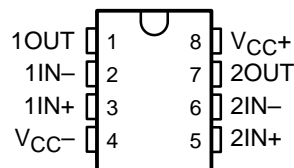


RC4558 DUAL GENERAL-PURPOSE OPERATIONAL AMPLIFIER

SLOS073B – MARCH 1976 – REVISED OCTOBER 2002

- 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/√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 μ A741, 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

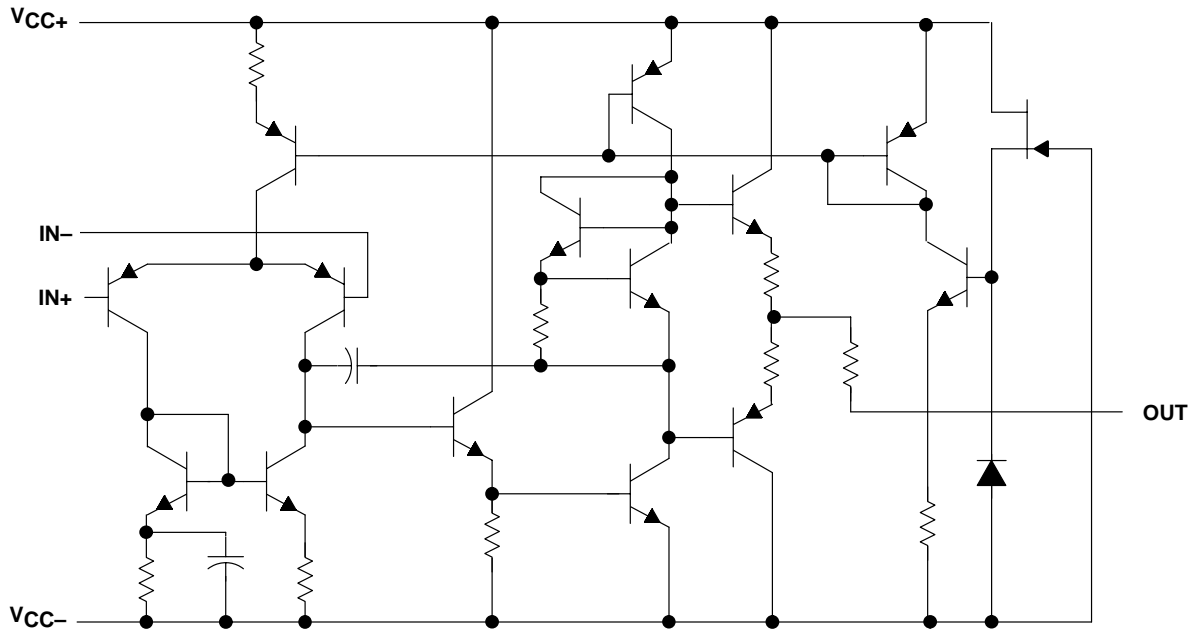
T _A	V _{IO} MAX AT 25°C	PACKAGE†		ORDERABLE PART NUMBER	TOP-SIDE MARKING
0°C to 70°C	6 mV	PDIP (P)	Tube	RC4558P	RC4558P
		SOIC (D)	Tube	RC4558D	RC4558
			Tape and reel	RC4558DR	
		SOP (PS)	Tape and reel	RC4558PSR	R4558
		TSSOP (PW)	Tube	RC4558PW	R4558
			Tape and reel	RC4558PWR	

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

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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



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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	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	$R_L = 10\text{ k}\Omega$	25°C	±12	±14	V
		$R_L = 2\text{ k}\Omega$	25°C	±10	±13	
		$R_L \geq 2\text{ k}\Omega$	Full range	±10		
A_{VD}	Large-signal differential voltage amplification	$R_L \geq 2\text{ k}\Omega$, $V_O = \pm 10\text{ V}$	25°C	20	300	V/mV
			Full range	15		
B_1	Unity-gain bandwidth	25°C		3		MHz
r_i	Input resistance	25°C	0.3	5		M Ω
CMRR	Common-mode rejection ratio	25°C	70	90		dB
k_{SVS}	Supply-voltage sensitivity ($\Delta V_{IO}/\Delta V_{CC}$)	$V_{CC} = \pm 15\text{ V}$ to $\pm 9\text{ V}$	25°C	30	150	$\mu\text{V/V}$
V_n	Equivalent input noise voltage (closed loop)	$A_{VD} = 100$, $R_S = 100\ \Omega$, $f = 1\text{ kHz}$, $BW = 1\text{ Hz}$	25°C	8		$\text{nV}/\sqrt{\text{Hz}}$
I_{CC}	Supply current (both amplifiers)	$V_O = 0$, No load	25°C	2.5	5.6	mA
			$T_A(\text{min})$	3	6.6	
			$T_A(\text{max})$	2.3	5	
P_D	Total power dissipation (both amplifiers)	$V_O = 0$, No load	25°C	75	170	mW
			$T_A(\text{min})$	90	200	
			$T_A(\text{max})$	70	150	
V_{O1}/V_{O2}	Crosstalk attenuation	Open loop $A_{VD} = 100$	$R_S = 1\text{ k}\Omega$, $f = 10\text{ kHz}$	25°C	85	dB
					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. $T_A(\text{min})$ is 0°C. $T_A(\text{max})$ is 70°C.

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

PARAMETER	TEST CONDITIONS			MIN	TYP	MAX	UNIT
t_r	Rise time	$V_I = 20\text{ mV}$, $R_L = 2\text{ k}\Omega$, $C_L = 100\text{ pF}$			0.13		ns
	Overshoot				5		%
SR	Slew rate at unity gain	$V_I = 10\text{ V}$,	$R_L = 2\text{ k}\Omega$,	$C_L = 100\text{ pF}$	1.1	1.7	V/ μs



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