180MHz, 350V/μs Rail-to-Rail Input and Output Low Distortion Op Amp

January 2000

FEATURES

- **–3dB Bandwidth: 320MHz, $A_V = 1$**
- **Gain-Bandwidth Product: 180MHz, $A_V \geq 10$**
- **Slew Rate: 350V/μs**
- **Wide Supply Range: 2.5V to 12.6V**
- **Large Output Current: 85mA**
- **Low Distortion, 5MHz: –90dBc**
- Input Common Mode Range Includes Both Rails
- Output Swings Rail-to-Rail
- Input Offset Voltage, Rail-to-Rail: 2.5mV Max
- Common Mode Rejection: 89dB Typ
- Power Supply Rejection: 87dB Typ
- Open-Loop Gain: 100V/mV Typ
- Shutdown Pin
- 8-Pin SO-8 Package
- Operating Temperature Range –40°C to 85°C

APPLICATIONS

- Active Filters
- Rail-to-Rail Buffer Amplifiers
- Driving A/D Converters
- Low Voltage Signal Processing
- Video Line Driver

DESCRIPTION

The LT®1809 is a low distortion rail-to-rail input and output op amp with a 350V/μs slew rate. The amplifier has a –3dB bandwidth of 320MHz at unity-gain, a gain-bandwidth product of 180MHz ($A_V \geq 10$) and an 85mA output current to fit the needs of low voltage, high performance signal conditioning systems.

The LT1809 has an input range that includes both supply rails and an output that swings within 20mV of either supply rail to maximize the signal dynamic range in low supply applications.

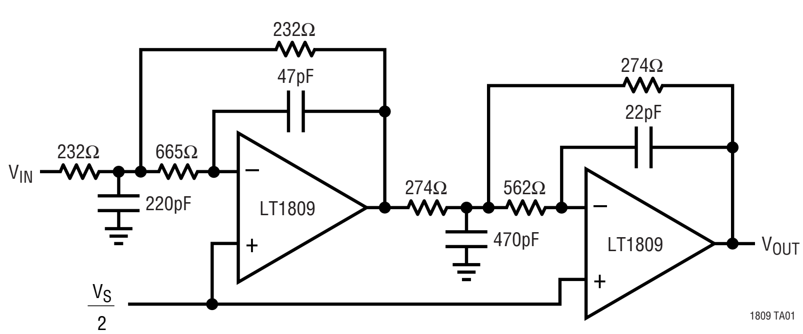
The LT1809 has very low distortion (–90dBc) up to 5MHz that allows it to be used in high performance data acquisition systems.

The LT1809 maintains its performance for supplies from 2.5V to 12.6V and is specified at 3V, 5V and ±5V supplies. The inputs can be driven beyond the supplies without damage or phase reversal of the output.

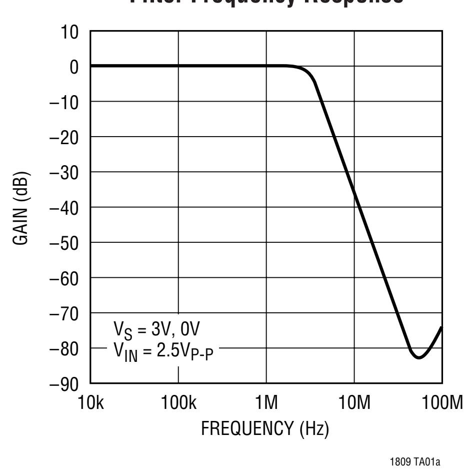
The LT1809 is available in the 8-pin SO package with the standard op amp pinout. This device can be used as a plug-in replacement for many op amps to improve input/output range and performance.

TYPICAL APPLICATION

Single 3V Supply, 4MHz, 4th Order Butterworth Filter



Filter Frequency Response



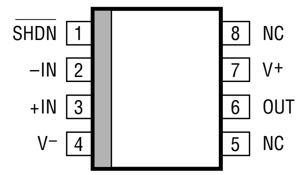
ABSOLUTE MAXIMUM RATINGS

(Note 1)

Total Supply Voltage (V^+ to V^-) 12.6V
Input Voltage (Note 2) .... $\pm V_S$
Input Current (Note 2) .... ±10mA
Output Short-Circuit Duration (Note 3) .... Indefinite
Operating Temperature Range (Note 4) .. −40°C to 85°C
Specified Temperature Range (Note 5) ... −40°C to 85°C
Junction Temperature .... 150°C
Storage Temperature Range .... −65°C to 150°C
Lead Temperature (Soldering, 10 sec) .... 300°C

PACKAGE/ORDER INFORMATION

TOP VIEW



S8 PACKAGE
8-LEAD PLASTIC SO

$T_{JMAX} = 150°C, \theta_{JA} = 190°C/W$

ORDER PART NUMBER	S8 PART MARKING
LT1809CS8	1809
LT1809IS8	1809I

Consult factory for Military grade parts.

