- **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/$\sqrt{Hz}$ Typ at 1 kHz**
- **Designed To Be Interchangeable With Raytheon RC4558 Device**

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

1OUT	1	8	$V_{CC}+$
1IN–	2	7	2OUT
1IN+	3	6	2IN–
$V_{CC}-$	4	5	2IN+
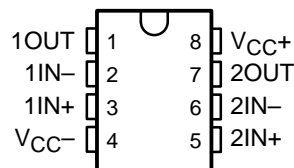
description/ordering information

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.

TEXAS INSTRUMENTS

RC4558
DUAL GENERAL-PURPOSE OPERATIONAL AMPLIFIER

schematic (each amplifier)
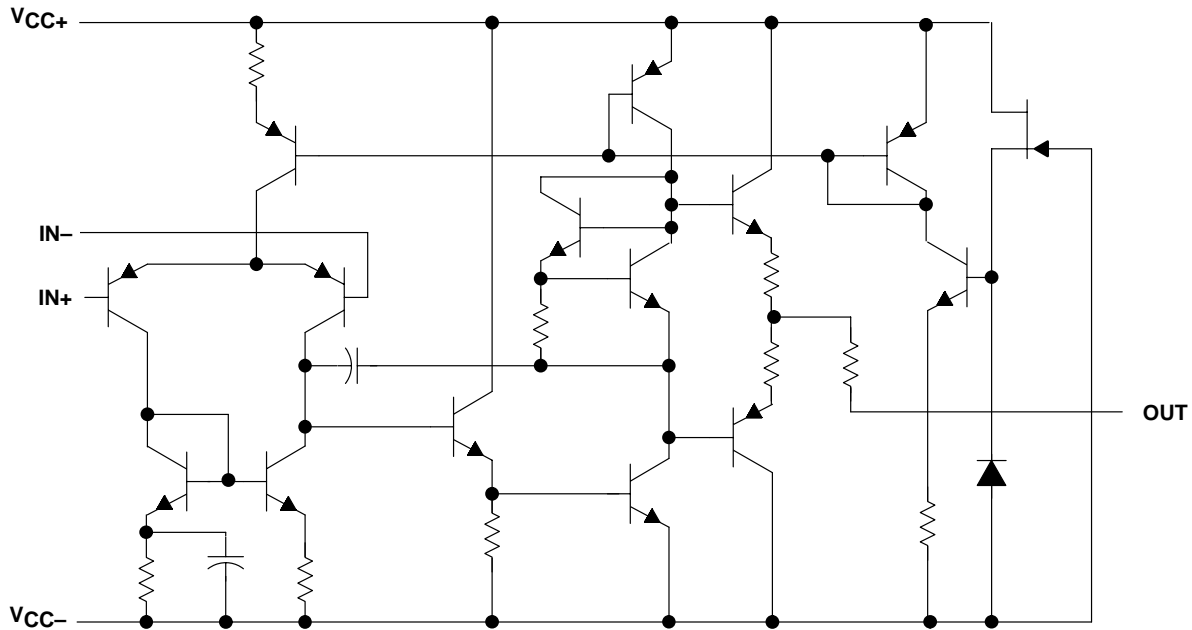
absolute maximum ratings over operating free-air temperature range (unless otherwise noted)†

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	$R_L = 10\ k\Omega$	25°C	±12	±14		V
		$R_L = 2\ k\Omega$	25°C	±10	±13		
		$R_L \geq 2\ k\Omega$	Full range	±10			
A_{VD}	Large-signal differential voltage amplification	$R_L \geq 2\ k\Omega$, $V_O = ±10$ 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)	$A_{VD} = 100$, $R_S = 100\ \Omega$, f = 1 kHz, BW = 1 Hz	25°C		8		nV/√$\overline{Hz}$
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	$R_S = 1\ k\Omega$, 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,	$R_L = 2\ k\Omega$,	$C_L = 100$ pF		0.13		ns
	Overshoot					5		%
SR	Slew rate at unity gain	$V_I = 10$ V,	$R_L = 2\ k\Omega$,	$C_L = 100$ pF	1.1	1.7		V/μs

