0°C \leq T_A \leq 70°C$		N/A			N/A			N/A		40		
MC1556	$T_A = 25°C$	±12	±13			f = 100 Hz			f = 20 Hz		100	200	
					80	110			5.0				
	$-55 \leq T_A \leq 125°C$		N/A			N/A			N/A		40		
MC1458	$T_A = 25°C$	±12	±13			f = 100 Hz			f = 20 Hz		20	100	
					70	90		0.3	1.0				
	$0°C \leq T_A \leq 70°C$		N/A			N/A							
									N/A		15		
MC1558	$T_A = 25°C$	±12	±13			f = 100 Hz			f = 20 Hz		50	200	
					70	90		0.3	1.0				
	$-55 \leq T_A \leq 125°C$		N/A			N/A			N/A		25		
μA709	$T_A = 25°C$		N/A									N/A	
	$\pm 9 \leq V_S \leq \pm 15$		$V_S = \pm 15$			N/A		150	400			$R_L \geq 25K\Omega$	
	$-55°C \leq T_A \leq +125°C$	±8.0	±10		70	90		40	100		25	45	70
μA709C	$T_A = 25°C$	±8.0	±10		65	90		50	250			$R_L \geq 25K\Omega$	
											15	45	
	$0°C \leq T_A \leq 70°C$		N/A			N/A		35			12		
μA740	$T_A = 25°C$		N/A			N/A			1,000,000			1,000	
	$0°C \leq T_A \leq +70°C$		±12			80			N/A			500	
μA741	$T_A = 25°C$		N/A			N/A		0.3	2.0		50	200	
	$-55°C \leq T_A \leq +125°C$	±12	±13		70	90					25		
μA741C	$T_A = 25°C$	±12	±13		70	90		0.3	2.0		20	200	
	$0°C \leq T_A \leq +70°C$		N/A			N/A			N/A		15		

ANALOG-OPERATIONAL AMPLIFIERS
ELECTRICAL CHARACTERISTICS TABLE (Cont'd) V_S = + 15V unless otherwise specified

PARAMETER / DEVICE	TEST CONDITIONS	V_{OUT} OUTPUT VOLTAGE SWING (V) $R_L \geq 2K\Omega$			I_{CC} SUPPLY CURRENT (MA)			POWER CONSUMPTION			P_{SRR} SUPPLY VOLTAGE REJECTION RATION ($\mu V/V$) $R_S \leq 10K\Omega$		
	TEMPERATURE	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
LM324	$T_A = 25°C$ $V^+ = 5V$		N/A			N/A			N/A		65	100	
			V_{OH} $V^+ = 30V$										
		26											
			$R_L \geq 10K\Omega$										
		27	28										
			V_{OL} $V^+ = 5V$										
			$R_L \leq 10K\Omega$										
	$0°C \leq T_A \leq 70°C$		5	20		$R_L = \infty$ On All Op Amps 0.8	2		N/A			N/A	
MC1456	$T_A = 25°C$	±11	±12			1.3	3.0		40	90		75	200
	$0°C \leq T_A \leq 70°C$		N/A			N/A						N/A	
MC1556	$T_A = 25°C$	±12	±13			1.0	1.5		30	45		50	100
	$-55 \leq T_A \leq 125°C$		N/A			N/A			N/A			N/A	
MC1458	$T_A = 25°C$		$R_L = 10K\Omega$			2.3	5.6		70	170		30	150
		±12	±14										
	$0°C \leq T_A \leq 70°C$		$R_L = 2K\Omega$										
		±10	±13			N/A			N/A			N/A	
MC1558	$T_A = 25°C$		$R_L = 10K\Omega$			2.3	5.0		70	150		30	150
			$R_L = 2K\Omega$										
	$-55 \leq T_A \leq 125°C$	±10	±13			N/A			N/A			N/A	
μA709	$T_A = 25°C$ $\pm 9 \leq V_S \leq \pm 15$		N/A			N/A			80	165		N/A	
	$-55°C \leq T_A \leq +125°C$	±10	±13			N/A			N/A		25	150	
			$R_L = 10K\Omega$										
		±12	±14										
μA709C	$T_A = 25°C$	±10	±13			N/A			80	200		25	200
			$R_L = 10K\Omega$										
		±12	±14										
	$0°C \leq T_A \leq 70°C$		N/A			N/A			N/A			N/A	
μA740	$T_A = 25°C$		N/A			4.2	3.0		126	240		N/A	
		±10	±13										
	$0°C \leq T_A \leq +70°C$		$R_L \geq 10K\Omega$			N/A			N/A			70	
		±12	±14										
μA741	$T_A = 25°C$		N/A			1.4	2.8		50	85		N/A	
						$T_A = +125°C$			$T_A = +125°C$				
	$-55°C \leq T_A \leq +125°C$	±10	±13			1.5	2.5		45	75		10	150
			$R_L \geq 10K\Omega$			$T_A = -55°C$			$T_A = -55°C$				
		±12	±14			2.0	3.3		45	100			
μA741C	$T_A = 25°C$	±10	±13			1.4	2.8		50	85		10	150
			$R_L \geq 10K\Omega$										
		±12	±14										
	$0°C \leq T_A \leq +70°C$	±10	±13			N/A			N/A			N/A	