



- **SO Package with Standard Pinout**
- **Supply Current per Amplifier: 17 $\mu$ A Max**
- **Offset Voltage: 70 $\mu$ V Max**
- Offset Current: 250pA Max
- Input Bias Current: 5nA Max
- Voltage Noise: 0.9 $\mu$ V<sub>P-P</sub>, 0.1Hz to 10Hz
- Current Noise: 1.5pA<sub>P-P</sub>, 0.1Hz to 10Hz
- Offset Voltage Drift: 0.5 $\mu$ V/ $^{\circ}$ C
- Gain Bandwidth Product: 85kHz
- Slew Rate: 0.04V/ $\mu$ s
- Single Supply Operation
  - Input Voltage Range Includes Ground
  - Output Swings to Ground while Sinking Current
  - No Pull-Down Resistors Needed
- Output Sources and Sinks 5mA Load Current

- Battery- or Solar-Powered Systems
  - Portable Instrumentation
  - Remote Sensor Amplifier
  - Satellite Circuitry
- Micropower Sample-and-Hold
- Thermocouple Amplifier
- Micropower Filters

## TYPICAL APPLICATION

TOTAL BATTERY CURRENT = 28  $\mu$ A  
 OUTPUT ACCURACY =  $\pm 0.4\%$  MAX  
 TEMPERATURE COEFFICIENT = 20ppm/°C  
 LOAD REGULATION = 25ppm/mA,  $I_L \leq 5$ mA,  $V^+ \geq 5$ V  
 LINE REGULATION = 10ppm/V  
 \* 0.1% FILM RESISTORS

For surface mount applications where three times higher supply current is acceptable, the micropower LT1077 single, LT2078 dual and LT2079 quad are recommended. The LT1077/LT2078/LT2079 have significantly higher bandwidth, slew rate, lower voltage noise and better output drive capability. For applications requiring DIP packages refer to the LT1178/LT1179.

Graph showing Supply Current per Amplifier ( $\mu\text{A}$ ) versus Temperature ( $^{\circ}\text{C}$ ) for the LT2178/79. The curves represent different supply voltage conditions ( $V_S$ ):

- $V_S = \pm 15\text{V}$  (Top curve)
- $V_S = 5\text{V}, 0\text{V}$  (Middle curve)
- $V_S = \pm 1.5\text{V}$  (Bottom curve)

The supply current increases with temperature for all conditions. The current is highest for  $V_S = \pm 15\text{V}$  and lowest for  $V_S = \pm 1.5\text{V}$ .

Temperature ( $^{\circ}\text{C}$ )	$V_S = \pm 15\text{V}$ ( $\mu\text{A}$ )	$V_S = 5\text{V}, 0\text{V}$ ( $\mu\text{A}$ )	$V_S = \pm 1.5\text{V}$ ( $\mu\text{A}$ )
-50	13.5	10.5	10.0
-25	14.5	11.5	10.5
0	15.5	12.5	11.0
25	16.5	13.5	11.5
50	17.5	14.0	12.0
75	18.0	14.2	12.2
100	18.5	14.5	12.5

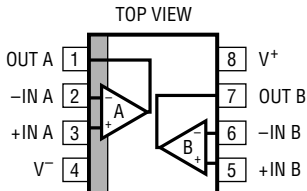
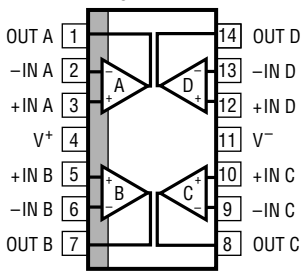
# LT2178/LT2179

## ABSOLUTE MAXIMUM RATINGS

Supply Voltage .....  $\pm 22\text{V}$   
Differential Input Voltage .....  $\pm 30\text{V}$   
Input Voltage ..... Equal to Positive Supply Voltage  
..... 5V Below Negative Supply Voltage  
Output Short-Circuit Duration ..... Indefinite

Specified Temperature Range  
Commercial .....  $0^{\circ}\text{C}$  to  $70^{\circ}\text{C}$   
Industrial .....  $-40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$   
Storage Temperature Range .....  $-65^{\circ}\text{C}$  to  $150^{\circ}\text{C}$   
Lead Temperature (Soldering, 10 sec) .....  $300^{\circ}\text{C}$

## PACKAGE/ORDER INFORMATION

 <p>S8 PACKAGE 8-LEAD PLASTIC SO</p> <p><math>T_{JMAX} = 150^{\circ}\text{C}</math>, <math>\theta_{JA} = 190^{\circ}\text{C/W}</math></p>	ORDER PART NUMBER	 <p>S PACKAGE 14-LEAD PLASTIC SO</p> <p><math>T_{JMAX} = 150^{\circ}\text{C}</math>, <math>\theta_{JA} = 150^{\circ}\text{C/W}</math></p>	ORDER PART NUMBER
	LT2178ACS8 LT2178AIS8 LT2178CS8 LT2178IS8		LT2179ACS LT2179AIS LT2179CS LT2179IS
	PART MARKING		
	2178A 2178 2178AI 2178I		

Consult factory for Military grade parts.

## ELECTRICAL CHARACTERISTICS

$V_S = 5\text{V}$ ,  $0\text{V}$ ,  $V_{CM} = 0.1\text{V}$ ,  $V_O = 1.4\text{V}$ ,  $T_A = 25^{\circ}\text{C}$ , unless otherwise noted.