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Product Folder: RC4558, Dual General-Purpose Operational Amplifier

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PRODUCT SUPPORT: DEVELOPMENT TOOLS | RELATED SOFTWARE | APPLICATIONS

RC4558, Dual General-Purpose Operational Amplifier
DEVICE STATUS: **ACTIVE**

PARAMETER NAME	RC4558
Number of Channels	2
Available Channels	D
Shutdown	No
Vs (max) (V)	30
Vs (min) (V)	10
IQ per channel (max) (mA)	2.8
GBW (typ) (MHz)	3
Slew Rate (typ) (V/us)	1.7
VIO (25 deg C) (max) (mV)	6
IIB (max) (pA)	500000
CMRR (min) (dB)	70
Vn at 1kHz (typ) (nV/rtHz)	8
Single Supply	No

FEATURES   ▲Back to Top

- 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

DESCRIPTION   ▲Back to Top

The RC4558 device is a dual general-purpose operational amplifier, with each half electrically similar to the uA741, except that offset null capability is not provided.

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TECHNICAL DOCUMENTS   ▲Back to Top

To view the following documents, Acrobat Reader 4.0 is required.
To download a document to your hard drive, right-click on the link and choose 'Save'.

DATASHEET   ▲Back to Top

Full datasheet in Acrobat PDF: rc4558.pdf (60 KB,Rev.B) (Updated: 10/17/2002)

Product Folder: RC4558, Dual General-Purpose Operational Amplifier

APPLICATION NOTES

View Application Notes for [Operational Amplifiers (Less than equal to 100MHz)](#)

- [Analog Applications Journal (Rev. A)](#) (SLYT010A - Updated: 03/17/2000)
- [Op Amps for Everyone Design Guide (Rev. B)](#) (SLOD006B - Updated: 08/22/2002)

MORE LITERATURE

- [Enhanced Plastic Portfolio Brochure](#) (SGZB004, 387 KB - Updated: 08/19/2002)
- [QML Class V Space Products Military Brief (Rev. A)](#) (SGZN001A, 257 KB - Updated: 10/07/2002)
- [Understanding Basic Analog - Active Devices (Rev. A)](#) (SLOA026A, 61 KB - Updated: 04/06/2000)
- [Understanding Basic Analog - Circuit Equations (Rev. A)](#) (SLOA025A, 89 KB - Updated: 04/06/2000)
- [Understanding Basic Analog Passive Devices](#) (SLOA027, 56 KB - Updated: 06/25/1999)

USER GUIDES

- [Universal Op Amp Single, Dual, Quad (SOIC) Evaluation Module With Shutdown (Rev. A)](#) (SLOU061A, 457 KB - Updated: 03/20/2001)
- [Universal Operational Amplifier EVM (Rev. A)](#) (SLVU006A, 387 KB - Updated: 03/22/1999)
- [Universal Operational Amplifier Evaluation Module Selection Guide (Rev. B)](#) (SLOU060B, 20 KB - Updated: 03/20/2001)
- [Universal Operational Amplifier Single, Dual, Quad (MSOP/TSSOP)](#) (SLOU055, 1196 KB - Updated: 10/22/1999)
- [Universal Operational Amplifier Single, Dual, Quad (PDIP) (Rev. A)](#) (SLOU062A, 513 KB - Updated: 03/20/2001)

SAMPLES

ORDERABLE DEVICE	PACKAGE INDUSTRY (TI)	PINS	TEMP (ºC)	STATUS	PRODUCT CONTENT	SAMPLES
RC4558D	SOIC (D)	8	0 TO 70	ACTIVE	View Product Content	Request Samples
RC4558P	PDIP (P)	8	0 TO 70	ACTIVE	View Product Content	Request Samples
RC4558PSR	SOP (PS)	8	0 TO 70	ACTIVE	View Product Content	Request Samples
RC4558PWR	TSSOP (PW)	8		ACTIVE	View Product Content	Request Samples

PRICING/AVAILABILITY/PKG

DEVICE INFORMATION
Updated Daily

ORDERABLE DEVICE	STATUS	PACKAGE TYPE | PINS	TEMP (ºC)	PRODUCT CONTENT	BUDGETARY PRICING QTY | $US	STD PACK QTY
RC4558D	ACTIVE	SOIC (D) | 8	0 TO 70	View Contents	1KU | 0.26	75

