

GENERAL DESCRIPTION

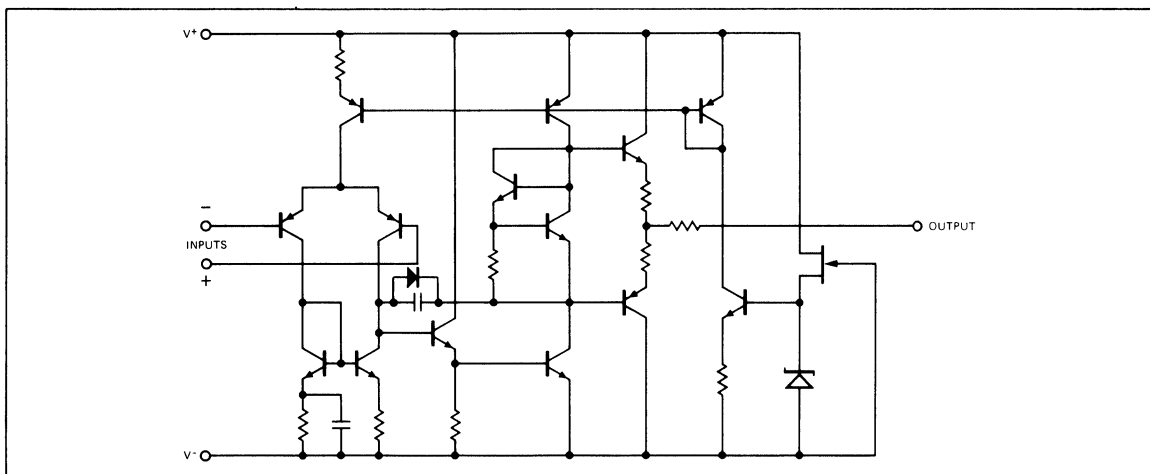
The 4558 integrated circuit is a high gain operational amplifier internally compensated and constructed on a single silicon chip using the planar epitaxial process.

Combining all of the outstanding features of the 741 with the close parameter matching and tracking of a dual device on a monolithic chip results in unique performance characteristics. Excellent channel separation allows the use of the dual device in all single 741 operational amplifier applications providing the highest possible packaging density. It is especially well suited for applications in differential-in, differential-out as well as in potentiometric amplifiers and where gain and phase matched channels are mandatory.

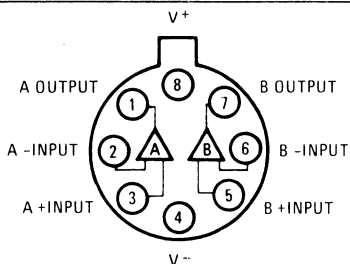
DESIGN FEATURES

- Supply Voltage ± 18 V
- Continuous Short-Circuit Protection
- No Frequency Compensation Required
- No Latch-Up
- Unity Gain Bandwidth 3 MHz
- Large Common-Mode and Differential Voltage Ranges
- Low Power Consumption
- Parameter Tracking Over Temperature Range
- Gain and Phase Match Between Amplifiers

SCHEMATIC DIAGRAM

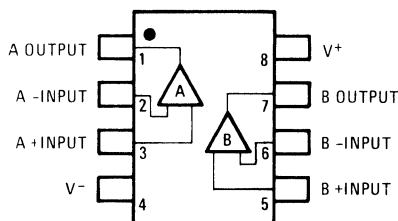


CONNECTION INFORMATION



TE Metal Can Package
(Top View)

Order Part Nos.:
RC4558T, RM4558T



NB Dual In-line
Plastic Package
(Top View)

Order Part Nos.:
RC4558NB, RV4558T

ABSOLUTE MAXIMUM RATINGS

Supply Voltage	RM4558: $\pm 22\text{V}$ RC4558: $\pm 18\text{V}$	Operating Temperature Range	RM4558: -55°C to $+125^{\circ}\text{C}$ RV4558: -40°C to $+85^{\circ}\text{C}$ RC4558: 0°C to $+70^{\circ}\text{C}$
Internal Power Dissipation (Note 1)	500mW	Lead Temperature (Soldering, 60s)	300°C
Differential Input Voltage	$\pm 30\text{V}$	Output Short-Circuit Duration (Note 3)	Indefinite
Input Voltage (Note 2)	$\pm 15\text{V}$		
Storage Temperature Range	-65°C to $+150^{\circ}\text{C}$		

