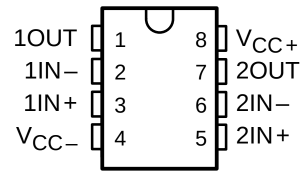
- **Wide Range of Supply Voltages; Single Supply . . . 3 V to 36 V, or Dual Supplies**
- **Class AB Output Stage**
- **High-Impedance N-Channel-JFET Input Stage . . . 10^{12} Ω Typ**
- **Internal Frequency Compensation**
- **Short-Circuit Protection**
- **Input Common Mode Includes V_{CC-}**
- **Low Input Offset Current . . . 50 pA**
- **Low Input Bias Current . . . 200 pA Typ**

PS PACKAGE
(TOP VIEW)



description

The TL092 JFET-input operational amplifier is similar in performance to the MC3403 family, but with much higher input impedance derived from a FET input stage. The N-channel-JFET input stage allows a common-mode input voltage range that includes the negative supply voltage and offers a typical input impedance of 10^{12} Ω, a typical input offset current of 50 pA, and a typical input bias current of 200 pA. This device is designed to operate from a single supply over a range of 3 V to 36 V. Operation from split supplies also is possible, provided the difference between the two supplies is 3 V to 36 V. Output voltage range is from V_{CC-} to V_{CC+} – 1.3 V, with a load resistor to V_{CC-}.

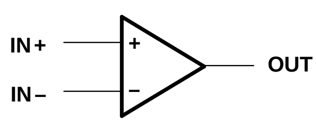
The TL092 is characterized for operation from 0°C to 70°C.

AVAILABLE OPTIONS

T_A	PACKAGED DEVICE PLASTIC SMALL OUTLINE (PS)
0°C to 70°C	TL092CPSR

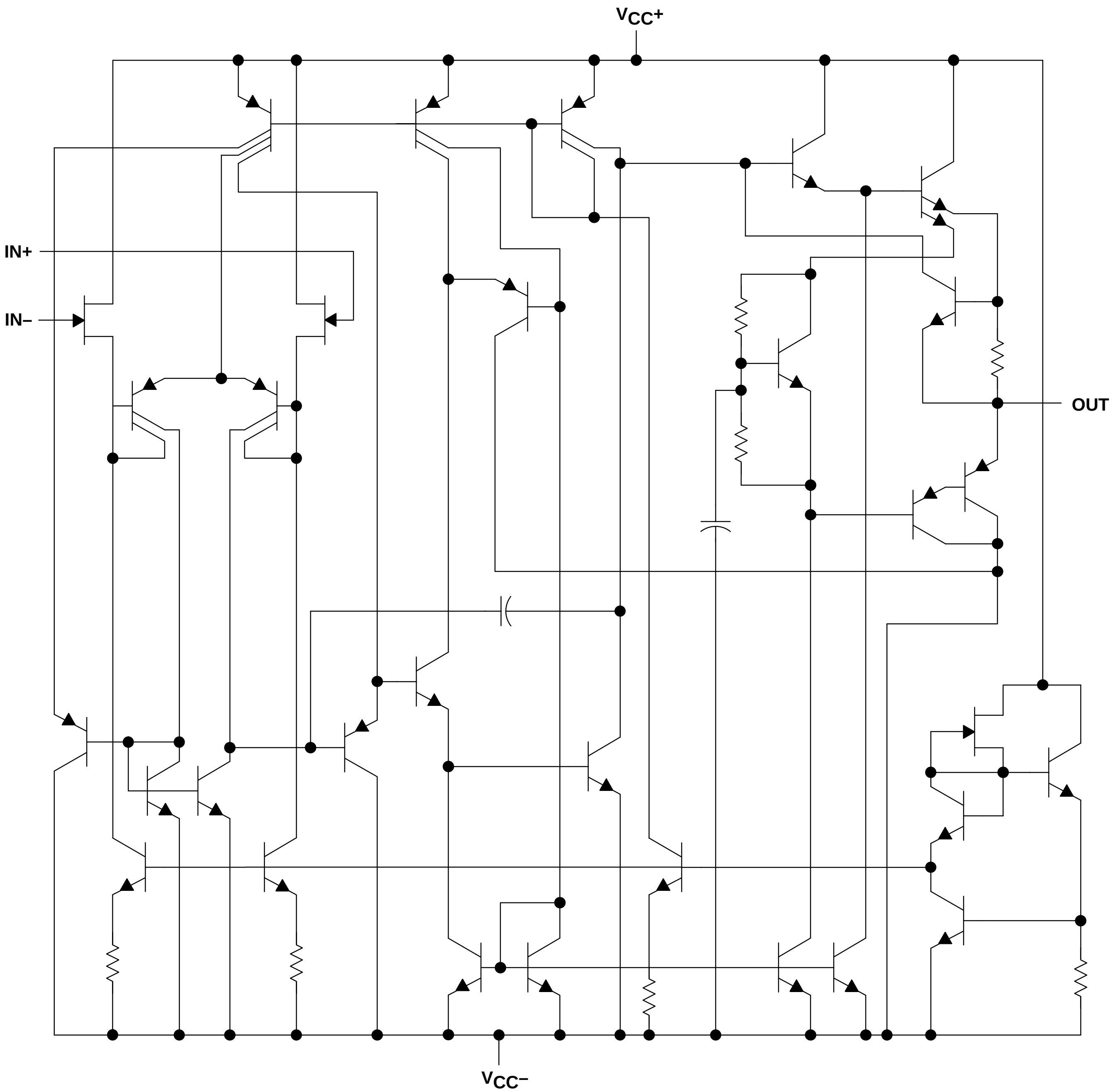
The PS package is only available taped and reeled. Add the suffix R to device type for ordering (e.g., TL092CPSR).