SYMBOL	PARAMETER	CONDITIONS (NOTE 1)	LT2178AC/LT2178AI LT2179AC/LT2179AI			LT2178C/LT2178I LT2179C/LT2179I			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	
$V_{OS}$	Input Offset Voltage	LT2178 LT2179		30 35	70 100		40 40	120 150	$\mu\text{V}$ $\mu\text{V}$
$\frac{\Delta V_{OS}}{\Delta \text{Time}}$	Long Term Input Offset Voltage Stability			0.5			0.6		$\mu\text{V/Mo}$
$I_{OS}$	Input Offset Current			0.05	0.25		0.05	0.35	nA
$I_B$	Input Bias Current			3	5		3	6	nA
$e_n$	Input Noise Voltage	0.1Hz to 10Hz (Note 2)		0.9	2.0		0.9		$\mu\text{V}_{p-p}$
	Input Noise Voltage Density	$f_0 = 10\text{Hz}$ (Note 2) $f_0 = 1000\text{Hz}$ (Note 2)		50 49	75 65		50 49		$\text{nV}/\sqrt{\text{Hz}}$ $\text{nV}/\sqrt{\text{Hz}}$
$i_n$	Input Noise Current	0.1Hz to 10Hz (Note 2)		1.5	2.5		1.5		$\text{pA}_{p-p}$
	Input Noise Current Density	$f_0 = 10\text{Hz}$ (Note 2) $f_0 = 1000\text{Hz}$		0.03 0.01	0.07		0.03 0.01		$\text{pA}/\sqrt{\text{Hz}}$ $\text{pA}/\sqrt{\text{Hz}}$
	Input Resistance Differential Mode Common Mode	(Note 3)	0.8	2.0 12		0.6	2.0 12		$\text{G}\Omega$ $\text{G}\Omega$
	Input Voltage Range		3.5 0	3.9 -0.3		3.5 0	3.9 -0.3		V V
CMRR	Common Mode Rejection Ratio	$V_{CM} = 0\text{V}$ to $3.5\text{V}$	93	103		90	102		dB
PSRR	Power Supply Rejection Ratio	$V_S = 2.2\text{V}$ to $12\text{V}$	94	104		92	104		dB

**ELECTRICAL CHARACTERISTICS**  $V_S = 5V$ ,  $0V$ ,  $V_{CM} = 0.1V$ ,  $V_O = 1.4V$ ,  $T_A = 25^\circ C$ , unless otherwise noted.

SYMBOL	PARAMETER	CONDITIONS (NOTE 1)	LT2178AC/LT2178AI LT2179AC/LT2179AI			LT2178C/LT2178I LT2179C/LT2179I			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	
$A_{VOL}$	Large-Signal Voltage Gain	$V_O = 0.03V$ to $4V$ , No Load (Note 3) $V_O = 0.03V$ to $3.5V$ , $R_L = 50k$	140 80	700 200		110 70	700 200		V/mV V/mV
	Maximum Output Voltage Swing	Output Low, No Load		6.5	9		6.5	9	mV
		Output Low, 2k to GND		0.2	0.6		0.2	0.6	mV
		Output Low, $I_{SINK} = 100\mu A$		120	160		120	160	mV
		Output High, No Load	4.2	4.4		4.2	4.4		V
		Output High, 2k to GND	3.5	3.8		3.5	3.8		V
SR	Slew Rate	$A_V = 1$ , $C_L = 10pF$ (Note 3)	0.013	0.025		0.013	0.025		V/ $\mu s$
GBW	Gain Bandwidth Product	$f_0 \leq 5kHz$		60			60		kHz
$I_S$	Supply Current per Amplifier	$V_S = \pm 1.5V$ , $V_O = 0V$		13 12	18 17		14 13	21 20	$\mu A$ $\mu A$
	Channel Separation	$\Delta V_{IN} = 3V$ , $R_L = 10k$		110			110		dB
	Minimum Supply Voltage	(Note 4)		2.0	2.2		2.0	2.2	V

 **$V_S = 5V$ ,  $0V$ ,  $V_{CM} = 0.1V$ ,  $V_O = 1.4V$ ,  $-40^\circ C \leq T_A \leq 85^\circ C$  for I grades, unless otherwise noted. (Note 6)**

SYMBOL	PARAMETER	CONDITIONS		LT2178AI/LT2179AI			LT2178I/LT2179I			UNITS
				MIN	TYP	MAX	MIN	TYP	MAX	
$V_{OS}$	Input Offset Voltage	LT2178 LT2179	● ●		70 80	270 300		95 100	370 400	$\mu V$ $\mu V$
$\frac{\Delta V_{OS}}{\Delta T}$	Input Offset Voltage Drift	LT2178 (Note 5) LT2179	●		0.4 0.5	1.8 3.0		0.5 0.6	2.5 3.5	$\mu V/^\circ C$ $\mu V/^\circ C$
$I_{OS}$	Input Offset Current		●		0.07	0.70		0.1	1.0	nA
$I_B$	Input Bias Current		●		3	7		4	8	nA
CMRR	Common Mode Rejection Ratio	$V_{CM} = 0.05V$ to $3.2V$	●	86	100		84	98		dB
PSRR	Power Supply Rejection Ratio	$V_S = 3V$ to $12V$	●	88	100		86	100		dB
$A_{VOL}$	Large-Signal Voltage Gain	$V_O = 0.05V$ to $4V$ , No Load (Note 3) $V_O = 0.05V$ to $3.5V$ , $R_L = 50k$	● ●	75 40	350 130		50 30	350 130		V/mV V/mV
	Maximum Output Voltage Swing	Output Low, No Load	●		9	13		9	13	mV
		Output Low, $I_{SINK} = 100\mu A$	●		160	220		160	220	mV
		Output High, No Load	●	3.9	4.2		3.9	4.2		V
		Output High, 2k to GND	●	3.0	3.7		3.0	3.7		V
$I_S$	Supply Current per Amplifier		●		15	24		15	27	$\mu A$

 **$V_S = 5V$ ,  $0V$ ,  $V_{CM} = 0.1V$ ,  $V_O = 1.4V$ ,  $0^\circ C \leq T_A \leq 70^\circ C$ , unless otherwise noted. (Note 7)**

SYMBOL	PARAMETER	CONDITIONS		LT2178AC/LT2179AC			LT2178C/LT2179C			UNITS
				MIN	TYP	MAX	MIN	TYP	MAX	
$V_{OS}$	Input Offset Voltage	LT2178 LT2179	● ●		50 60	170 200		65 70	250 290	$\mu V$ $\mu V$
$\frac{\Delta V_{OS}}{\Delta T}$	Input Offset Voltage Drift	LT2178 (Note 5) LT2179	●		0.4 0.5	1.8 3.0		0.5 0.6	2.5 3.5	$\mu V/^\circ C$ $\mu V/^\circ C$
$I_{OS}$	Input Offset Current		●		0.06	0.35		0.06	0.50	nA
$I_B$	Input Bias Current		●		3	6		3	7	nA
CMRR	Common Mode Rejection Ratio	$V_{CM} = 0V$ to $3.4V$	●	90	101		86	100		dB
PSRR	Power Supply Rejection Ratio	$V_S = 2.5V$ to $12V$	●	90	102		88	102		dB

## ELECTRICAL CHARACTERISTICS $V_S = 5V, 0V, V_{CM} = 0.1V, V_O = 1.4V, 0^\circ C \leq T_A \leq 70^\circ C$ , unless otherwise noted.