ELECTRICAL CHARACTERISTICS ($V_{CC} = \pm 15\text{V}$, $T_A = 25^{\circ}\text{C}$ unless otherwise specified)

PARAMETER	CONDITIONS	RM4558			RV/RC4558			UNITS
		MIN	TYP	MAX	MIN	TYP	MAX	
Input Offset Voltage	$R_S \leq 10\text{k}\Omega$		1.0	5.0		2.0	6.0	mV
Input Offset Current			30	200		30	200	nA
Input Bias Current			200	500		200	500	nA
Input Resistance		0.3	1.0		0.3	1.0		M Ω
Large-Signal Voltage Gain	$R_L \geq 2\text{k}\Omega$ $V_{out} = \pm 10\text{V}$	50,000	200,000		20,000	100,000		
Output Voltage Swing	$R_L \geq 10\text{k}\Omega$	± 12	± 14		± 12	± 14		V
	$R_L \geq 2\text{k}\Omega$	± 10	± 13		± 10	± 13		V
Input Voltage Range		± 12	± 13		± 12	± 13		V
Common Mode Rejection Ratio	$R_S \leq 10\text{k}\Omega$	70	90		70	90		dB
Supply Voltage Rejection Ratio	$R_S \leq 10\text{k}\Omega$		30	150		30	150	$\mu\text{V/V}$
Power Consumption			100	170		100	170	mW
Transient Response (unity gain)	$V_{IN} = 20\text{mV}$ $R_L = 2\text{k}\Omega$ $C_L \leq 100\text{pF}$							
Risetime			0.3			0.3		μs
Overshoot			5.0			5.0		%
Slew Rate (unity gain)	$R_L \geq 2\text{k}\Omega$		0.5			0.5		V/ μs
Channel Separation (open loop)	$f = 10\text{kHz}$ $R_S = 1\text{k}\Omega$		70			70		dB
(Gain = 100)	$f = 10\text{kHz}$ $R_S = 1\text{k}\Omega$		83			83		dB

The following specifications apply for $-55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$ for RM4558; $0^{\circ}\text{C} \leq T_A \leq +70^{\circ}\text{C}$ for RC4558; $-40^{\circ}\text{C} \leq T_A \leq +85^{\circ}\text{C}$ for RV4558

Input Offset Voltage	$R_S \leq 10\text{k}\Omega$			6.0			7.5	mV
Input Offset Current				500			300/500*	nA
Input Bias Current				1.5			.8/1.5*	nA
Large-Signal Voltage Gain	$R_L \geq 2\text{k}\Omega$ $V_{out} = \pm 10\text{V}$	25,000			15,000			
Output Voltage Swing	$R_L \geq 2\text{k}\Omega$	± 10			± 10			V
Power Consumption	$V_S = \pm 15\text{V}$ $T_A = +125^{\circ}\text{C}$ $T_A = -55^{\circ}\text{C}$		90 120	150 200		90 120	150 200	mW

*RV4558

MATCHING CHARACTERISTICS ($V_{CC} = \pm 15\text{V}$, $T_A = 25^{\circ}\text{C}$ unless otherwise specified)