ELECTRICAL CHARACTERISTICS

T_A = 25°C. V_S = 5V, 0V; V_S = 3V, 0V; $V_{\overline{SHDN}}$ = open; $V_{CM} = V_{OUT}$ = half supply unless otherwise noted.

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
V_{OS}	Input Offset Voltage	$V_{CM} = V^+$ $V_{CM} = V^-$		0.6 0.6	2.5 2.5	mV mV
ΔV_{OS}	Input Offset Shift	$V_{CM} = V^-$ to V^+		0.3	1.75	mV
I_B	Input Bias Current	$V_{CM} = V^+$ $V_{CM} = V^-$	 −27.5	1.8 −13	8	μA μA
ΔI_B	Input Bias Current Shift	$V_{CM} = V^-$ to V^+		11.8	35.5	μA
I_{OS}	Input Offset Current	$V_{CM} = V^+$ $V_{CM} = V^-$		0.05 0.2	1.2 4	μA μA
ΔI_{OS}	Input Offset Current Shift	$V_{CM} = V^-$ to V^+		0.25	5.2	μA
e_n	Input Noise Voltage Density	f = 10kHz		16		$nV/\sqrt{Hz}$
i_n	Input Noise Current Density	f = 10kHz		5		$pA/\sqrt{Hz}$
C_{IN}	Input Capacitance			2		pF
A_{VOL}	Large-Signal Voltage Gain	V_S = 5V, V_O = 0.5V to 4.5V, R_L = 1k V_S = 5V, V_O = 1V to 4V, R_L = 100Ω V_S = 3V, V_O = 0.5V to 2.5V, R_L = 1k	35 4.5 22	90 10 42		V/mV V/mV V/mV
CMRR	Common Mode Rejection Ratio	V_S = 5V, $V_{CM} = V^-$ to V^+ V_S = 3V, $V_{CM} = V^-$ to V^+	69 64	82 78		dB dB
	Input Common Mode Range		V^-		V^+	V
PSRR	Power Supply Rejection Ratio	V_S = 2.5V to 10V, V_{CM} = 0V	73	87		dB
	Minimum Supply Voltage (Note 6)			2.3	2.5	V

ELECTRICAL CHARACTERISTICS

T_A = 25°C. V_S = 5V, 0V; V_S = 3V, 0V; $V_{\overline{SHDN}}$ = open; V_{CM} = V_{OUT} = half supply unless otherwise noted.

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
V_{OL}	Output Voltage Swing LOW (Note 7)	No Load I_{SINK} = 5mA I_{SINK} = 25mA		6 40 150	20 80 300	mV mV mV
V_{OH}	Output Voltage Swing HIGH (Note 7)	No Load I_{SOURCE} = 5mA I_{SOURCE} = 25mA		17 80 300	40 160 500	mV mV mV
I_{SC}	Short-Circuit Current	V_S = 5V V_S = 3V	±50 ±40	±85 ±70		mA mA
I_S	Supply Current			12.5	17	mA
	Disable Supply Current	V_S = 5V, $V_{\overline{SHDN}}$ = 0V V_S = 3V, $V_{\overline{SHDN}}$ = 0V		0.55 0.31	0.8 0.5	mA mA
GBW	Gain-Bandwidth Product	Frequency = 2MHz		160		MHz
SR	Slew Rate	V_S = 5V, A_V = –1, R_L = 1k, V_O = $4V_{P-P}$		300		V/µs
THD	Total Harmonic Distortion	V_S = 5V, A_V = 1, R_L = 1k, V_O = $2V_{P-P}$, f_C = 5MHz		–86		dB
t_S	Settling Time	0.01%, V_S = 5V, V_{STEP} = 2V, A_V = 1, R_L = 1k		40		ns
ΔG	Differential Gain (NTSC)	V_S = 5V, A_V = 2, R_L = 150Ω		0.015		%
Δθ	Differential Phase (NTSC)			0.05		%

The ● denotes the specifications which apply over the 0°C ≤ T_A ≤ 70°C temperature range. V_S = 5V, 0V; V_S = 3V, 0V; $V_{\overline{SHDN}}$ = open; V_{CM} = V_{OUT} = half supply unless otherwise noted.

