



General Description

These devices offer low offset and long-term stability by means of a low-noise, chopperless, bipolar-input-transistor amplifier circuit. For most applications, external components are not required for offset nulling and frequency compensation. The true differential input, with a wide input-voltage range and outstanding common-mode rejection, provides maximum flexibility and performance in high-noise environments and in noninverting applications. Low bias currents and extremely high input impedances are maintained over the entire temperature range.

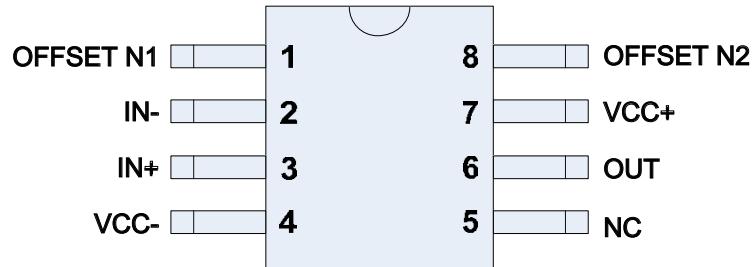
Features

- Low Noise
- No External Components Required
- Replace Chopper Amplifiers at a Lower Cost
- Wide Input-Voltage Range: 0 to ± 14 V (Typ)
- Wide Supply-Voltage Range: ± 3 V to ± 18 V

Ordering Information

Product Model	Package Type	Packing	Packing Qty
OP07CDR	SOP-8	Tape	4000Pcs/Reel

Pin Configurations



Function Block

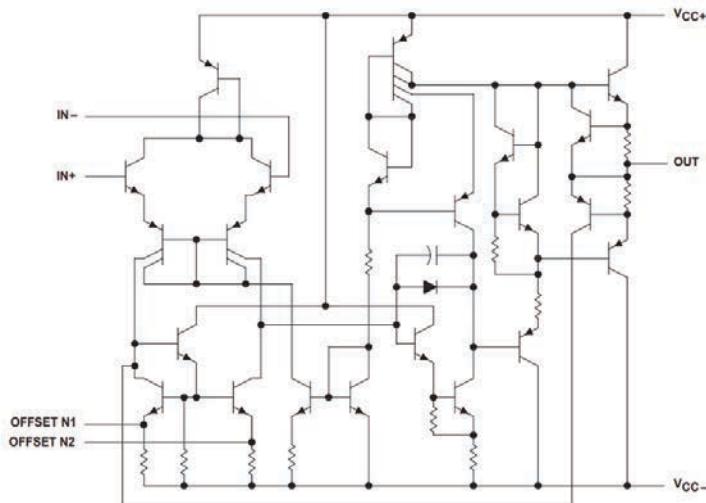


Figure 1 Function Block Diagram of OP07CDR



Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
VCC	Supply voltage	±22	V
V _{id}	Differential input voltage	±30	
V _i	Input voltage	±22	
	Output short-circuit duration	Infinite	
R _{thja}	Thermal resistance junction to ambient	125	°C/W
R _{thjc}	Thermal resistance junction to case	40	
ESD	HBM: human body model ⁽¹⁾ DIP package SO package	500 400	V
	MM: machine model ⁽²⁾	100	
	CDM: charged device model ⁽³⁾	1.5	kV
T _{stg}	Storage temperature range	-65 to +150	°C

1. Human body model: a 100 pF capacitor is charged to the specified voltage, then discharged through a 1.5kΩ resistor between two pins of the device. This is done for all couples of connected pin combinations while the other pins are floating.
2. Machine model: a 200 pF capacitor is charged to the specified voltage, then discharged directly between two pins of the device with no external series resistor (internal resistor <5Ω). This is done for all couples of connected pin combinations while the other pins are floating.
3. Charged device model: all pins and the package are charged together to the specified voltage and then discharged directly to the ground through only one pin. This is done for all pins.