symbol



Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

schematic



absolute maximum ratings over operating free-air temperature range (unless otherwise noted)†

Supply voltage: V_{CC+} (see Note 1) . . . . 18 V
V_{CC-} (see Note 1) . . . . –18 V
V_{CC+} with respect to V_{CC-} . . . . 36 V
Differential input voltage, V_{ID} (see Note 2) . . . . ±36 V
Input voltage, V_I (see Notes 1 and 3) . . . . ±18 V
Package thermal impedance, θ_{JA} (see Notes 4 and 5) . . . . 95°C/W
Lead temperature 1.6 mm (1/16 inch) from case for 10 seconds . . . . 260°C
Storage temperature range, T_{stg} . . . . –65°C to 150°C

† Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

NOTES:
1. All voltage values, except differential voltages, are with respect to the midpoint between V_{CC+} and V_{CC-}.
2. Differential voltages are at the noninverting input with respect to the inverting input.
3. Neither input must ever be more positive than V_{CC+} or more negative than V_{CC-} – 0.3 V.
4. Maximum power dissipation is a function of T_J(max), θ_{JA}, and T_A. The maximum allowable power dissipation at any allowable ambient temperature is $P_D = (T_J(max) - T_A)/\theta_{JA}$. Operating at the absolute maximum T_J of 150°C can impact reliability.
5. The package thermal impedance is calculated in accordance with JESD 51-7.

recommended operating conditions

		MIN	MAX	UNIT
$V_{CC\pm}$	Supply voltage	3	36	V
T_A	Operating free-air temperature range	0	70	°C

electrical characteristics at specified free-air temperature, $V_{CC\pm} = \pm15$ V (all characteristics are specified under open-loop conditions, unless otherwise noted)

PARAMETER		TEST CONDITIONS		T_A	MIN	TYP†	MAX	UNIT
V_{IO}	Input offset voltage	R_S = 50 Ω		25°C		5	15	mV
				Full range			20	
αV_{IO}	Temperature coefficient of input offset voltage			25°C		10		μV/°C
I_{IO}‡	Input offset current			25°C		50	200	pA
				Full range			5	nA
I_{IB}‡	Input bias current			25°C		200	400	pA
				Full range			10	nA
V_{ICR}	Common-mode input voltage range			25°C	V_{CC-} to 12	V_{CC-} to 13		V
$V_{O(PP)}$	Peak output voltage swing	R_L = 2 kΩ		25°C	±10	±13		V
		R_L = 10 kΩ		25°C	±12	±13.5		
		R_L = 2 kΩ		Full range	±10			
A_{VD}	Large-signal differential voltage amplification	R_L = 2 kΩ,	V_O = ±10 V	25°C	20	200		V/mV
				Full range	15			
B_{OM}	Maximum output swing bandwidth	R_L = 2 kΩ, A_{VD} = 1,	$V_{O(PP)}$ = 20 V, THD < 5%	25°C		9		kHz
B_1	Unity gain bandwidth	R_L = 10 kΩ,	V_O = 50 mV	25°C		1		MHz
ϕ_m	Phase margin	R_L = 2 kΩ,	C_L = 200 pF	25°C		60°		
r_i	Input resistance	f = 20 Hz		25°C		10^{12}		Ω
r_o	Output resistance	f = 20 Hz		25°C		75		Ω
CMRR	Common-mode rejection ratio	R_S = 50 Ω,	$V_{IC} = V_{ICR}$	25°C	70	90		dB
k_{SVR}	Supply-voltage rejection ratio ($\Delta V_{CC}/\Delta V_{IO}$)	R_S = 50 Ω,	$V_{CC\pm}$ = ±3 V to ±15 V	25°C	75	90		dB
I_{OS}	Short-circuit output current			25°C		40		mA
I_{CC}	Supply current (per amplifier)	V_O = 0,	No load	25°C		1.5	2.5	mA