SYMBOL	PARAMETER	CONDITIONS		MIN	TYP	MAX	UNITS
V_{OS}	Input Offset Voltage	V_{CM} = V^+ V_{CM} = V^-	● ●		1 1	3 3	mV mV
V_{OS} TC	Input Offset Voltage Drift (Note 8)	V_{CM} = V^+ V_{CM} = V^-	● ●		9 9	25 25	µV/°C µV/°C
ΔV_{OS}	Input Offset Voltage Shift	V_{CM} = V^- to V^+	●		0.5	2	mV
I_B	Input Bias Current	V_{CM} = V^+ – 0.1V V_{CM} = V^- + 0.2V	● ●	 –30	2 –14	10	µA µA
ΔI_B	Input Bias Current Shift	V_{CM} = V^- + 0.2V to V^+ – 0.1V	●		12	40	µA
I_{OS}	Input Offset Current	V_{CM} = V^+ – 0.1V V_{CM} = V^- + 0.2V	● ●		0.05 0.40	1.5 4.5	µA µA
ΔI_{OS}	Input Offset Current Shift	V_{CM} = V^- + 0.2V to V^+ – 0.1V	●		0.45	6	µA
A_{VOL}	Large-Signal Voltage Gain	V_S = 5V, V_O = 0.5V to 4.5V, R_L = 1k V_S = 5V, V_O = 1V to 4V, R_L = 100Ω V_S = 3V, V_O = 0.5V to 2.5V, R_L = 1k	● ● ●	25 3.5 16	80 8.5 40		V/mV V/mV V/mV
CMRR	Common Mode Rejection Ratio	V_S = 5V, V_{CM} = V^- to V^+ V_S = 3V, V_{CM} = V^- to V^+	● ●	67.5 63.5	80 75		dB dB
	Input Common Mode Range		●	V^-		V^+	V
PSRR	Power Supply Rejection Ratio	V_S = 2.5V to 10V, V_{CM} = 0V	●	71	83		dB
	Minimum Supply Voltage (Note 6)		●		2.3	2.5	V
V_{OL}	Output Voltage Swing LOW (Note 7)	No Load I_{SINK} = 5mA I_{SINK} = 25mA	● ● ●		8 40 160	25 80 320	mV mV mV

ELECTRICAL CHARACTERISTICS

The ● denotes the specifications which apply over the 0°C ≤ T_A ≤ 70°C temperature range. V_S = 5V, 0V; V_S = 3V, 0V; $V_{\overline{SHDN}}$ = open; V_{CM} = V_{OUT} = half supply unless otherwise noted.

SYMBOL	PARAMETER	CONDITIONS		MIN	TYP	MAX	UNITS
V_{OH}	Output Voltage Swing HIGH (Note 7)	No Load I_{SOURCE} = 5mA I_{SOURCE} = 25mA	● ● ●		50 110 340	100 220 600	mV mV mV
I_{SC}	Short-Circuit Current	V_S = 5V V_S = 3V	● ●	±45 ±35	±75 ±65		mA mA
I_S	Supply Current		●		15	20	mA
	Disable Supply Current	V_S = 5V, $V_{\overline{SHDN}}$ = 0V V_S = 3V, $V_{\overline{SHDN}}$ = 0V	● ●		0.58 0.35	1 0.75	mA mA
GBW	Gain-Bandwidth Product		●		145		MHz
SR	Slew Rate	V_S = 5V, A_V = –1, R_L = 1k, V_O = $4V_{P-P}$	●		250		V/μs

The ● denotes the specifications which apply over the –40°C ≤ T_A ≤ 85°C temperature range. V_S = 5V, 0V; V_S = 3V, 0V; $V_{\overline{SHDN}}$ = open; V_{CM} = V_{OUT} = half supply unless otherwise noted. (Note 5)

