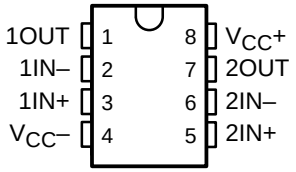
- **Continuous-Short-Circuit Protection**
- **Wide Common-Mode and Differential Voltage Ranges**
- **No Frequency Compensation Required**
- **Low Power Consumption**
- **No Latch-Up**
- **Unity-Gain Bandwidth . . . 3 MHz Typ**
- **Gain and Phase Match Between Amplifiers**
- **Low Noise . . . 8 nV/$\sqrt{\text{Hz}}$ Typ at 1 kHz**
- **Designed To Be Interchangeable With Raytheon RC4558 Device**

D, P, PS, OR PW PACKAGE
(TOP VIEW)



description/ordering information

The RC4558 device is a dual general-purpose operational amplifier, with each half electrically similar to the μA741, except that offset null capability is not provided.

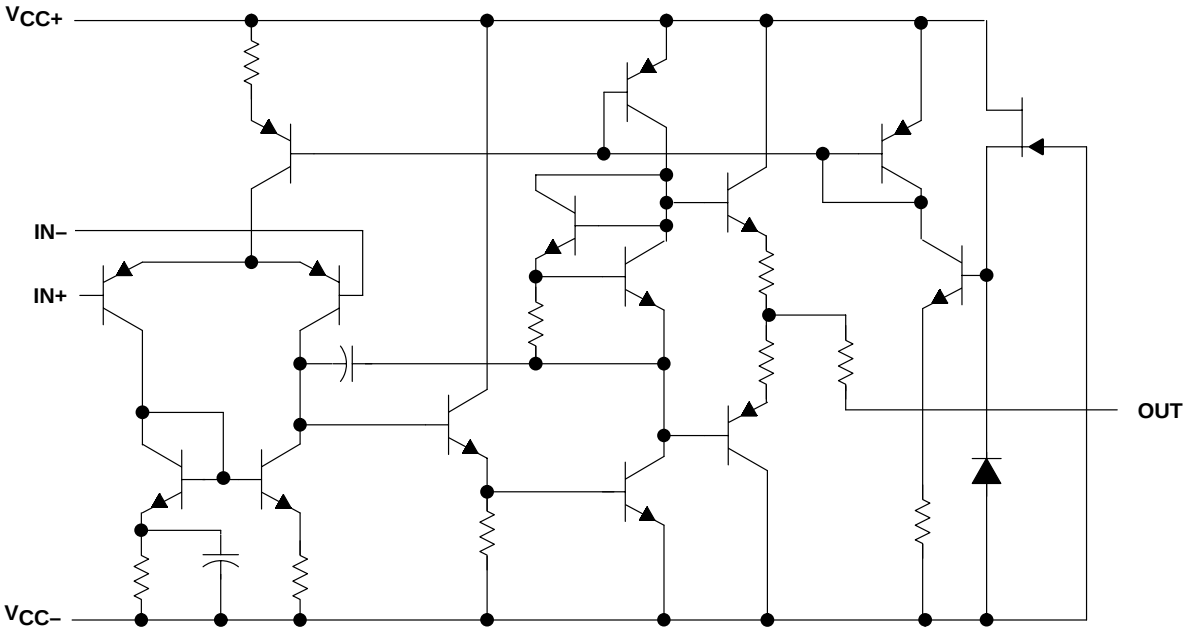
The high common-mode input voltage range and the absence of latch-up make this amplifier ideal for voltage-follower applications. The device is short-circuit protected and the internal frequency compensation ensures stability without external components.

ORDERING INFORMATION

T_A	V_{IO}MAX AT 25°C	PACKAGE†		ORDERABLE PART NUMBER	TOP-SIDE MARKING
0°C to 70°C	6 mV	PDIP (P)	Tube	RC4558P	RC4558P
		SOIC (D)	Tube	RC4558D	RC4558
			Tape and reel	RC4558DR	
		SOP (PS)	Tape and reel	RC4558PSR	R4558
		TSSOP (PW)	Tube	RC4558PW	R4558
			Tape and reel	RC4558PWR	

† Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at www.ti.com/sc/package.

schematic (each amplifier)



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, V_{ID} (see Note 2) . . . . . ±30 V
Input voltage, V_I (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
Operating virtual junction temperature, T_J . . . . . 150°C
Package thermal impedance, θ_{JA} (see Notes 5 and 6): D package . . . . . 97°C/W
P package . . . . . 85°C/W
PS package . . . . . 95°C/W
PW package . . . . . 149°C/W
Lead temperature 1,6 mm (1/16 inch) from case for 60 seconds . . . . . 260°C
Storage temperature range, T_{stg} . . . . . –65°C to 150°C

NOTES: 1. All voltage values, unless otherwise noted, are with respect to the midpoint between V_{CC+} and V_{CC-}.
2. Differential voltages are at IN+ with respect to IN–.
3. The magnitude of the input voltage must never exceed the magnitude of the supply voltage or 15 V, whichever is less.
4. Temperature and/or supply voltages must be limited to ensure that the dissipation rating is not exceeded.
5. 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 affect reliability.
6. The package thermal impedance is calculated in accordance with JESD 51-7.

recommended operating conditions

		MIN	MAX	UNIT
V_{CC+}	Supply voltage	5	15	V
V_{CC-}		–5	–15	
T_A	Operating free-air temperature	0	70	°C

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		0.5	6	mV
				Full range			7.5	
I_{IO}	Input offset current		V_O = 0	25°C		5	200	nA
				Full range			300	
I_{IB}	Input bias current		V_O = 0	25°C		150	500	nA
				Full range			800	
V_{ICR}	Common-mode input voltage range			25°C	±12	±14		V
V_{OM}	Maximum output voltage swing		R_L = 10 kΩ	25°C	±12	±14		V
			R_L = 2 kΩ	25°C	±10	±13		
			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	300		V/mV
				Full range	15			
B_1	Unity-gain bandwith			25°C		3		MHz
r_i	Input resistance			25°C	0.3	5		MΩ
CMRR	Common-mode rejection ratio			25°C	70	90		dB
k_{SVS}	Supply-voltage sensitivity ($\Delta V_{IO}/\Delta V_{CC}$)		V_{CC} = ±15 V to ±9 V	25°C		30	150	μV/V
V_n	Equivalent input noise voltage (closed loop)		A_{VD} = 100, R_S = 100 Ω, f = 1 kHz, BW = 1 Hz	25°C		8		nV/√Hz
I_{CC}	Supply current (both amplifiers)		V_O = 0, No load	25°C		2.5	5.6	mA
				$T_{A(min)}$		3	6.6	
				$T_{A(max)}$		2.3	5	
P_D	Total power dissipation (both amplifiers)		V_O = 0, No load	25°C		75	170	mW
				$T_{A(min)}$		90	200	
				$T_{A(max)}$		70	150	
V_{O1}/V_{O2}	Crosstalk attenuation	Open loop	R_S = 1 kΩ, f = 10 kHz	25°C		85		dB
		A_{VD} = 100				105		

† All characteristics are measured under open-loop conditions with zero common-mode input voltage, unless otherwise specified. Full range is 0°C to 70°C. $T_{A(min)}$ is 0°C. $T_{A(max)}$ is 70°C.

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		0.13		ns
	Overshoot					5		%
SR	Slew rate at unity gain	V_I = 10 V,	R_L = 2 kΩ,	C_L = 100 pF	1.1	1.7		V/μs

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