† All typical values are at T_A = 25°C.
‡ Input bias currents of a FET-input operational amplifier are normal junction reverse currents, which are temperature sensitive. Pulse techniques that maintain the junction temperature as close to the ambient temperature as possible must be used.

electrical characteristics at specified free-air temperature, V_{CC+} = 5 V, V_{CC-} = 0 V, T_A = 25°C (unless otherwise noted)

PARAMETER		TEST CONDITIONS		MIN	TYP†	MAX	UNIT
V_{IO}	Input offset voltage	R_S = 50 Ω,	V_O = 2.5 V		5	15	mV
I_{IO}	Input offset current	V_O = 2.5 V			50	200	pA
I_{IB}	Input bias current	V_O = 2.5 V			200	400	pA
$V_{O(PP)}$	Peak output voltage swing	R_L = 10 kΩ		3.3	3.5		V
		R_L = 10 kΩ,	V_{CC+} = 5 V to 30 V	V_{CC+}–1.7			V
A_{VD}	Large-signal differential voltage amplification	R_L = 2 kΩ,	ΔV_O =1.6 V	20	200		V/mV
k_{SVR}	Supply-voltage rejection ratio ($\Delta V_{CC}/\Delta V_{IO}$)	R_S = 50 Ω,	$V_{CC\pm}$ = ±3 V to ±15 V	75			dB
I_{CC}	Supply current (per amplifier)	V_O = 2.5 V,	No load		1.5	2.5	mA
V_{O1}/V_{O2}	Channel separation	f = 1 kHz to 20 kHz			120		dB

† All typical values are at T_A = 25°C.

operating characteristics, $V_{CC\pm}$ = ±15 V, T_A = 25°C

PARAMETER		TEST CONDITIONS			MIN	TYP	MAX	UNIT
SR	Slew rate at unity gain	V_I = ±10 V (see Figure 1),	C_L = 100 pF,	R_L = 2 kΩ		0.6		V/μs
t_r	Rise time	ΔV_O = 50 mV (see Figure 1),	C_L = 100 pF,	R_L = 2 kΩ		0.2		μs
t_f	Fall time	ΔV_O = 50 mV (see Figure 1),	C_L = 100 pF,	R_L = 2 kΩ		0.2		μs
	Overshoot factor	ΔV_O = 50 mV (see Figure 1),	C_L = 100 pF,	R_L = 2 kΩ		20%		
	Crossover distortion	V_{IPP} = 30 mV, $V_{O(PP)}$ = 2 V,	f = 10 kHz			1%		
V_n	Equivalent input noise voltage	R_S = 100 Ω,	f = 1 kHz			34		nV/√Hz

PARAMETER MEASUREMENT INFORMATION

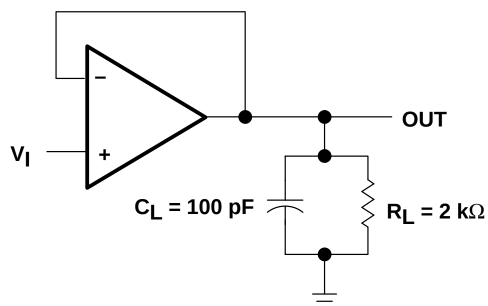
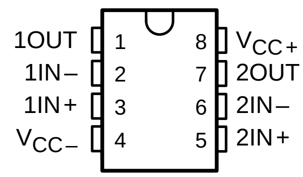


Figure 1. Unity-Gain Amplifier

- **Wide Range of Supply Voltages; Single Supply . . . 3 V to 36 V, or Dual Supplies**
- **Class AB Output Stage**
- **High-Impedance N-Channel-JFET Input Stage . . . 10^{12} Ω Typ**
- **Internal Frequency Compensation**
- **Short-Circuit Protection**
- **Input Common Mode Includes V_{CC-}**
- **Low Input Offset Current . . . 50 pA**
- **Low Input Bias Current . . . 200 pA Typ**

PS PACKAGE
(TOP VIEW)



description

The TL092 JFET-input operational amplifier is similar in performance to the MC3403 family, but with much higher input impedance derived from a FET input stage. The N-channel-JFET input stage allows a common-mode input voltage range that includes the negative supply voltage and offers a typical input impedance of 10^{12} Ω, a typical input offset current of 50 pA, and a typical input bias current of 200 pA. This device is designed to operate from a single supply over a range of 3 V to 36 V. Operation from split supplies also is possible, provided the difference between the two supplies is 3 V to 36 V. Output voltage range is from V_{CC-} to V_{CC+} – 1.3 V, with a load resistor to V_{CC-}.

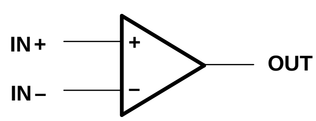
The TL092 is characterized for operation from 0°C to 70°C.