SYMBOL	PARAMETER	CONDITIONS		LT2178AC/LT2179AC			LT2178C/LT2179C			UNITS
				MIN	TYP	MAX	MIN	TYP	MAX	
$A_{VOL}$	Large-Signal Voltage Gain	$V_O = 0.05V$ to $4V$ , No Load (Note 3) $V_O = 0.05V$ to $3.5V$ , $R_L = 50k$	● ●	150 55	500 160		80 45	500 160		V/mV V/mV
	Maximum Output Voltage Swing	Output Low, No Load	●		8	11		8	11	mV
		Output Low, $I_{SINK} = 100\mu A$	●		140	190		140	190	mV
		Output High, No Load	●	4.1	4.3		4.1	4.3		V
		Output High, $2k$ to GND	●	3.3	3.8		3.3	3.8		V
$I_S$	Supply Current per Amplifier		●		14	21		15	24	$\mu A$

$V_S = \pm 15V, T_A = 25^\circ C$ , unless otherwise noted.

SYMBOL	PARAMETER	CONDITIONS		LT2178AC/LT2178AI LT2179AC/LT2179AI			LT2178C/LT2178I LT2179C/LT2179I			UNITS
				MIN	TYP	MAX	MIN	TYP	MAX	
$V_{OS}$	Input Offset Voltage	LT2178 LT2179			70 80	300 350		90 100	400 450	$\mu V$ $\mu V$
$I_{OS}$	Input Offset Current				0.05	0.25		0.05	0.35	nA
$I_B$	Input Bias Current				3	5		3	6	nA
	Input Voltage Range			13.5 -15.0	13.9 -15.3		13.5 -15.0	13.9 -15.3		V V
CMRR	Common Mode Rejection Ratio	$V_{CM} = 13.5V$ to $-15V$		96	106		93	106		dB
PSRR	Power Supply Rejection Ratio	$V_S = 5V, 0V$ to $\pm 18V$		96	112		94	112		dB
$A_{VOL}$	Large-Signal Voltage Gain	$V_O = \pm 10V$ , $R_L = 50k$ $V_O = \pm 10V$ , No Load		300 600	1200 2500		250 400	1000 2500		V/mV V/mV
$V_{OUT}$	Maximum Output Voltage Swing	$R_L = 50k$ $R_L = 2k$		$\pm 13.0$ $\pm 11.0$	$\pm 14.2$ $\pm 12.7$		$\pm 13.0$ $\pm 11.0$	$\pm 14.2$ $\pm 12.7$		V V
SR	Slew Rate	$A_V = 1$		0.02	0.04		0.02	0.04		V/ $\mu s$
GBW	Gain Bandwidth Product	$f_0 \leq 5kHz$			85			85		kHz
$I_S$	Supply Current per Amplifier				16	21		17	25	$\mu A$

$V_S = \pm 15V, -40^\circ C \leq T_A \leq 85^\circ C$  for I grades, unless otherwise noted.

SYMBOL	PARAMETER	CONDITIONS		LT2178AI/LT2179AI			LT2178I/LT2179I			UNITS
				MIN	TYP	MAX	MIN	TYP	MAX	
$V_{OS}$	Input Offset Voltage	LT2178 LT2179	● ●		100 100	650 650		130 130	740 740	$\mu V$ $\mu V$
$\frac{\Delta V_{OS}}{\Delta T}$	Input Offset Voltage Drift	LT2178 (Note 5) LT2179	●		0.6 0.7	1.8 3.0		0.7 0.9	2.5 4.0	$\mu V/^\circ C$ $\mu V/^\circ C$
$I_{OS}$	Input Offset Current		●		0.07	0.70		0.1	1.0	nA
$I_B$	Input Bias Current		●		3	7		4	8	nA
$A_{VOL}$	Large-Signal Voltage Gain	$V_O = \pm 10V$ , $R_L = 50k$	●	150	500		100	500		V/mV
CMRR	Common Mode Rejection Ratio	$V_{CM} = 13V, -14.9V$	●	90	105		88	103		dB
PSRR	Power Supply Rejection Ratio	$V_S = 0V, 5V$ to $\pm 18V$	●	92	110		88	109		dB
	Maximum Output Voltage Swing	$R_L = 5k$	●	$\pm 11.0$	$\pm 13.5$		$\pm 11.0$	$\pm 13.5$		V
$I_S$	Supply Current per Amplifier		●		18	28		19	30	$\mu A$

# ELECTRICAL CHARACTERISTICS

$V_S = \pm 15V$ ,  $0^\circ C \leq T_A \leq 70^\circ C$ , unless otherwise noted.

SYMBOL	PARAMETER	CONDITIONS		LT2178AC/LT2179AC			LT2178C/LT2179C			UNITS
				MIN	TYP	MAX	MIN	TYP	MAX	
$V_{OS}$	Input Offset Voltage	LT2178 LT2179	● ●	100 120	480 550		130 150	660 750		$\mu V$ $\mu V$
$\frac{\Delta V_{OS}}{\Delta T}$	Input Offset Voltage Drift	LT2178 (Note 5) LT2179	●	0.6 0.7	1.8 3.0		0.7 0.9	2.5 4.0		$\mu V/^\circ C$ $\mu V/^\circ C$
$I_{OS}$	Input Offset Current		●	0.06	0.35		0.06	0.35		nA
$I_B$	Input Bias Current		●	3	6		3	7		nA
$A_{VOL}$	Large-Signal Voltage Gain	$V_O = \pm 10V$ , $R_L = 50k$	●	200	800		150	750		V/mV
CMRR	Common Mode Rejection Ratio	$V_{CM} = 13V, -15V$	●	94	104		91	104		dB
PSRR	Power Supply Rejection Ratio	$V_S = 5V, 0V$ to $\pm 18V$	●	93	110		91	110		dB
	Maximum Output Voltage Swing	$R_L = 5k$	●	$\pm 11.0$	$\pm 13.6$		$\pm 11.0$	$\pm 13.6$		V
$I_S$	Supply Current per Amplifier		●	17	24		18	28		$\mu A$

The ● denotes specifications which apply over the full operating temperature range.

**Note 1:** Typical parameters are defined as the 60% yield of parameter distributions of individual amplifiers, i.e., out of 100 LT2179s (or 100 LT2178s) typically 240 op amps (or 120) will be better than the indicated specification.

**Note 2:** This parameter is tested on a sample basis only. All noise parameters are tested with  $V_S = \pm 2.5V$ ,  $V_O = 0V$ .