Operating Conditions

Symbol	Parameter	Value	Unit
VCC	Supply voltage	6 to 36	V
V _{icm}	Common mode input voltage range	±13	
T _{oper}	Operating free air temperature range	-40 to +125	°C



Electrical Characteristics

TA = 25°C, unless otherwise noted, VCC = ± 15 V, Tamb = 25 °C

Symbol	Parameter		Min.	Typ.	Max.	Unit
V_{io}	Input offset voltage ($(R_S \leq 10 \text{ k}\Omega)$ $T_{amb} = +25 \text{ }^\circ\text{C}$ $T_{min} \leq T_{amb} \leq T_{max}$			260	300 350	uV
I_{io}	Input offset current $T_{amb} = +25 \text{ }^\circ\text{C}$ $T_{min} \leq T_{amb} \leq T_{max}$			2	6 8	nA
I_{ib}	Input bias current $T_{amb} = +25 \text{ }^\circ\text{C}$ $T_{min} \leq T_{amb} \leq T_{max}$				± 12 ± 14	
A_{vd}	Large signal voltage gain ($V_o = \pm 10 \text{ V}$, $R_L = 2 \text{ k}\Omega$) $T_{amb} = +25 \text{ }^\circ\text{C}$ $T_{min} \leq T_{amb} \leq T_{max}$		120 100	400		V/mV
SVR	Supply voltage rejection ratio ($(R_S \leq 10 \text{ k}\Omega)$ $T_{amb} = +25 \text{ }^\circ\text{C}$ $T_{min} \leq T_{amb} \leq T_{max}$		77 77	90		dB
I_{cc}	Supply current, no load $T_{amb} = +25 \text{ }^\circ\text{C}$ $T_{min} \leq T_{amb} \leq T_{max}$			1.7	2.8 3.3	mA
V_{icm}	Input common mode voltage range $T_{amb} = +25 \text{ }^\circ\text{C}$ $T_{min} \leq T_{amb} \leq T_{max}$		± 13 ± 13			V
CMR	Common mode rejection ratio ($R_S \leq 10 \text{ k}\Omega$) $T_{amb} = +25 \text{ }^\circ\text{C}$ $T_{min} \leq T_{amb} \leq T_{max}$		70 70	90		dB
I_{os}	Output short circuit current		10	25	40	mA
$\pm V_{opp}$	Output voltage swing $T_{amb} = +25 \text{ }^\circ\text{C}$ $T_{min} \leq T_{amb} \leq T_{max}$	$R_L = 10 \text{ k}\Omega$ $R_L = 2 \text{ k}\Omega$ $R_L = 10 \text{ k}\Omega$ $R_L = 2 \text{ k}\Omega$	12 10 12 10	14 13		V
SR	Slew rate $V_i = \pm 10 \text{ V}$, $R_L = 2 \text{ k}\Omega$, $C_L = 100 \text{ pF}$, unity gain		0.25	0.5		V/ μ s
t_r	Rise time $V_i = \pm 20 \text{ mV}$, $R_L = 2 \text{ k}\Omega$, $C_L = 100 \text{ pF}$, unity gain			0.3		μ s
K_{ov}	Overshoot $V_i = 20 \text{ mV}$, $R_L = 2 \text{ k}\Omega$, $C_L = 100 \text{ pF}$, unity gain			5		%
R_i	Input resistance		7	31		M Ω