AVAILABLE OPTIONS

T_A	PACKAGED DEVICE PLASTIC SMALL OUTLINE (PS)
0°C to 70°C	TL092CPSR

The PS package is only available taped and reeled. Add the suffix R to device type for ordering (e.g., TL092CPSR).

symbol



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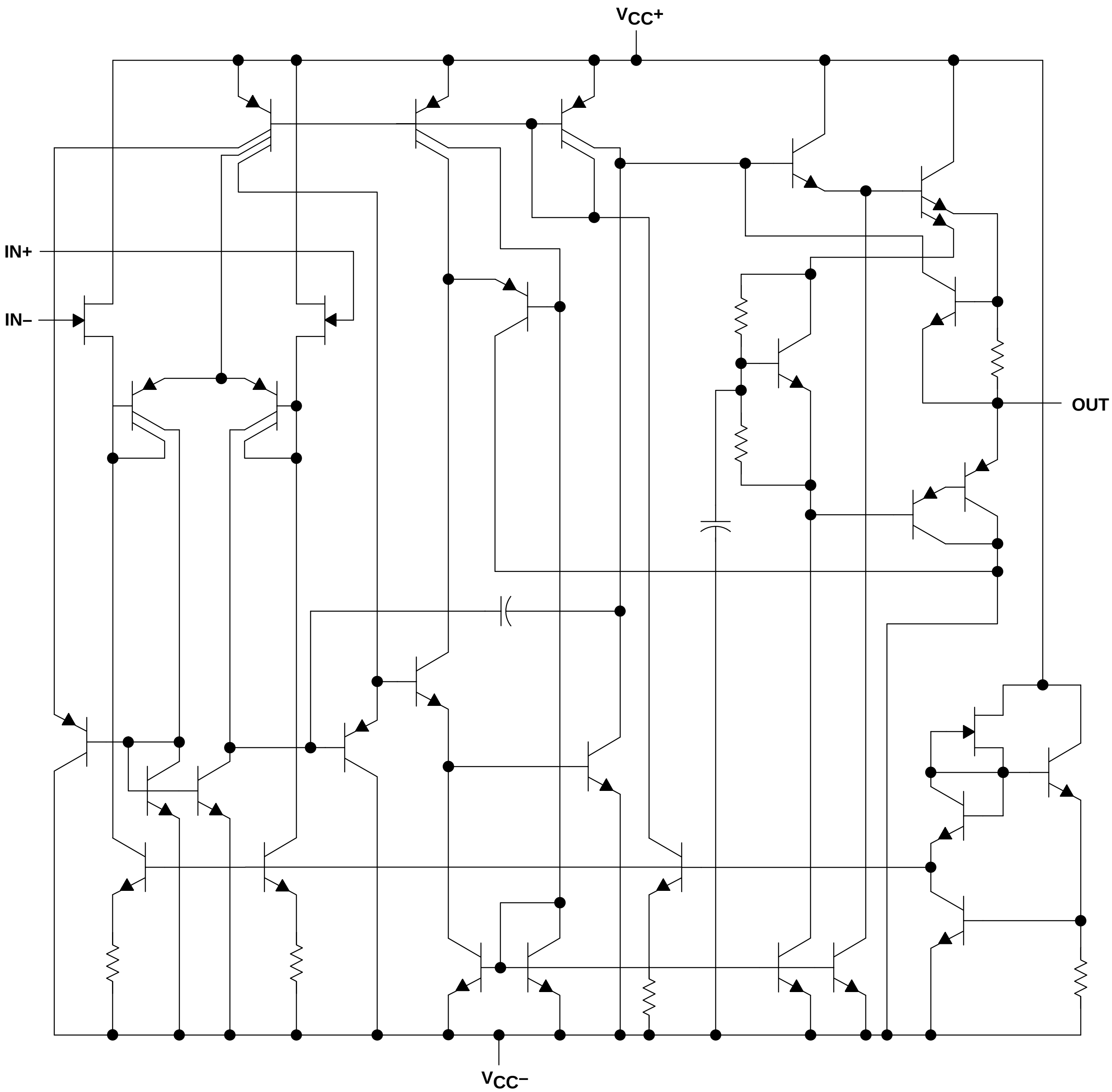
schematic



absolute maximum ratings over operating free-air temperature range (unless otherwise noted)†

Supply voltage: V_{CC+} (see Note 1)	18 V
V_{CC-} (see Note 1)	–18 V
V_{CC+} with respect to V_{CC-}	36 V
Differential input voltage, V_{ID} (see Note 2)	±36 V
Input voltage, V_I (see Notes 1 and 3)	±18 V
Package thermal impedance, θ_{JA} (see Notes 4 and 5)	95°C/W
Lead temperature 1.6 mm (1/16 inch) from case for 10 seconds	260°C
Storage temperature range, T_{stg}	–65°C to 150°C

† Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

NOTES:
1. All voltage values, except differential voltages, are with respect to the midpoint between V_{CC+} and V_{CC-}.
2. Differential voltages are at the noninverting input with respect to the inverting input.
3. Neither input must ever be more positive than V_{CC+} or more negative than V_{CC-} – 0.3 V.
4. Maximum power dissipation is a function of T_J(max), θ_{JA}, and T_A. The maximum allowable power dissipation at any allowable ambient temperature is $P_D = (T_J(max) - T_A)/\theta_{JA}$. Operating at the absolute maximum T_J of 150°C can impact reliability.
5. The package thermal impedance is calculated in accordance with JESD 51-7.

recommended operating conditions

		MIN	MAX	UNIT
$V_{CC\pm}$	Supply voltage	3	36	V
T_A	Operating free-air temperature range	0	70	°C

electrical characteristics at specified free-air temperature, $V_{CC\pm} = \pm15$ V (all characteristics are specified under open-loop conditions, unless otherwise noted)

PARAMETER		TEST CONDITIONS		T_A	MIN	TYP†	MAX	UNIT
V_{IO}	Input offset voltage	R_S = 50 Ω		25°C		5	15	mV
				Full range			20	
α_{VIO}	Temperature coefficient of input offset voltage			25°C		10		µV/°C
I_{IO}‡	Input offset current			25°C		50	200	pA
				Full range			5	nA
I_{IB}‡	Input bias current			25°C		200	400	pA
				Full range			10	nA
V_{ICR}	Common-mode input voltage range			25°C	V_{CC-} to 12	V_{CC-} to 13		V
$V_{O(PP)}$	Peak output voltage swing	R_L = 2 kΩ		25°C	±10	±13		V
		R_L = 10 kΩ		25°C	±12	±13.5		
		R_L = 2 kΩ		Full range	±10			
A_{VD}	Large-signal differential voltage amplification	R_L = 2 kΩ,	V_O = ±10 V	25°C	20	200		V/mV
				Full range	15			
B_{OM}	Maximum output swing bandwidth	R_L = 2 kΩ, A_{VD} = 1,	$V_{O(PP)}$ = 20 V, THD < 5%	25°C		9		kHz
B_1	Unity gain bandwidth	R_L = 10 kΩ,	V_O = 50 mV	25°C		1		MHz
ϕ_m	Phase margin	R_L = 2 kΩ,	C_L = 200 pF	25°C		60°		
r_i	Input resistance	f = 20 Hz		25°C		10^{12}		Ω
r_o	Output resistance	f = 20 Hz		25°C		75		Ω
CMRR	Common-mode rejection ratio	R_S = 50 Ω,	$V_{IC} = V_{ICR}$	25°C	70	90		dB
k_{SVR}	Supply-voltage rejection ratio ($\Delta V_{CC}/\Delta V_{IO}$)	R_S = 50 Ω,	$V_{CC\pm}$ = ±3 V to ±15 V	25°C	75	90		dB
I_{OS}	Short-circuit output current			25°C		40		mA
I_{CC}	Supply current (per amplifier)	V_O = 0,	No load	25°C		1.5	2.5	mA

† All typical values are at T_A = 25°C.
‡ Input bias currents of a FET-input operational amplifier are normal junction reverse currents, which are temperature sensitive. Pulse techniques that maintain the junction temperature as close to the ambient temperature as possible must be used.

electrical characteristics at specified free-air temperature, V_{CC+} = 5 V, V_{CC-} = 0 V, T_A = 25°C (unless otherwise noted)

PARAMETER		TEST CONDITIONS		MIN	TYP†	MAX	UNIT
V_{IO}	Input offset voltage	R_S = 50 Ω,	V_O = 2.5 V		5	15	mV
I_{IO}	Input offset current	V_O = 2.5 V			50	200	pA
I_{IB}	Input bias current	V_O = 2.5 V			200	400	pA
$V_{O(PP)}$	Peak output voltage swing	R_L = 10 kΩ		3.3	3.5		V
		R_L = 10 kΩ,	V_{CC+} = 5 V to 30 V	V_{CC+}–1.7			V
A_{VD}	Large-signal differential voltage amplification	R_L = 2 kΩ,	ΔV_O =1.6 V	20	200		V/mV
k_{SVR}	Supply-voltage rejection ratio ($\Delta V_{CC}/\Delta V_{IO}$)	R_S = 50 Ω,	$V_{CC\pm}$ = ±3 V to ±15 V	75			dB
I_{CC}	Supply current (per amplifier)	V_O = 2.5 V,	No load		1.5	2.5	mA
V_{O1}/V_{O2}	Channel separation	f = 1 kHz to 20 kHz			120		dB

† All typical values are at T_A = 25°C.