**Note 3:** This parameter is guaranteed by design and is not tested.

**Note 4:** Power supply rejection ratio is measured at the minimum supply voltage. The op amps actually work at 1.7V supply but with a typical offset skew of  $-300\mu V$ .

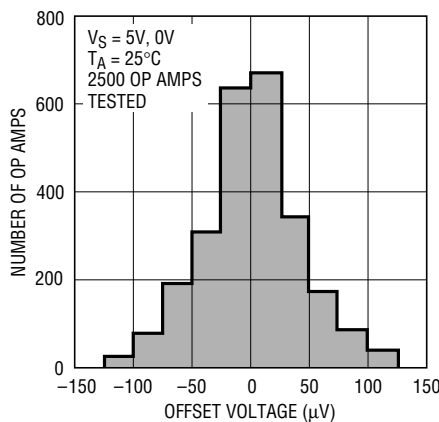
**Note 5:** This parameter is not 100% tested.

**Note 6:** During testing at  $-40^\circ C$ , the 5V power supply turn-on time is less than 0.5s.

**Note 7:** The LT2178C/LT2179C are designed, characterized and expected to meet the industrial temperature limits, but are not tested at  $-40^\circ C$  and  $85^\circ C$ . I-grade parts are guaranteed.

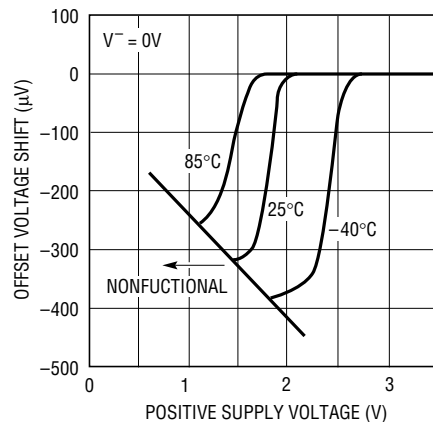
# TYPICAL PERFORMANCE CHARACTERISTICS

**Distribution of Input Offset Voltage**



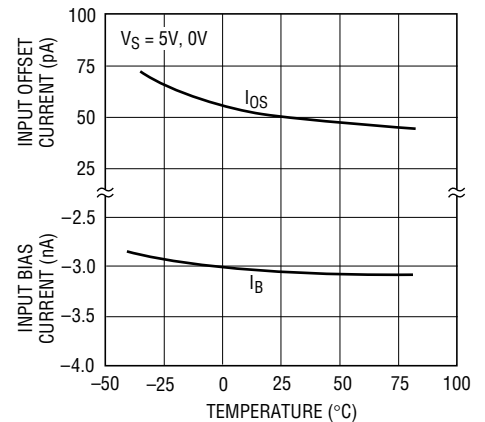
LT2178/79 • TPC01

**Minimum Supply Voltage**



LT2178/79 • TPC02

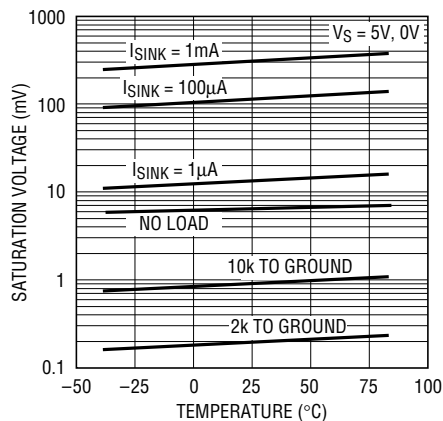
**Input Bias and Offset Currents vs Temperature**