SYMBOL	PARAMETER	CONDITIONS		MIN	TYP	MAX	UNITS
Vos	Input Offset Voltage	V_{CM} = V^+ V_{CM} = V^-	● ●		1 1	3.5 3.5	mV mV
Vos TC	Input Offset Voltage Drift (Note 8)	V_{CM} = V^+ V_{CM} = V^-	● ●		9 9	25 25	μV/°C μV/°C
ΔVos	Input Offset Voltage Shift	V_{CM} = V^-	●		0.5	2.25	mV
I_B	Input Bias Current	V_{CM} = V^+ – 0.1V V_{CM} = V^- + 0.2V	● ●	 –35	2 –17	12	μA μA
ΔI_B	Input Bias Current Shift	V_{CM} = V^- + 0.2V to V^+ – 0.1V	●		14	47	μA
I_{OS}	Input Offset Current	V_{CM} = V^+ – 0.1V V_{CM} = V^- + 0.2V	● ●		0.08 0.5	2 6	μA μA
ΔI_{OS}	Input Offset Current Shift	V_{CM} = V^- + 0.2V to V^+ – 0.1V	●		0.58	7.5	μA
A_{VOL}	Large-Signal Voltage Gain	V_S = 5V, V_O = 0.5V to 4.5V, R_L = 1k V_S = 5V, V_O = 1V to 4V, R_L = 100Ω V_S = 3V, V_O = 0.5V to 2.5V, R_L = 1k	● ● ●	20 2.5 12	60 7 35		V/mV V/mV V/mV
CMRR	Common Mode Rejection Ratio	V_S = 5V, V_{CM} = V^- to V^+ V_S = 3V, V_{CM} = V^- to V^+	● ●	66.5 62.5	80 75.5		dB dB
	Input Common Mode Range		●	V^-		V^+	V
PSRR	Power Supply Rejection Ratio	V_S = 2.5V to 10V, V_{CM} = 0V	●	71	83.5		dB
	Minimum Supply Voltage (Note 6)		●		2.3	2.5	V
V_{OL}	Output Voltage Swing LOW (Note 7)	No Load I_{SINK} = 5mA I_{SINK} = 25mA	● ● ●		8 45 170	30 90 340	mV mV mV
V_{OH}	Output Voltage Swing HIGH (Note 7)	No Load I_{SOURCE} = 5mA I_{SOURCE} = 25mA	● ● ●		55 110 350	120 230 620	mV mV mV
I_{SC}	Short-Circuit Current	V_S = 5V V_S = 3V	● ●	±35 ±30	±70 ±60		mA mA
I_S	Supply Current		●		15	21	mA
	Disable Supply Current	V_S = 5V, $V_{\overline{SHDN}}$ = 0V V_S = 3V, $V_{\overline{SHDN}}$ = 0V	● ●		0.58 0.35	1.1 0.85	mA mA

ELECTRICAL CHARACTERISTICS

The ● denotes the specifications which apply over the $-40°C \le T_A \le 85°C$ temperature range. V_S = 5V, 0V; V_S = 3V, 0V; $V_{\overline{SHDN}}$ = open; $V_{CM} = V_{OUT}$ = half supply unless otherwise noted. (Note 5)

SYMBOL	PARAMETER	CONDITIONS		MIN	TYP	MAX	UNITS
GBW	Gain-Bandwidth Product	Frequency = 2MHz	●		140		MHz
SR	Slew Rate	V_S = 5V, A_V = -1, R_L = 1k, V_O = $4V_{P-P}$	●		180		V/µs

T_A = 25°C. V_S = ±5V, $V_{\overline{SHDN}}$ = open, V_{CM} = 0V, V_{OUT} = 0V unless otherwise noted.