operating characteristics, $V_{CC\pm} = \pm 15$ V, $T_A = 25°C$

PARAMETER		TEST CONDITIONS			MIN	TYP	MAX	UNIT
SR	Slew rate at unity gain	$V_I = \pm 10$ V (see Figure 1),	$C_L = 100$ pF,	$R_L = 2$ kΩ		0.6		V/μs
t_r	Rise time	$\Delta V_O = 50$ mV (see Figure 1),	$C_L = 100$ pF,	$R_L = 2$ kΩ		0.2		μs
t_f	Fall time	$\Delta V_O = 50$ mV (see Figure 1),	$C_L = 100$ pF,	$R_L = 2$ kΩ		0.2		μs
	Overshoot factor	$\Delta V_O = 50$ mV (see Figure 1),	$C_L = 100$ pF,	$R_L = 2$ kΩ		20%		
	Crossover distortion	$V_{IPP} = 30$ mV, $V_{O(PP)} = 2$ V,	f = 10 kHz			1%		
V_n	Equivalent input noise voltage	$R_S = 100$ Ω,	f = 1 kHz			34		nV/$\sqrt{Hz}$

PARAMETER MEASUREMENT INFORMATION

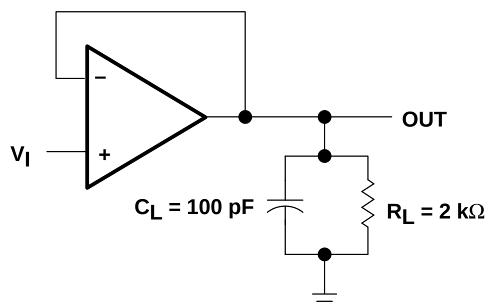
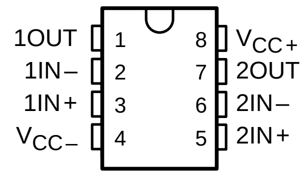


Figure 1. Unity-Gain Amplifier

- **Wide Range of Supply Voltages; Single Supply . . . 3 V to 36 V, or Dual Supplies**
- **Class AB Output Stage**
- **High-Impedance N-Channel-JFET Input Stage . . . 10^{12} Ω Typ**
- **Internal Frequency Compensation**
- **Short-Circuit Protection**
- **Input Common Mode Includes V_{CC-}**
- **Low Input Offset Current . . . 50 pA**
- **Low Input Bias Current . . . 200 pA Typ**

PS PACKAGE
(TOP VIEW)



description

The TL092 JFET-input operational amplifier is similar in performance to the MC3403 family, but with much higher input impedance derived from a FET input stage. The N-channel-JFET input stage allows a common-mode input voltage range that includes the negative supply voltage and offers a typical input impedance of 10^{12} Ω, a typical input offset current of 50 pA, and a typical input bias current of 200 pA. This device is designed to operate from a single supply over a range of 3 V to 36 V. Operation from split supplies also is possible, provided the difference between the two supplies is 3 V to 36 V. Output voltage range is from V_{CC-} to V_{CC+} – 1.3 V, with a load resistor to V_{CC-}.

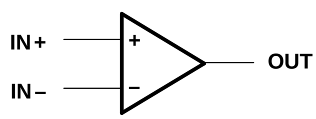
The TL092 is characterized for operation from 0°C to 70°C.

AVAILABLE OPTIONS

T_A	PACKAGED DEVICE PLASTIC SMALL OUTLINE (PS)
0°C to 70°C	TL092CPSR

The PS package is only available taped and reeled. Add the suffix R to device type for ordering (e.g., TL092CPSR).