LT2178/79 • TPC03

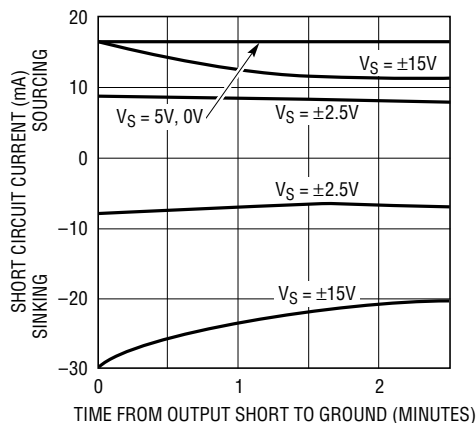
# TYPICAL PERFORMANCE CHARACTERISTICS

**Output Saturation vs Temperature vs Sink Current**



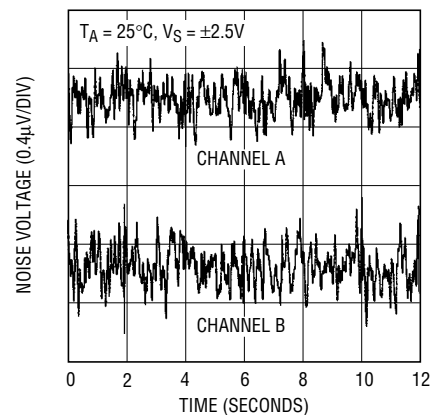
LT2178/79 • TPC04

**Short-Circuit Current**



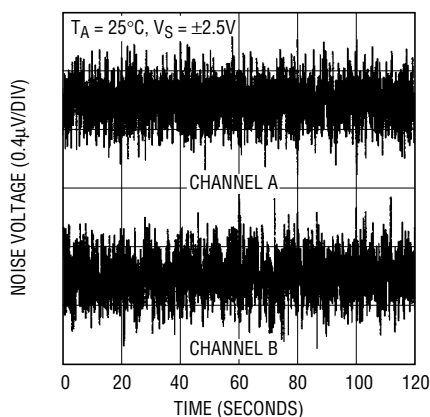
LT2178/79 • TPC05

**0.1Hz to 10Hz Noise**



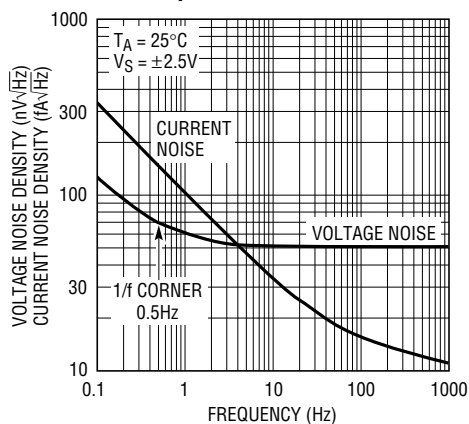
LT2178/79 • TPC06

**0.01Hz to 10Hz Noise**



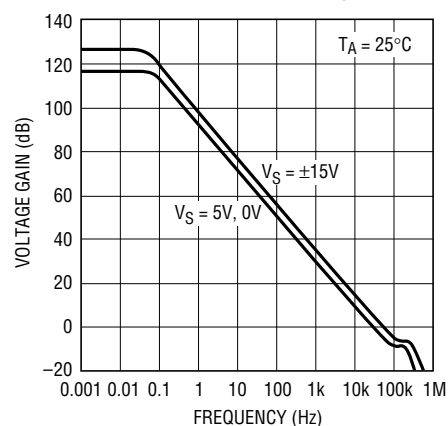
LT2178/79 • TPC07

**Noise Spectrum**



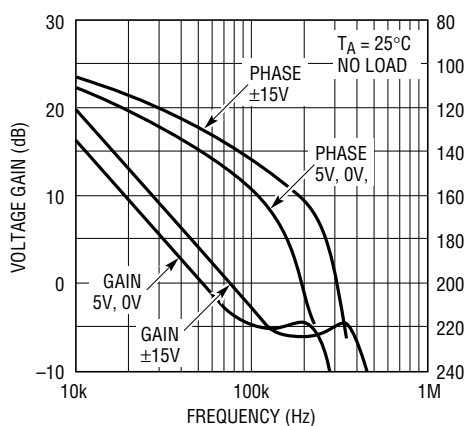
LT2178/79 • TPC08

**Voltage Gain vs Frequency**



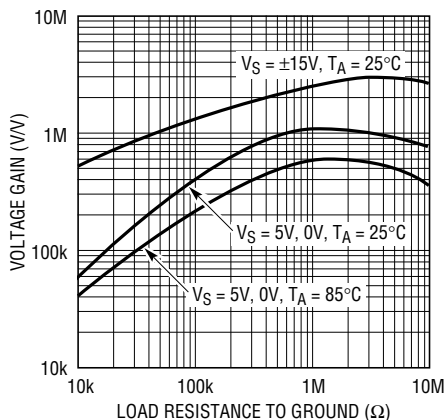
LT2178/79 • TPC09

**Gain, Phase vs Frequency**



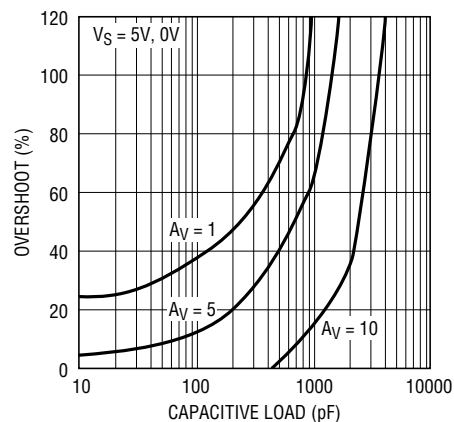
LT2178/79 • TPC10

**Voltage Gain vs Load Resistance**



LT2178/79 • TPC11

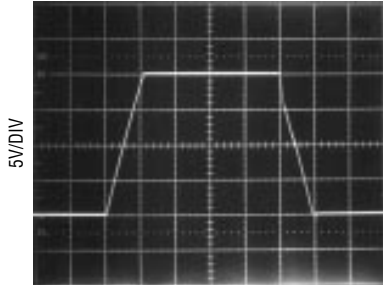
**Capacitive Load Handling**



LT2078/79 • TPC12

# TYPICAL PERFORMANCE CHARACTERISTICS

**Large-Signal Transient Response**  
 $V_S = \pm 15V$



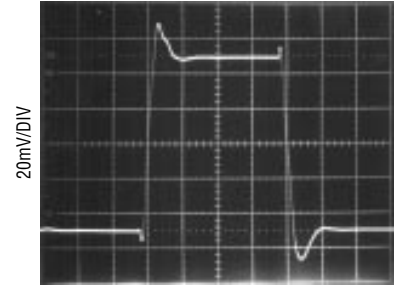
$A_V = 1$   
 $C_L = 12pF$   
500µs/DIV  
LT2178/79 • TPC13

**Large-Signal Transient Response**  
 $V_S = 5V, 0V$



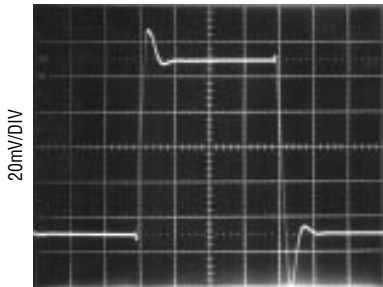
$A_V = 1$   
 $C_L = 12pF$   
INPUT PULSE = 0V TO 3.8V  
100µs/DIV  
LT2178/79 • TPC14

**Small-Signal Transient Response**  
 $V_S = \pm 2.5V$



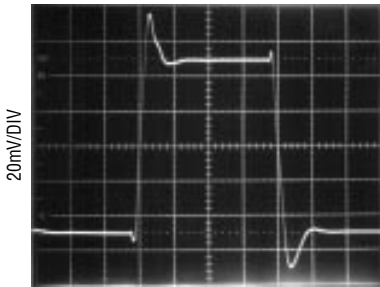
$A_V = 1$   
 $C_L = 12pF$   
20µs/DIV  
LT2178/79 • TPC15

**Small-Signal Transient Response**  
 $V_S = \pm 15V$



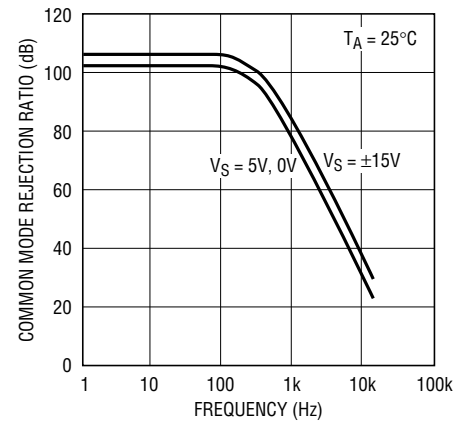
$A_V = 1$   
 $C_L = 12pF$   
20µs/DIV  
LT2178/79 • TPC16