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
V_{OS}	Input Offset Voltage	$V_{CM} = V^+$ $V_{CM} = V^-$		0.8 0.8	3 3	mV mV
ΔVos	Input Offset Voltage Shift	$V_{CM} = V^-$ to V^+		0.35	2	mV
I_B	Input Bias Current	$V_{CM} = V^+$ $V_{CM} = V^-$	 −30	2 −12.5	10	µA µA
ΔI_B	Input Bias Current Shift	$V_{CM} = V^-$ to V^+		13.5	42.5	µA
I_{OS}	Input Offset Current	$V_{CM} = V^+$ $V_{CM} = V^-$		0.05 0.4	2 5	µA µA
ΔI_{OS}	Input Offset Current Shift	$V_{CM} = V^-$ to V^+		0.45	7	µA
e_n	Input Noise Voltage Density	f = 10kHz		16		$nV/\sqrt{Hz}$
i_n	Input Noise Current Density	f = 10kHz		5		$pA/\sqrt{Hz}$
C_{in}	Input Capacitance	f = 100kHz		2		pF
A_{VOL}	Large-Signal Voltage Gain	V_O = −4V to 4V, R_L = 1k V_O = −2.5V to 2.5V, R_L = 100Ω	45 5	100 12		V/mV V/mV
CMRR	Common Mode Rejection Ratio	$V_{CM} = V^-$ to V^+	73	89		dB
	Input Common Mode Range		V^-		V^+	V
PSRR	Power Supply Rejection Ratio	V^+ = 2.5V to 10V, V^- = 0V	73	87		dB
V_{OL}	Output Voltage Swing LOW (Note 7)	No Load I_{SINK} = 5mA I_{SINK} = 25mA		8 46 170	30 100 350	mV mV mV
V_{OH}	Output Voltage Swing HIGH (Note 7)	No Load I_{SOURCE} = 5mA I_{SOURCE} = 25mA		30 90 310	60 200 600	mV mV mV
I_{SC}	Short-Circuit Current		±60	±85		mA
I_S	Supply Current			15	20	mA
	Disable Supply Current	$V_{\overline{SHDN}}$ = 0V		0.6	0.9	mA
GBW	Gain-Bandwidth Product	Frequency = 2MHz	120	180		MHz
SR	Slew Rate	A_V = −1, R_L = 1k, V_O = ±4V, Measure at V_O = ±3V	175	350		V/µs
HD	Total Harmonic Distortion	A_V = 1, R_L = 1k, V_O = $2V_{P-P}$, f_C = 5MHz		−90		dB
t_S	Settling Time	0.01%, V_{STEP} = 5V, A_V = 1, R_L = 1k		60		nS
ΔG	Differential Gain (NTSC)	A_V = 2, R_L = 150		0.01		%
Δθ	Differential Phase (NTSC)			0.01		%

ELECTRICAL CHARACTERISTICS

The ● denotes the specifications which apply over the 0°C ≤ T_A ≤ 70°C temperature range. V_S = ±5V, $V_{\overline{SHDN}}$ = open, V_{CM} = 0V, V_{OUT} = 0V unless otherwise noted.

SYMBOL	PARAMETER	CONDITIONS		MIN	TYP	MAX	UNITS
V_{OS}	Input Offset Voltage	$V_{CM} = V^+$ $V_{CM} = V^-$	● ●		1 1	3.25 3.25	mV mV
V_{OS} TC	Input Offset Voltage Drift (Note 8)	$V_{CM} = V^+$ $V_{CM} = V^-$	● ●		10 10	25 25	µV/°C µV/°C
ΔV_{OS}	Input Offset Voltage Shift	$V_{CM} = V^-$ to V^+	●		0.5	2.15	mV
I_B	Input Bias Current	$V_{CM} = V^+ - 0.1V$ $V_{CM} = V^- +0.2V$	● ●	 –37.5	2.5 –15	12.5	µA µA
ΔI_B	Input Bias Current Shift	$V_{CM} = V^- + 0.2V$ to $V^+ - 0.1V$	●		14	50	µA
I_{OS}	Input Offset Current	$V_{CM} = V^+ - 0.1V$ $V_{CM} = V^- + 0.2V$	● ●		0.06 0.5	2.25 6	µA µA
ΔI_{OS}	Input Offset Current Shift	$V_{CM} = V^- + 0.2V$ to $V^+ - 0.1V$	●		0.56	8.25	µA
A_{VOL}	Large-Signal Voltage Gain	V_O = –4V to 4V, R_L = 1k V_O = –2.5V to 2.5V, RL = 100Ω	● ●	35 4	90 10		V/mV V/mV
CMRR	Common Mode Rejection Ratio	$V_{CM} = V^-$ to V^+	●	73.5	86		dB
	Input Common Mode Range		●	V^-		V^+	V
PSRR	Power Supply Rejection Ratio	V^+ = 2.5V to 10V, V^- = 0V	●	71	83		dB
V_{OL}	Output Voltage Swing LOW (Note 7)	No Load I_{SINK} = 5mA I_{SINK} = 25mA	● ● ●		10 45 185	40 100 370	mV mV mV
V_{OH}	Output Voltage Swing HIGH (Note 7)	No Load I_{SOURCE} = 5mA I_{SOURCE} = 25mA	● ● ●		60 110 360	120 220 625	mV mV mV
I_{SC}	Short-Circuit Current		●	±50	±75		mA
I_S	Supply Current		●		17.5	25	mA
	Disable Supply Current	$V_{\overline{SHDN}}$= 0V	●		0.6	1.1	mA
GBW	Gain-Bandwidth Product	Frequency = 2MHz	●	100	170		MHz
SR	Slew Rate	A_V = –1, R_L = 1k, V_O = ±4V, Measure at V_O = ±3V	●	150	300		V/µs