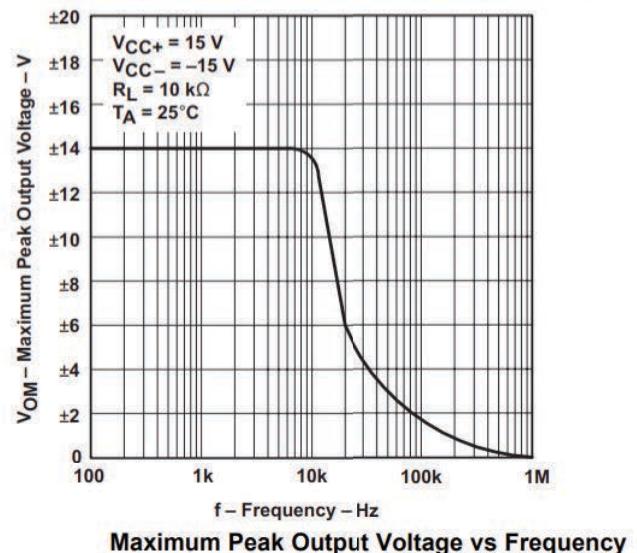
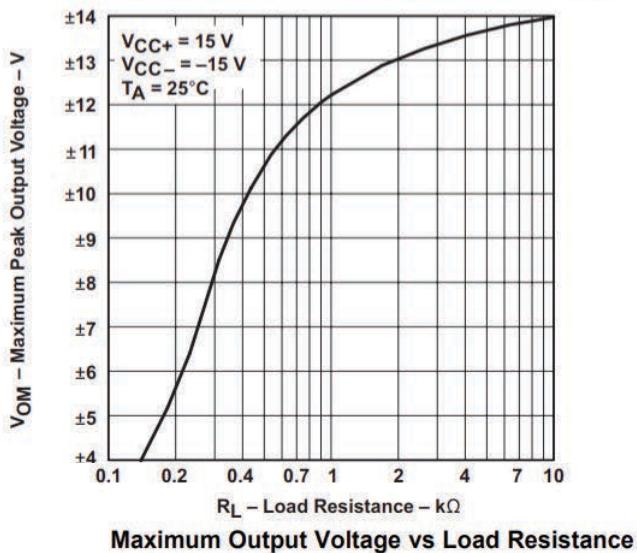
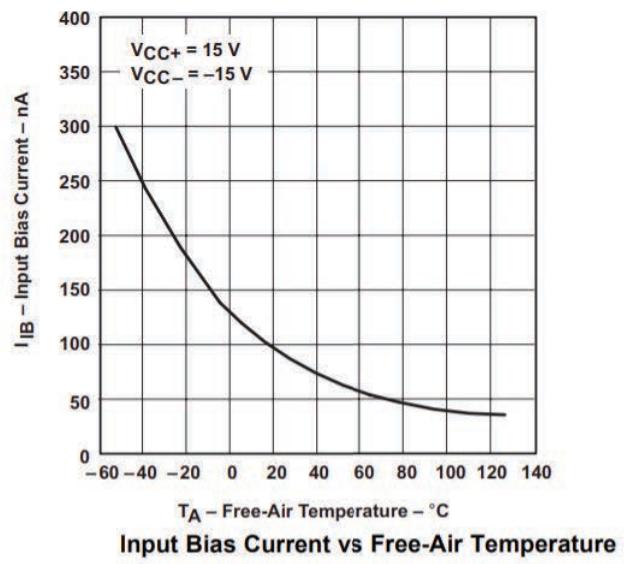
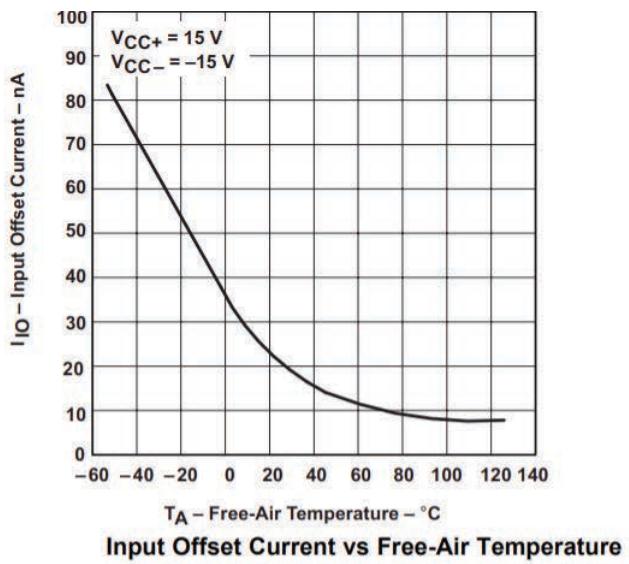