**Small-Signal Transient Response**  
 $V_S = 5V, 0V$



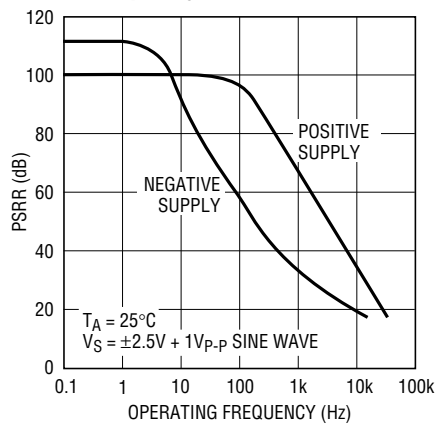
$A_V = 1$   
 $C_L = 12pF$   
INPUT PULSE = 50mV TO 150mV  
20µs/DIV  
LT2178/79 • TPC17

**Common Mode Rejection Ratio vs Frequency**



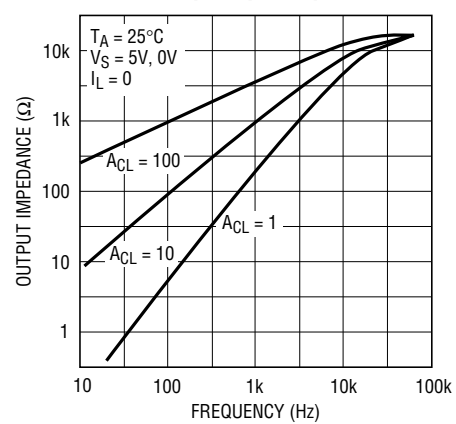
LT2178/79 • TPC18

**Power Supply Rejection Ratio vs Frequency**



LT2178/79 • TPC19

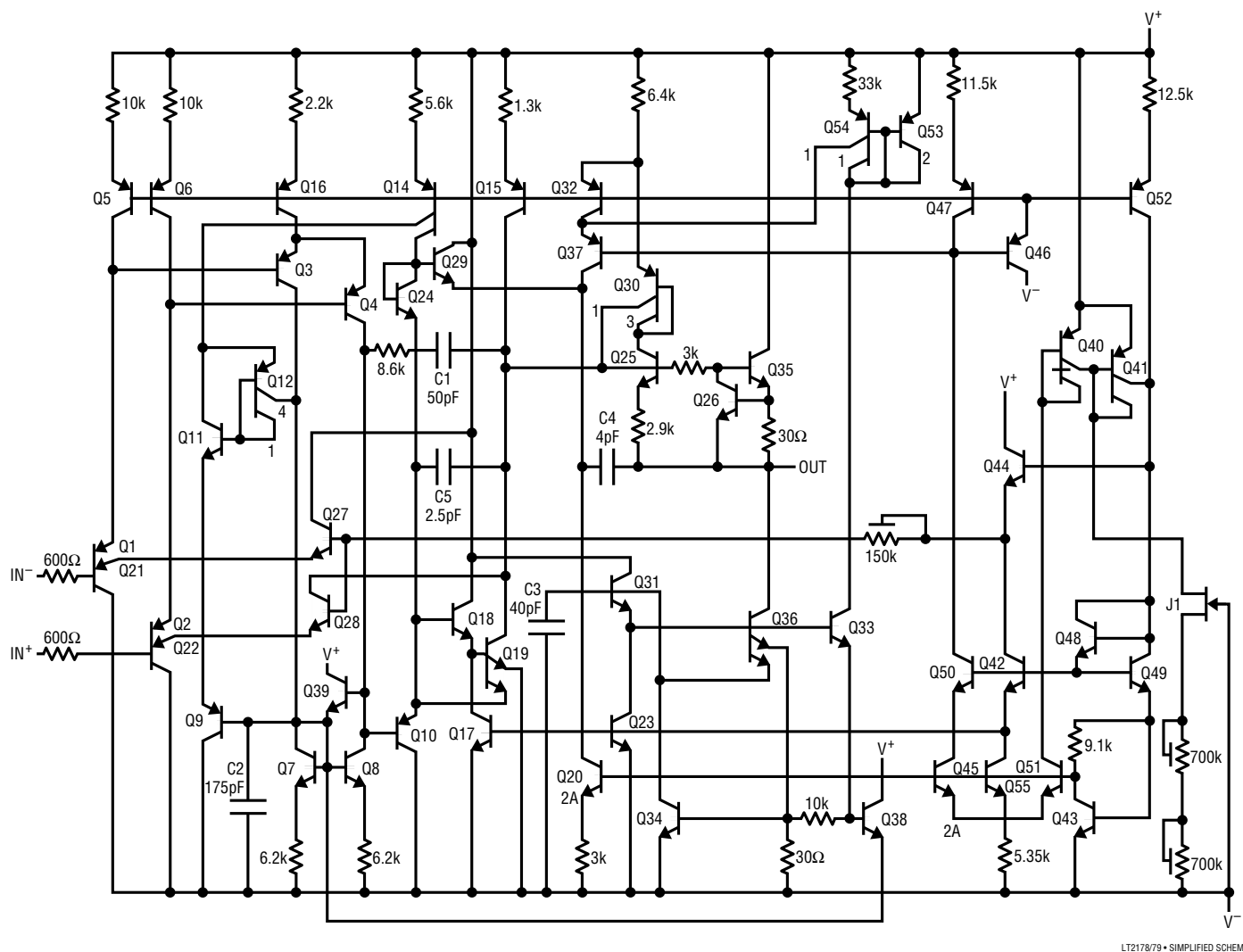
