

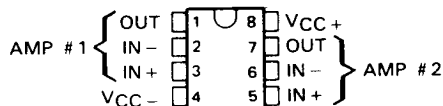
RC4559

DUAL HIGH-PERFORMANCE OPERATIONAL AMPLIFIER

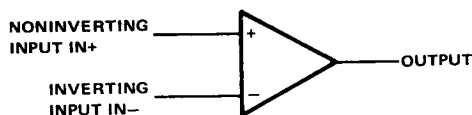
D2785, OCTOBER 1983—REVISED JUNE 1988

- Matched Gain and Offset Between Amplifiers
- Unity-Gain Bandwidth . . . 3 MHz Min
- Slew Rate . . . 1.5 V/ns Min
- Low Equivalent Input Noise Voltage
... 2 $\mu\text{V}/\sqrt{\text{Hz}}$ Max (20 kHz)
- No Frequency Compensation Required
- No Latch Up
- Wide Common-Mode Voltage Range
- Low Power Consumption
- Designed to be Interchangeable with Raytheon RC4559

D OR P PACKAGE
(TOP VIEW)



symbol (each amplifier)



AVAILABLE OPTIONS

SYMBOLIZATION		OPERATING TEMPERATURE RANGE	V_{IO} MAX at 25°C
DEVICE	PACKAGE SUFFIX		
RC4559	D,P	-0°C to 70°C	6 mV

The D packages are available taped and reeled. Add the suffix R to the device type when ordering. (i.e., RC4559DR)

description

The RC4559 is a dual high-performance operational amplifier. The high common-mode input voltage and the absence of latch-up make this amplifier ideal for low-noise signal applications such as audio preamplifiers and signal conditioners. This amplifier features a guaranteed dynamic performance and output drive capability that far exceeds that of the general-purpose type amplifiers.

The RC4559 is characterized for operation from 0°C to 70°C.

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

Supply voltage V_{CC+} (see Note 1)	18 V
Supply voltage V_{CC-} (see Note 1)	-18 V
Differential input voltage (see Note 2)	± 30 V
Input voltage (any input, see Notes 1 and 3)	± 15 V
Duration of output short-circuit to ground, one amplifier at a time (see Note 4)	unlimited
Continuous total dissipation	500 mW
Operating free-air temperature range	0°C to 70°C
Storage temperature range	-65°C to 125°C
Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds	260°C

- NOTES: 1. All voltage values, unless otherwise noted, are with respect to the zero reference level (ground) of the supply voltages where the zero reference level is the midpoint between V_{CC+} and V_{CC-} .
2. Differential voltages are at the noninverting input terminal with respect to the inverting input terminal.
3. The magnitude of the input voltage must never exceed the magnitude of the supply voltage or 15 volts, whichever is less.
4. Temperature and/or supply voltages must be limited to ensure that the dissipation rating is not exceeded.

PRODUCTION DATA documents contain information current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

**TEXAS
INSTRUMENTS**

POST OFFICE BOX 655303 • DALLAS, TEXAS 75265

Copyright © 1983, Texas Instruments Incorporated

2-169

RC4559

DUAL HIGH-PERFORMANCE OPERATIONAL AMPLIFIER

electrical characteristics at specified free-air temperature, $V_{CC+} = 15\text{ V}$, $V_{CC-} = -15\text{ V}$

PARAMETER		TEST CONDITIONS†		MIN	TYP	MAX	UNIT
V_{IO}	Input offset voltage	$V_O = 0$	25 °C		2	6	mV
			0 °C to 70 °C			7.5	
I_{IO}	Input offset current	$V_O = 0$	25 °C		5	100	nA
			0 °C to 70 °C			200	
I_{IB}	Input bias current	$V_O = 0$	25 °C		40	250	nA
			0 °C to 70 °C			500	
V_I	Input voltage range		25 °C	± 12	± 13		V
V_{OM}	Maximum peak output voltage swing	$R_L \geq 3\text{ k}\Omega$	25 °C	± 12	± 13		V
		$R_L = 600\ \Omega$	25 °C	± 9.5	± 10		
		$R_L \geq 2\text{ k}\Omega$	0 °C to 70 °C	± 10			
A_{VD}	Large-signal differential voltage amplification	$V_O = \pm 10\text{ V}$, $R_L = 2\text{ k}\Omega$	25 °C	20	300		V/mV
			0 °C to 70 °C	15			
B_{OM}	Maximum output-swing bandwidth	$V_{OPP} = 20\text{ V}$, $R_L = 2\text{ k}\Omega$	25 °C	24	32		kHz
B_1	Unity-gain bandwidth		25 °C	3	4		MHz
r_i	Input resistance		25 °C	0.3	1		M Ω
$CMRR$	Common-mode rejection ratio	$V_O = 0$	25 °C	80	100		dB
k_{SVS}	Supply voltage sensitivity ($\Delta V_{IO}/\Delta V_{CC}$)	$V_O = 0$	25 °C		10	75	$\mu\text{V/V}$
V_n	Equivalent input noise voltage (closed-loop)	$A_{VD} = 100$, $R_S = 1\text{ k}\Omega$, $f = 20\text{ Hz to } 20\text{ kHz}$	25 °C		1.4	2	μV
I_n	Equivalent input noise current	$f = 20\text{ Hz to } 20\text{ kHz}$	25 °C		25		pA
I_{CC}	Supply current (both amplifiers)	No load, No signal	25 °C		3.3	5.6	mA
			0 °C		4	6.6	
			70 °C		3	5	
V_{O1}/V_{O2}	Crosstalk attenuation	$A_{VD} = 100$, $R_S = 1\text{ k}\Omega$, $f = 10\text{ kHz}$	25 °C		90		dB
			25 °C		90		

† All characteristics are specified under open-loop operation, unless otherwise noted.

matching characteristics at $V_{CC+} = 15\text{ V}$, $V_{CC-} = -15\text{ V}$, $T_A = 25\text{ °C}$

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
V_{IO}	Input offset voltage $V_O = 0$		± 0.2		mV
I_{IO}	Input offset current $V_O = 0$		± 7.5		nA
I_{IB}	Input bias current $V_O = 0$		± 15		nA
A_{VD}	Large-signal differential voltage amplification $V_O = \pm 10\text{ V}$, $R_L = 2\text{ k}\Omega$		± 1		dB

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

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_r	Rise time $V_I = 20\text{ mV}$, $R_L = 2\text{ k}\Omega$		80		μs
	Overshoot $C_L = 100\text{ pF}$		18 %		
SR	Slew rate at unity gain $V_I = 10\text{ V}$, $R_L = 2\text{ k}\Omega$, $C_L = 100\text{ pF}$	1.5	2		V/ μs