symbol



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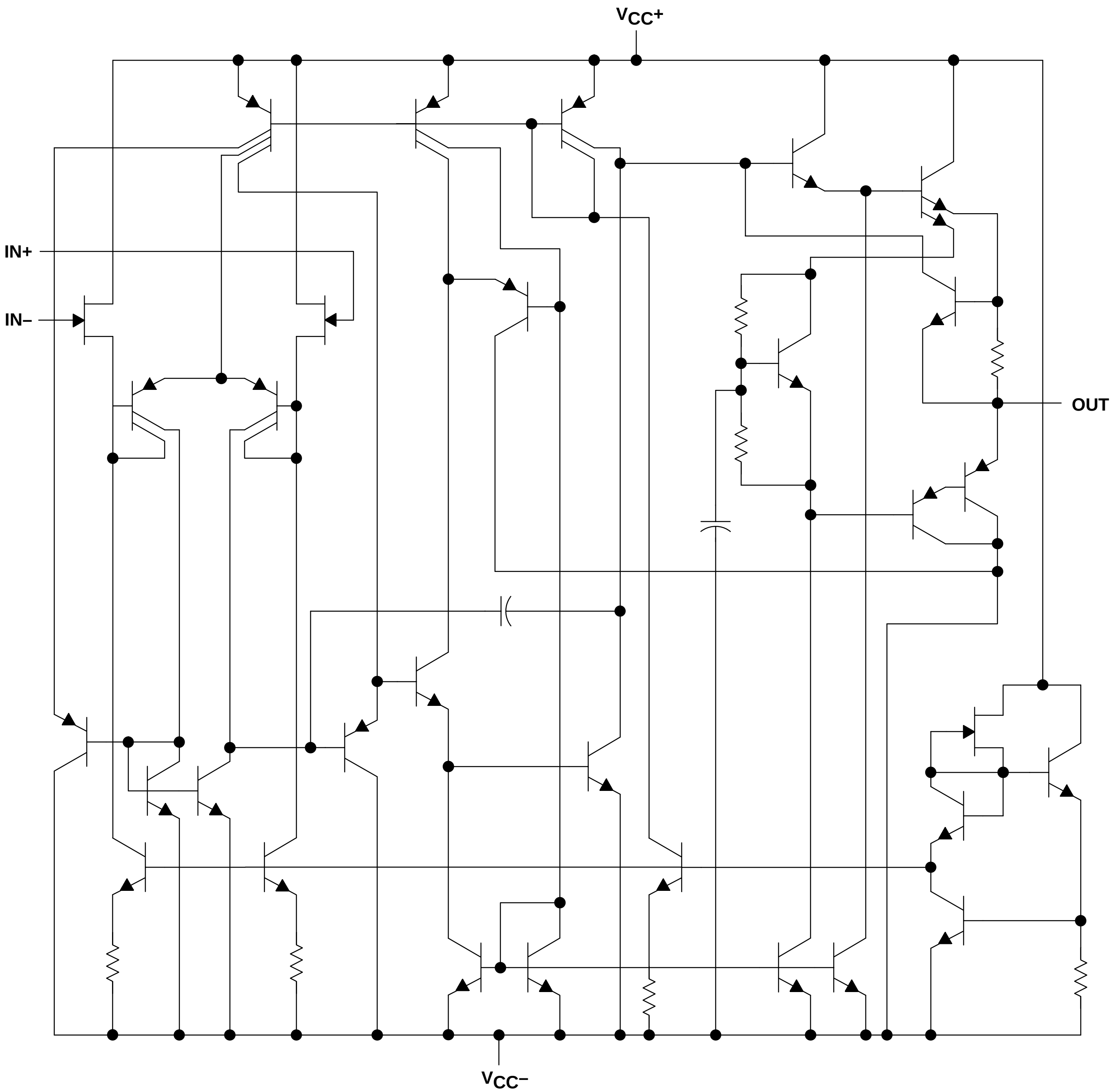
schematic



absolute maximum ratings over operating free-air temperature range (unless otherwise noted)†

Supply voltage: V_{CC+} (see Note 1) . . . . 18 V
V_{CC-} (see Note 1) . . . . –18 V
V_{CC+} with respect to V_{CC-} . . . . 36 V
Differential input voltage, V_{ID} (see Note 2) . . . . ±36 V
Input voltage, V_I (see Notes 1 and 3) . . . . ±18 V
Package thermal impedance, θ_{JA} (see Notes 4 and 5) . . . . 95°C/W
Lead temperature 1.6 mm (1/16 inch) from case for 10 seconds . . . . 260°C
Storage temperature range, T_{stg} . . . . –65°C to 150°C

† Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

NOTES: 1. All voltage values, except differential voltages, are with respect to the midpoint between V_{CC+} and V_{CC-}.
2. Differential voltages are at the noninverting input with respect to the inverting input.
3. Neither input must ever be more positive than V_{CC+} or more negative than V_{CC-} – 0.3 V.
4. Maximum power dissipation is a function of T_J(max), θ_{JA}, and T_A. The maximum allowable power dissipation at any allowable ambient temperature is $P_D = (T_J(max) – T_A)/\theta_{JA}$. Operating at the absolute maximum T_J of 150°C can impact reliability.
5. The package thermal impedance is calculated in accordance with JESD 51-7.

recommended operating conditions

		MIN	MAX	UNIT
$V_{CC\pm}$	Supply voltage	3	36	V
T_A	Operating free-air temperature range	0	70	°C

electrical characteristics at specified free-air temperature, $V_{CC\pm} = \pm15$ V (all characteristics are specified under open-loop conditions, unless otherwise noted)