**Closed Loop Output Impedance**



LT2178/79 • TPC20

# SIMPLIFIED SCHEMATIC

1/2 LT2178  
1/4 LT2179



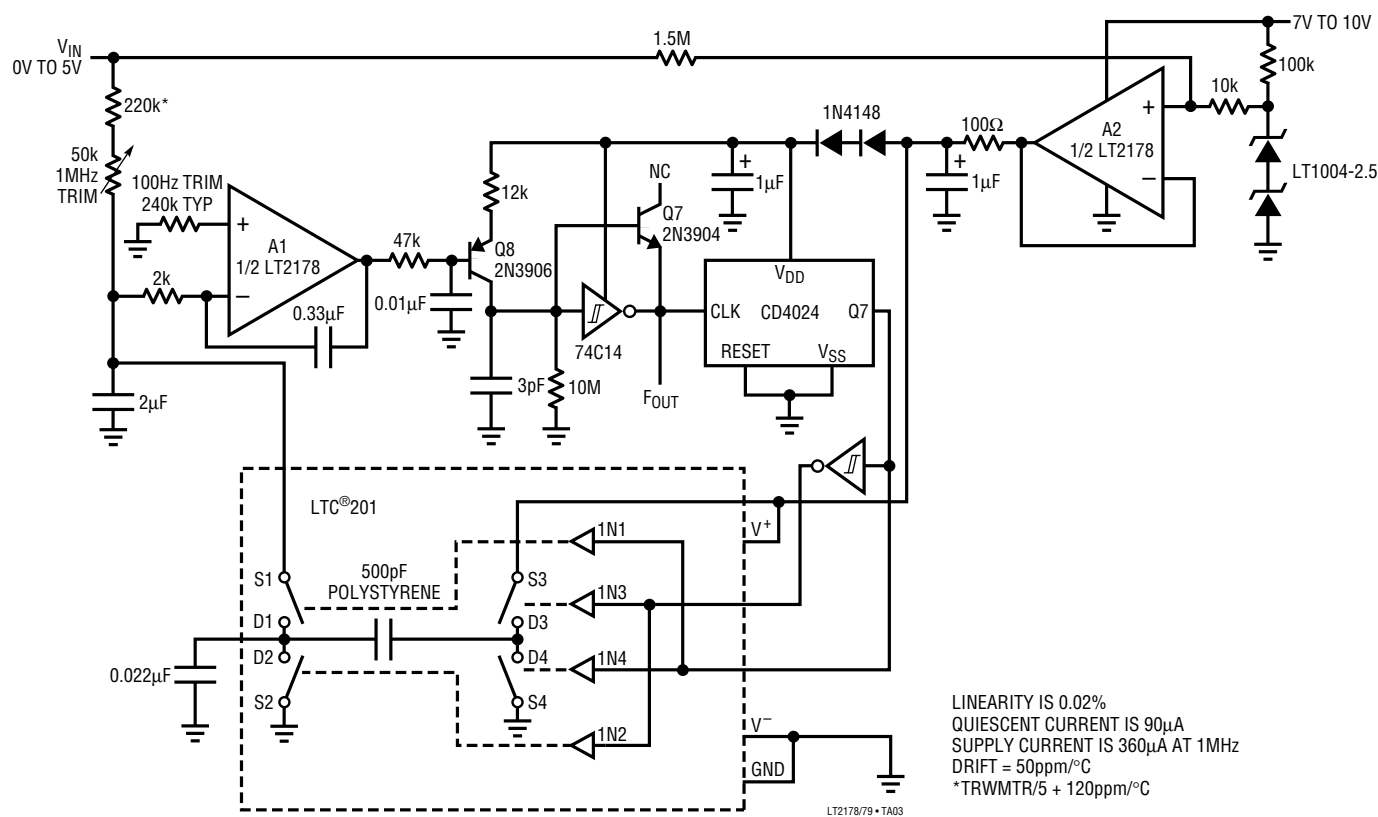


## APPLICATIONS INFORMATION

Please see the LT2078/LT2079 data sheet for applications information. All comments relating to specifications, single

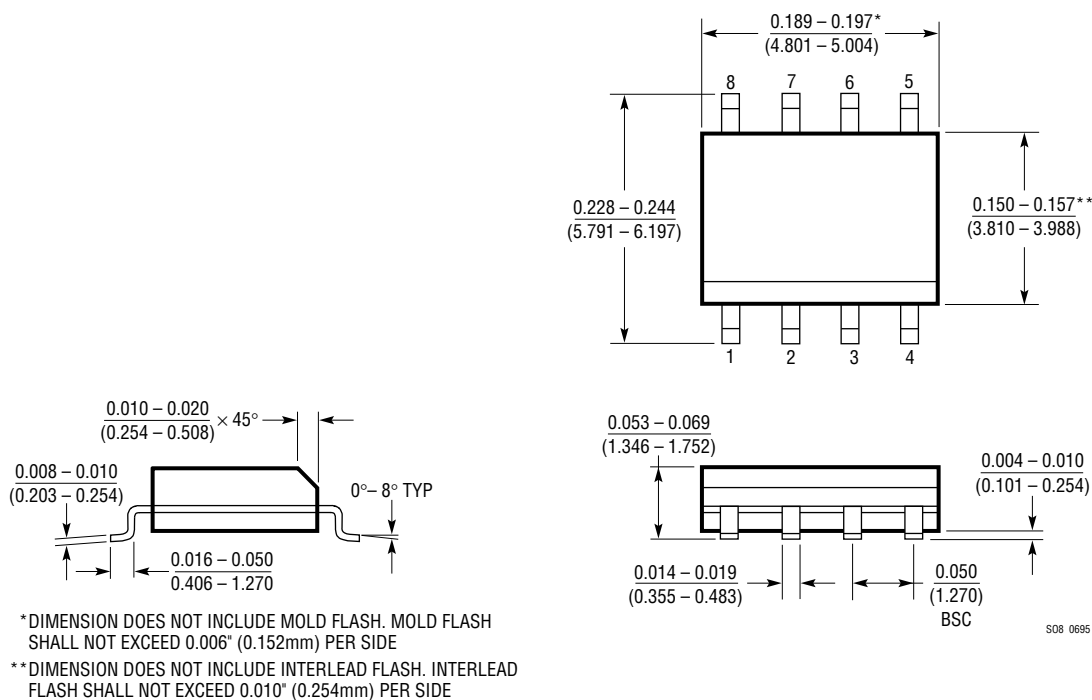
supply operation and phase reversal protection are directly applicable to the LT2178/LT2179.