TI INVENTORY STATUS
As Of 09:00 AM GMT, 17 Apr 2003

IN STOCK	IN PROGRESS QTY | DATE	LEAD TIME
2145*	2055 | 21 Apr	4 WKS
	4099 | 25 Apr	
	1625 | 30 Apr	
	>10k | 06 May	

REPORTED DISTRIBUTOR INVENTORY
As Of 09:00 AM GMT, 17 Apr 2003

DISTRIBUTOR COMPANY | REGION	IN STOCK	PURCHASE
Arrow | Americas	>1k	BUY NOW
EBV Electronik | Europe	>1k	BUY NOW
Avnet-SILICA | Europe	>1k	BUY NOW
Avnet | Americas	>1k	BUY NOW
Abacus Polar | Europe	440	BUY NOW
DigiKey | Americas	69	BUY NOW
Insight | Americas	63	BUY NOW

Product Folder: RC4558, Dual General-Purpose Operational Amplifier

RC4558DR	ACTIVE	SOIC (D)	| 8	0 TO 70	View Contents	1KU | 0.26	2500	>10k*	>10k | 28 Apr	2 WKS	Avnet | Americas	>1k	BUY NOW
											Arrow | Americas	>1k	BUY NOW
											DigiKey | Americas	>1k	BUY NOW
RC4558P	ACTIVE	PDIP (P)	| 8	0 TO 70	View Contents	1KU | 0.26	50	3000*	>10k | 28 Apr	2 WKS	Avnet | Americas	>1k	BUY NOW
											EBV Electronik | Europe	>1k	BUY NOW
											Arrow | Americas	>1k	BUY NOW
											DigiKey | Americas	>1k	BUY NOW
											Newark Electronics | Americas	>1k	BUY NOW
											Abacus Polar | Europe	1k	BUY NOW
											Insight | Americas	88	BUY NOW
RC4558PSLE	OBSOLETE	SOP (PS)	| 8	0 TO 70	View Contents	1KU |		0*		Call**	None Reported View Distributors		
RC4558PSR	ACTIVE	SOP (PS)	| 8	0 TO 70	View Contents	1KU | 0.26	2000	0*	468 | 21 Apr	4 WKS	DigiKey | Americas	958	BUY NOW
									>10k | 22 Apr				
RC4558PW	ACTIVE	TSSOP (PW)	| 8		View Contents	1KU | 0.21	150	0*	1050 | 16 Apr	4 WKS	None Reported View Distributors		
									84 | 21 Apr				
									>10k | 08 May				
RC4558PWLE	OBSOLETE	TSSOP (PW)	| 8	0 TO 70	View Contents	1KU |		0*		Call**	None Reported View Distributors		
RC4558PWR	ACTIVE	TSSOP (PW)	| 8		View Contents	1KU | 0.26	2000	0*	>10k | 08 May	4 WKS	Avnet | Americas	>1k	BUY NOW
											DigiKey | Americas	>1k	BUY NOW
RC4558Y	OBSOLETE	(Y)	| 0		View Contents	1KU |		0*		Call**	None Reported View Distributors		

DEVELOPMENT TOOLS		▲Back to Top
Tool Part Number	**Tool Title**	**Tool Type**
OPAMPEVM-SOT23	Universal EVM for Single/Dual OpAmps without Shutdown in MSOP/SOIC/SOT-23 Packages	Development Boards/EVMs
UNIV-OPAMP-GUIDE	Universal EVM Selection Guide	Development Boards/EVMs

RELATED SOFTWARE	▲Back to Top

- FilterPro MFB and Sallen-Key Design Program (Rev. A) (SLVC003A, 4314 KB, ZIP - Updated: 02/27/2002)

MODELS	▲Back to Top

Product Folder: RC4558, Dual General-Purpose Operational Amplifier

- [RC4558 Spice Macromodel](#) (SLOJ053, 0 KB, ZIP - Updated: 01/10/2002)

Table Data Updated on: 4/17/2003