PARAMETER		TEST CONDITIONS		T_A	MIN	TYP†	MAX	UNIT
V_{IO}	Input offset voltage	$R_S = 50\ \Omega$		25°C		5	15	mV
				Full range			20	
α_{VIO}	Temperature coefficient of input offset voltage			25°C		10		µV/°C
I_{IO}‡	Input offset current			25°C		50	200	pA
				Full range			5	nA
I_{IB}‡	Input bias current			25°C		200	400	pA
				Full range			10	nA
V_{ICR}	Common-mode input voltage range			25°C	V_{CC-} to 12	V_{CC-} to 13		V
$V_{O(PP)}$	Peak output voltage swing	$R_L = 2\ k\Omega$		25°C	±10	±13		V
		$R_L = 10\ k\Omega$		25°C	±12	±13.5		
		$R_L = 2\ k\Omega$		Full range	±10			
A_{VD}	Large-signal differential voltage amplification	$R_L = 2\ k\Omega$,	$V_O = \pm10$ V	25°C	20	200		V/mV
				Full range	15			
B_{OM}	Maximum output swing bandwidth	$R_L = 2\ k\Omega$, $A_{VD} = 1$,	$V_{O(PP)} = 20$ V, THD < 5%	25°C		9		kHz
B_1	Unity gain bandwidth	$R_L = 10\ k\Omega$,	$V_O = 50$ mV	25°C		1		MHz
ϕ_m	Phase margin	$R_L = 2\ k\Omega$,	$C_L = 200$ pF	25°C		60°		
r_i	Input resistance	f = 20 Hz		25°C		10^{12}		Ω
r_o	Output resistance	f = 20 Hz		25°C		75		Ω
CMRR	Common-mode rejection ratio	$R_S = 50\ \Omega$,	$V_{IC} = V_{ICR}$	25°C	70	90		dB
k_{SVR}	Supply-voltage rejection ratio ($\Delta V_{CC}/\Delta V_{IO}$)	$R_S = 50\ \Omega$,	$V_{CC\pm} = \pm3$ V to ±15 V	25°C	75	90		dB
I_{OS}	Short-circuit output current			25°C		40		mA
I_{CC}	Supply current (per amplifier)	$V_O = 0$,	No load	25°C		1.5	2.5	mA

† All typical values are at $T_A = 25°C$.
‡ Input bias currents of a FET-input operational amplifier are normal junction reverse currents, which are temperature sensitive. Pulse techniques that maintain the junction temperature as close to the ambient temperature as possible must be used.

electrical characteristics at specified free-air temperature, $V_{CC+} = 5$ V, $V_{CC-} = 0$ V, $T_A = 25°C$ (unless otherwise noted)

PARAMETER		TEST CONDITIONS		MIN	TYP†	MAX	UNIT
V_{IO}	Input offset voltage	$R_S = 50\ \Omega$,	$V_O = 2.5$ V		5	15	mV
I_{IO}	Input offset current	$V_O = 2.5$ V			50	200	pA
I_{IB}	Input bias current	$V_O = 2.5$ V			200	400	pA
$V_{O(PP)}$	Peak output voltage swing	$R_L = 10\ k\Omega$		3.3	3.5		V
		$R_L = 10\ k\Omega$,	$V_{CC+} = 5$ V to 30 V	V_{CC+}–1.7			V
A_{VD}	Large-signal differential voltage amplification	$R_L = 2\ k\Omega$,	$\Delta V_O = 1.6$ V	20	200		V/mV
k_{SVR}	Supply-voltage rejection ratio ($\Delta V_{CC}/\Delta V_{IO}$)	$R_S = 50\ \Omega$,	$V_{CC\pm} = \pm3$ V to ±15 V	75			dB
I_{CC}	Supply current (per amplifier)	$V_O = 2.5$ V,	No load		1.5	2.5	mA
V_{O1}/V_{O2}	Channel separation	f = 1 kHz to 20 kHz			120		dB

† All typical values are at $T_A = 25°C$.

operating characteristics, $V_{CC\pm} = \pm15$ V, $T_A = 25°C$

PARAMETER		TEST CONDITIONS			MIN	TYP	MAX	UNIT
SR	Slew rate at unity gain	$V_I = \pm10$ V (see Figure 1),	$C_L = 100$ pF,	$R_L = 2$ kΩ		0.6		V/μs
t_r	Rise time	$\Delta V_O = 50$ mV (see Figure 1),	$C_L = 100$ pF,	$R_L = 2$ kΩ		0.2		μs
t_f	Fall time	$\Delta V_O = 50$ mV (see Figure 1),	$C_L = 100$ pF,	$R_L = 2$ kΩ		0.2		μs
	Overshoot factor	$\Delta V_O = 50$ mV (see Figure 1),	$C_L = 100$ pF,	$R_L = 2$ kΩ		20%		
	Crossover distortion	$V_{IPP} = 30$ mV, $V_{O(PP)} = 2$ V,	f = 10 kHz			1%		
V_n	Equivalent input noise voltage	$R_S = 100$ Ω,	f = 1 kHz			34		nV/√Hz

PARAMETER MEASUREMENT INFORMATION

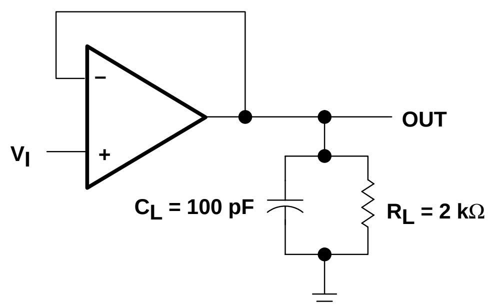


Figure 1. Unity-Gain Amplifier

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