### Micropower 100Hz to 1MHz V-to-F Converter



# PACKAGE DESCRIPTION Dimensions in inches (millimeters) unless otherwise noted.

## S8 Package 8-Lead Plastic Small Outline (Narrow 0.150) (LTC DWG # 05-08-1610)

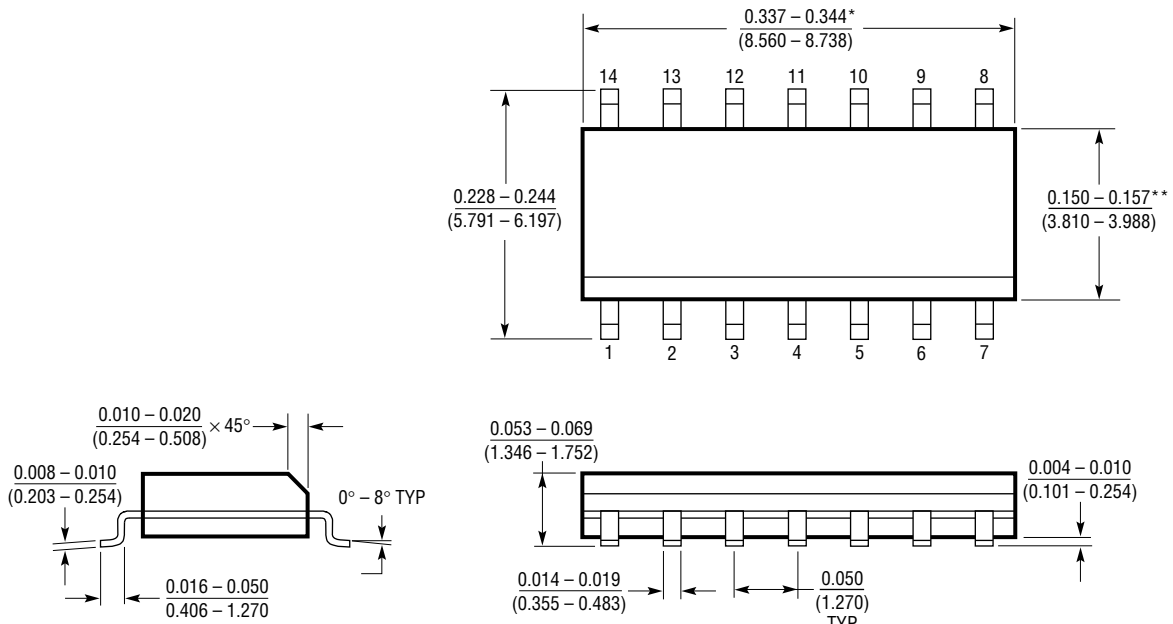


S08 0695

# PACKAGE DESCRIPTION

Dimensions in inches (millimeters) unless otherwise noted.

## S Package 14-Lead Plastic Small Outline (Narrow 0.150) (LTC DWG # 05-08-1610)



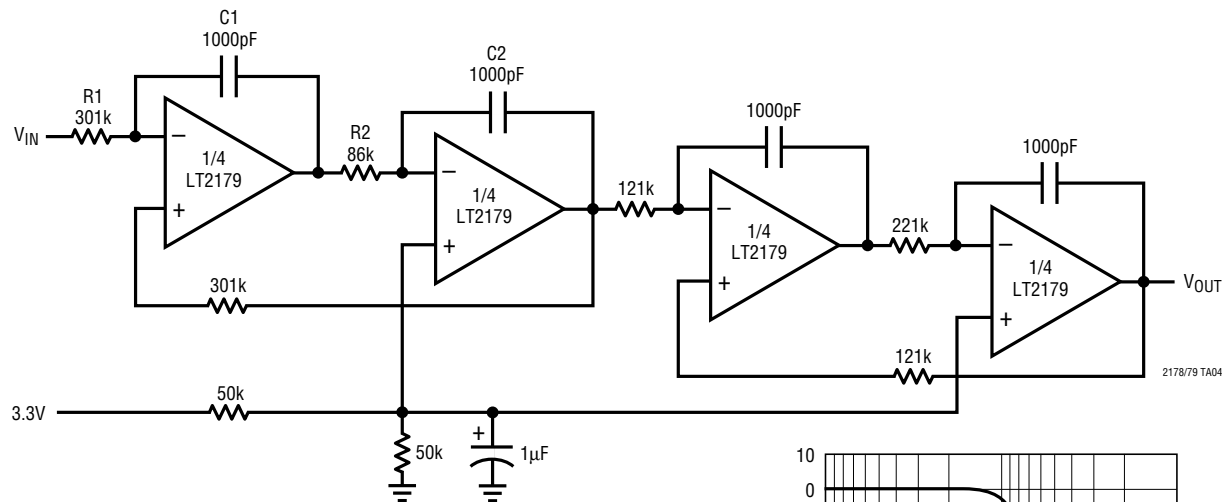
\* DIMENSION DOES NOT INCLUDE MOLD FLASH. MOLD FLASH SHALL NOT EXCEED 0.006" (0.152mm) PER SIDE

\*\* DIMENSION DOES NOT INCLUDE INTERLEAD FLASH. INTERLEAD FLASH SHALL NOT EXCEED 0.010" (0.254mm) PER SIDE

S14 0695

TYPICAL APPLICATION

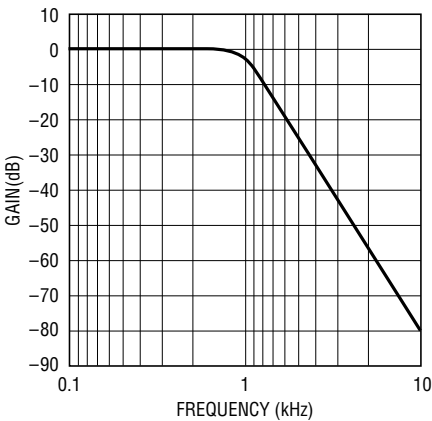
Single Supply, 1kHz, 4th Order Butterworth Lowpass Filter



12-BIT ACCURATE SIGNAL RANGE FROM 6mV TO 1.8V ON 3.3V SINGLE SUPPLY.  
MAXIMUM OUTPUT OFFSET ERROR IS 448μV.

FOR EACH 2ND ORDER SECTION:

$$W_0^2 = \frac{1}{C1C2R1R2}$$
$$R1 = \frac{1}{W_0QC1}$$
$$R2 = \frac{Q}{W_0C2}$$



LT2178/79 • TA04

RELATED PARTS

PART NUMBER	DESCRIPTION	COMMENTS
LT1078/LT1079	Dual/Quad 55μA Max, Single Supply Precision Op Amps	70μV V <sub>OS</sub> Max and 2.5μV/°C Drift Max, 200kHz BBW, 0.07V/μs Slew Rate, Input/Output Common Mode Includes Ground
LT1211/LT1212	14MHz, 7V/μs Single Supply Dual and Quad Precision Op Amps	275μV V <sub>OS</sub> Max, 6μV/°C Drift Max Input Voltage Range Includes Ground
LT1490/LT1491	Dual/ Quad Micropower Rail-to-Rail Input and Output Op Amps	Single Supply Input Range: -0.4V to 44V, Micropower 50μA Amplifier, Rail-to-Rail Input and Output, 200kHz GBW
LT2078/LT2079	Dual/Quad 55μA Max, Single Supply Precision Op Amps	70μV V <sub>OS</sub> Max and 2.5μV/°C Drift Max, 200kHz BBW, 0.07V/μs Slew Rate, Input/Output Common Mode Includes Ground Surface Mount Standard Pinout