The ● denotes the specifications which apply over the –40°C ≤ T_A ≤ 85°C temperature range. V_S = ±5V, $V_{\overline{SHDN}}$ = open, V_{CM} = 0V, V_{OUT} = 0V unless otherwise noted. (Note 5)

SYMBOL	PARAMETER	CONDITIONS		MIN	TYP	MAX	UNITS
V_{OS}	Input Offset Voltage	$V_{CM} = V^+$ $V_{CM} = V^-$	● ●		1 1	3.75 3.75	mV mV
V_{OS} TC	Input Offset Voltage Drift (Note 8)	$V_{CM} = V^+$ $V_{CM} = V^-$	● ●		10 10	25 25	µV/°C µV/°C
ΔV_{OS}	Input Offset Voltage Shift	$V_{CM} = V^-$ to V^+	●		0.5	2.5	mV
I_B	Input Bias Current	$V_{CM} = V^+ - 0.1V$ $V_{CM} = V^- + 0.2V$	● ●	 –45	2.8 –17	14	µA µA
ΔI_B	Input Bias Current Shift	$V_{CM} = V^- + 0.2V$ to $V^+ - 0.1V$	●		19.8	59	µA

ELECTRICAL CHARACTERISTICS

The ● denotes the specifications which apply over the –40°C ≤ T_A ≤ 85°C temperature range. V_S = ±5V, $V_{\overline{SHDN}}$ = open, V_{CM} = 0V, V_{OUT} = 0V unless otherwise noted. (Note 3)

SYMBOL	PARAMETER	CONDITIONS		MIN	TYP	MAX	UNITS
I_{OS}	Input Offset Current	$V_{CM} = V^+ – 0.1V$ $V_{CM} = V^- + 0.2V$	● ●		0.08 0.6	2.5 8	µA µA
ΔI_{OS}	Input Offset Current Shift	$V_{CM} = V^- + 0.2V$ to $V^+ – 0.1V$	●		0.68	10.5	µA
A_{VOL}	Large-Signal Voltage Gain	V_O = –4V to 4V, R_L = 1k V_O = –2.5V to 2.5V, R_L = 100Ω	● ●	25 3	80 10		V/mV V/mV
CMRR	Common Mode Rejection Ratio	$V_{CM} = V^-$ to V^+	●	72	86		dB
	Input Common Mode Range		●	V^-		V^+	V
PSRR	Power Supply Rejection Ratio	V^+ = 2.5V to 10V, V^- = 0V	●	71	83.5		dB
V_{OL}	Output Voltage Swing LOW (Note 7)	No Load I_{SINK} = 5mA I_{SINK} = 25mA	● ● ●		10 50 200	45 100 400	mV mV mV
V_{OH}	Output Voltage Swing HIGH (Note 7)	No Load I_{SOURCE} = 5mA I_{SOURCE} = 25mA	● ● ●		70 115 360	140 240 650	mV mV mV
I_{SC}	Short-Circuit Current		●	±40	±75		mA
I_S	Supply Current		●		19	25	mA
	Disable Supply Current	$V_{\overline{SHDN}}$ = 0V	●		0.65	1.15	mA
GBW	Gain-Bandwidth Product	Frequency = 2MHz	●	90	160		MHz
SR	Slew Rate	A_V = –1, R_L = 1k, V_O = ±4V, Measure at V_O = ±2V	●	110	220		V/µs

Note 1: Absolute Maximum Ratings are those values beyond which the life of a device may be impaired.

Note 2: The inputs are protected by back-to-back diodes. If the differential input voltage exceeds 1.4V, the input current should be limited to less than 10mA.

Note 3: A heat sink may be required to keep the junction temperature below the absolute maximum rating when the output is shorted indefinitely.

Note 4: The LT1809C/LT1809I are guaranteed functional over the operating temperature range of –40°C and 85°C.