Electrical Characteristics

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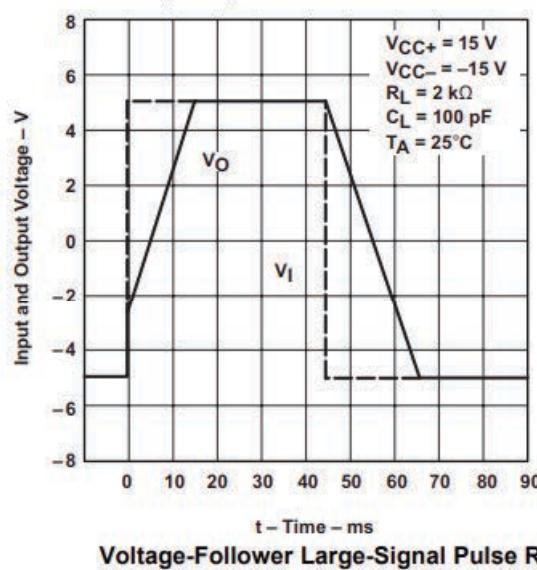
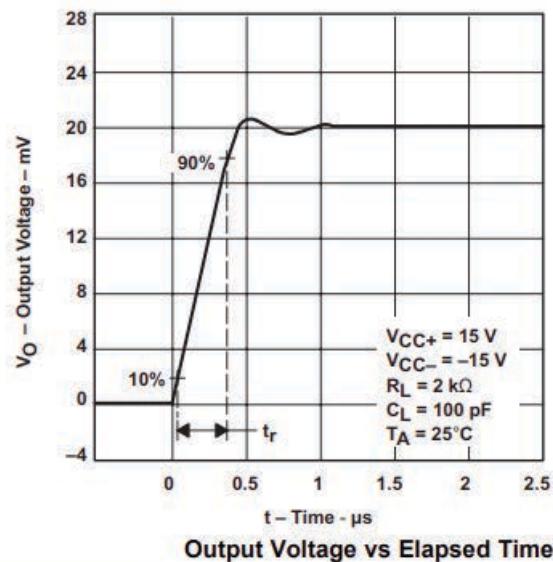
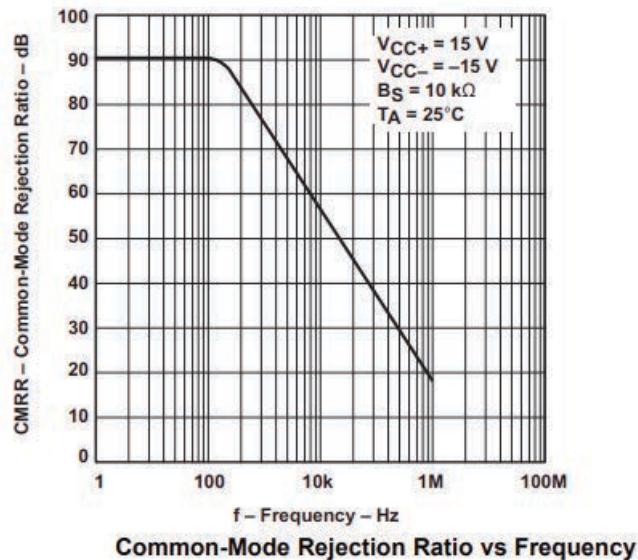
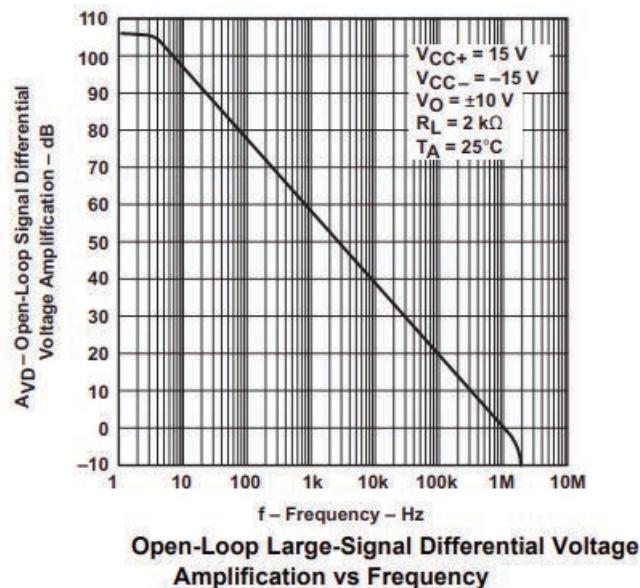
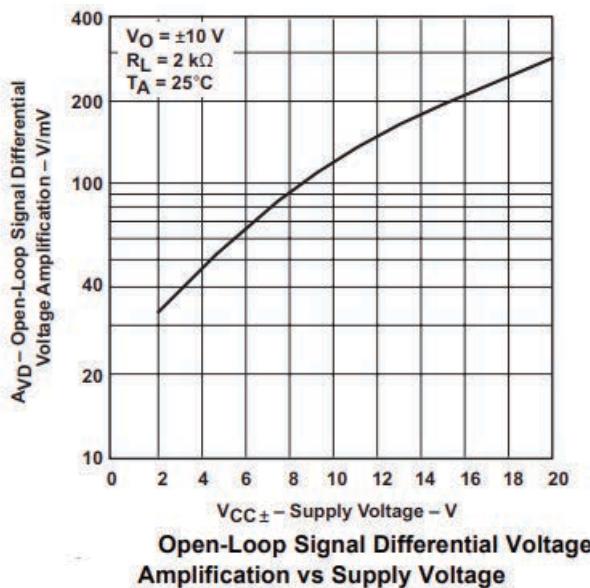
Symbol	Parameter	Min.	Typ.	Max.	Unit
GBP	Gain bandwidth product $V_i = 10$ mV, $R_L = 2$ kΩ, $C_L = 100$ pF, $f = 100$ kHz	0.4	0.6		MHz
THD	Total harmonic distortion $f = 1$ kHz, $A_V = 20$ dB, $R_L = 2$ kΩ, $V_O = 2$ Vpp, $C_L = 100$ pF, $T_{amb} = +25$ °C		0.06		%
e_n	Equivalent input noise voltage $f = 1$ kHz, $R_S = 100$ Ω		23		$\frac{nV}{\sqrt{Hz}}$
ϕ m	Phase margin		50		Degree

