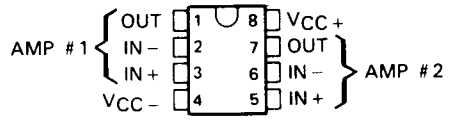
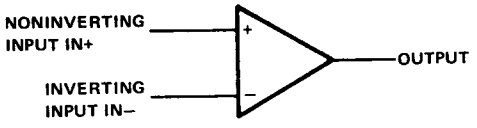
D2785, OCTOBER 1983—REVISED JUNE 1988

- 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 $\mu V/\sqrt{Hz}$ Max (20 Hz to 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.

electrical characteristics at specified free-air temperature, V_{CC+} = 15 V, V_{CC-} = −15 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	$R_L \geq 3\ k\Omega$	25°C	±12	±13		V
		R_L = 600 Ω	25°C	±9.5	±10		
		$R_L \geq 2\ k\Omega$	0°C to 70°C	±10			
A_{VD}	Large-signal differential voltage amplification	V_O = ±10 V, R_L = 2 kΩ	25°C	20	300		V/mV
			0°C to 70°C	15			
B_{OM}	Maximum output-swing bandwidth	V_{OPP} = 20 V, R_L = 2 kΩ	25°C	24	32		kHz
B_1	Unity-gain bandwidth		25°C	3	4		MHz
r_i	Input resistance		25°C	0.3	1		MΩ
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	μV/V
V_n	Equivalent input noise voltage (closed-loop)	A_{VD} = 100, R_S = 1 kΩ, f = 20 Hz to 20 kHz	25°C		1.4	2	μV
I_n	Equivalent input noise current	f = 20 Hz to 20 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 kΩ, f = 10 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 V, V_{CC-} = −15 V, T_A = 25°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 = ±10 V, R_L = 2 kΩ		±1		dB

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

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

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