Note 5: The LT1809C is guaranteed to meet specified performance from 0°C to 70°C. The LT1809C is designed, characterized and expected to meet specified performance from –40°C to 85°C but is not tested or QA sampled at these temperatures. The LT1809I is guaranteed to meet specified performance from –40°C to 85°C.

Note 6: Minimum supply voltage is guaranteed by power supply rejection ratio test.

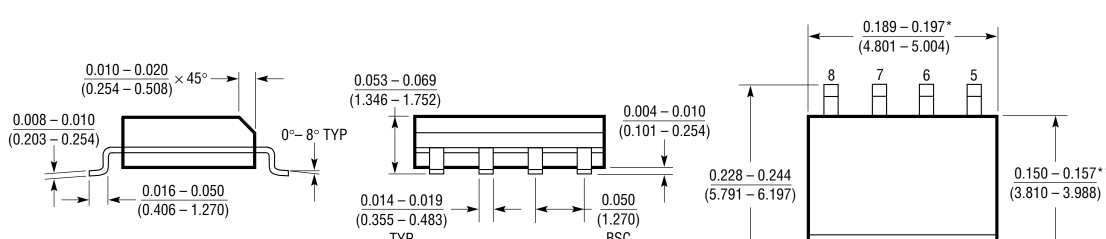
Note 7: Output voltage swings are measured between the output and power supply rails.

Note 8: This parameter is not 100% tested.

PACKAGE DESCRIPTION

Dimensions in inches (millimeters) unless otherwise noted.

S8 Package
8-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

TYPICAL APPLICATION

Single Supply Video Line Driver

The LT1809 is a wideband rail-to-rail op amp with high output current that allows it to drive video signals in low supply applications. Figure 1 depicts a single supply video line driver with AC coupling to minimize the quiescent power dissipation. Resistors R1 and R2 are used to level-shift the input and output to provide the largest signal swing. The gain of two is set up with R3 and R4 to restore the signal at V_{OUT} which is attenuated by 6dB due to the matching of the 75Ω line with the back-terminated resistor, R5. The back termination will eliminate any reflection of the signal that comes from the load. The input termination resistor, R_T, is optional—it is used only if matching of the incoming line is necessary. The values of C1, C2 and C3 are selected to minimize the droop of the luminance signal. In some less stringent requirements, the value of capacitors could be reduced.

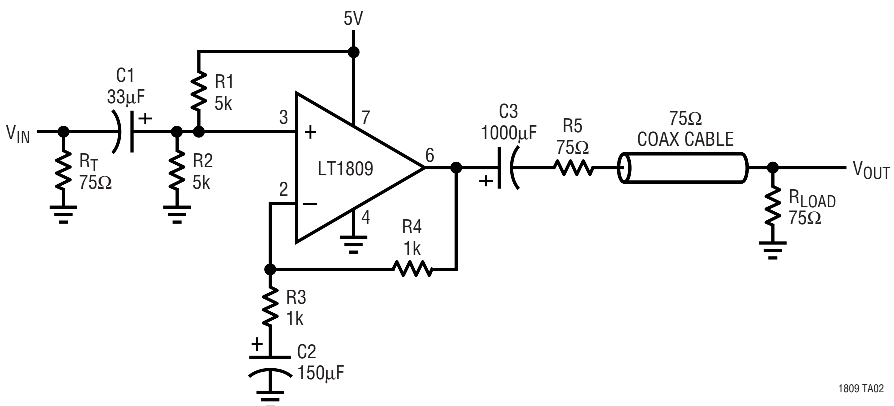


Figure 1. Single Supply Video Line Driver

RELATED PARTS

PART NUMBER	DESCRIPTION	COMMENTS
LT1632/LT1633	Dual/Quad 45MHz, 45V/µs Rail-to-Rail Input and Output Op Amps	High DC Accuracy, 1.35mV $V_{OS(MAX)}$, 70mA Output Current, Max Supply Current 5.2mA per Amplifier
LT1630/LT1631	Dual/Quad 30MHz, 10V/µs Rail-to-Rail Input and Output Op Amps	High DC Accuracy, 525µV $V_{OS(MAX)}$, 70mA Output Current, Max Supply Current 4.4mA per Amplifier
LT1215/LT1216	Dual/Quad 23MHz, 50V/µs Single Supply Precision Op Amps	Input Common Mode Includes Ground, 450µV $V_{OS(MAX)}$, 6µV/°C Max Drift, Max Supply Current 6.6mA per Amplifier

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