Typical Characteristics



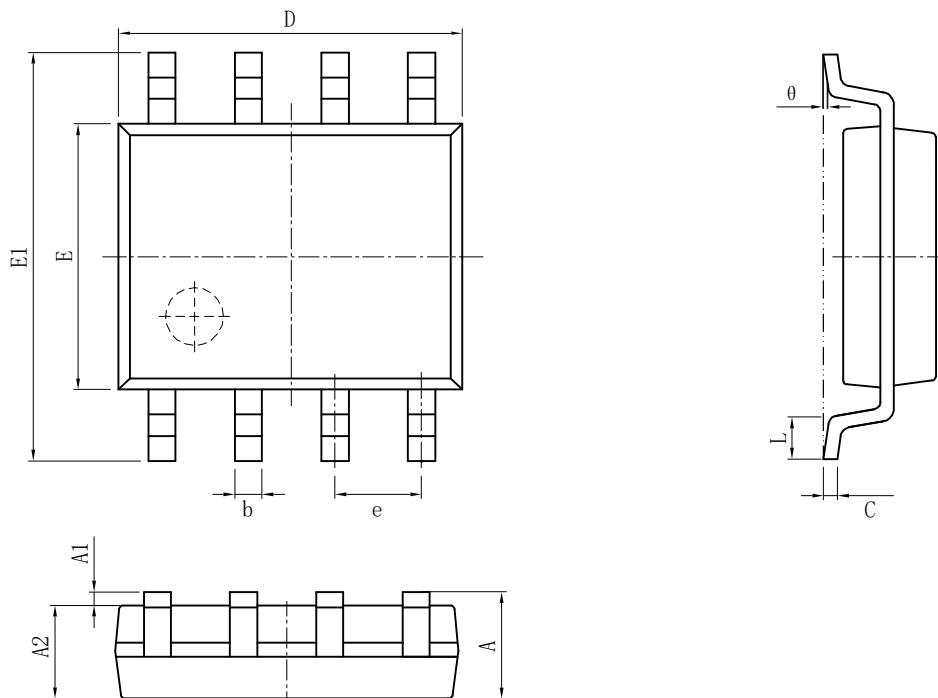


Typical Characteristics





Package Information SOP-8(SOIC-8)



Size Symbol	Dimensions In Millimeters		Size Symbol	Dimensions In Inches	
	Min(mm)	Max(mm)		Min(in)	Max(in)
A	1.350	1.750	A	0.053	0.069
A1	0.100	0.250	A1	0.004	0.010
A2	1.350	1.550	A2	0.053	0.061
b	0.330	0.510	b	0.013	0.020
c	0.170	0.250	c	0.006	0.010
D	4.700	5.100	D	0.185	0.200
E	3.800	4.000	E	0.150	0.157
E1	5.800	6.200	E1	0.228	0.224
e	1.270(BSC)		e	0.050(BSC)	
L	0.400	1.270	L	0.016	0.050
θ	0°	8°	θ	0°	8°



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