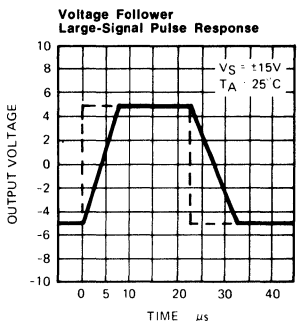
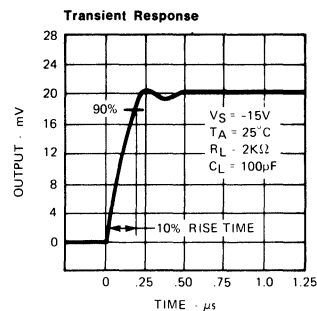
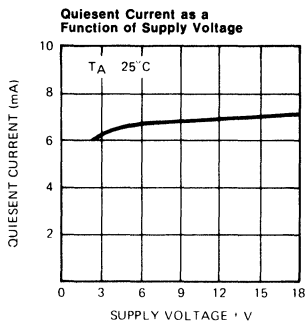
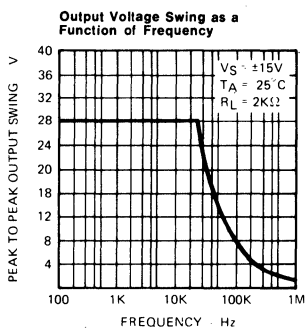
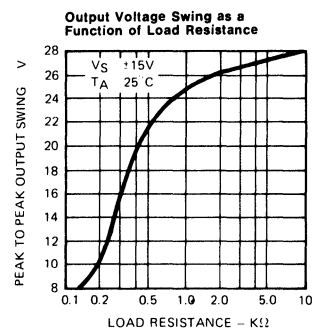
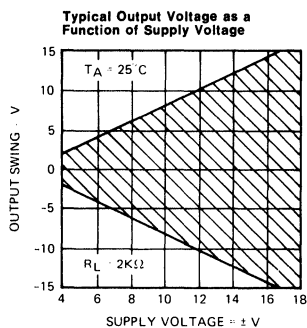
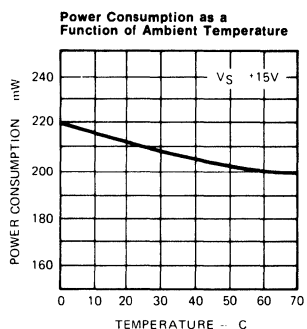
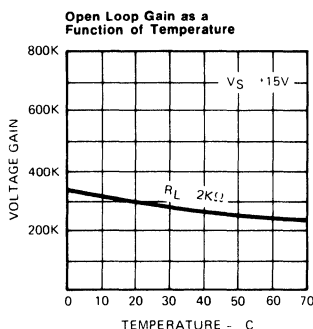
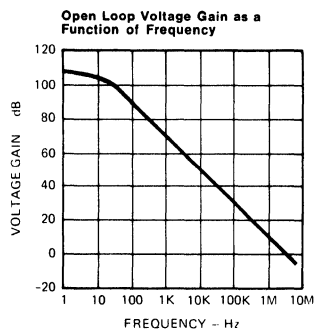
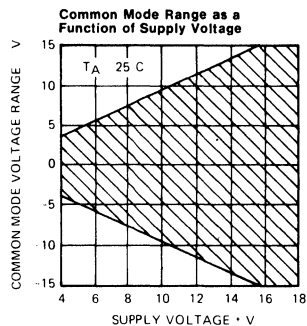
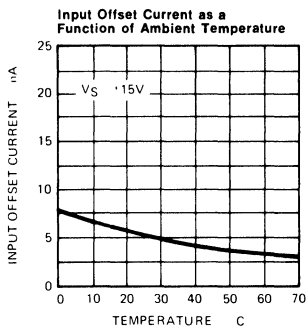
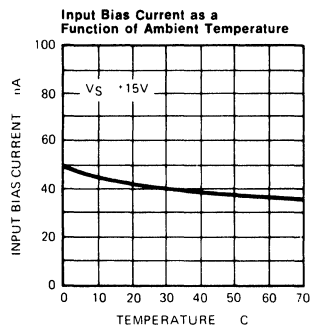
PARAMETER	CONDITIONS	RM4558 TYP	RC4558 TYP	UNITS
Voltage Gain	$R_L \geq 2\text{k}\Omega$	± 5	± 1.0	dB
Input Bias Current		± 15	± 15	nA
Input Offset Current		± 7.5	± 7.5	nA
Input Offset Voltage	$R_S \geq 10\text{k}\Omega$	± 1	± 2	mV

NOTE 1: Rating applies for case temperatures to 125°C ; derate linearly at $6.5\text{mW}/^{\circ}\text{C}$ for ambient temperatures above $+75^{\circ}\text{C}$ for RM4558.

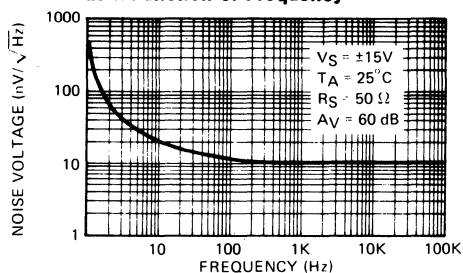
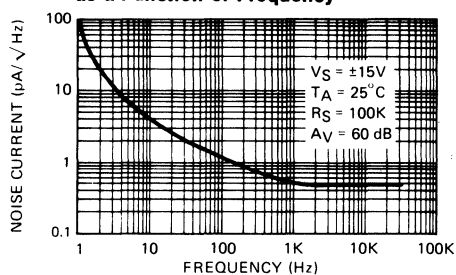
NOTE 2: For supply voltages less than $\pm 15\text{V}$, the absolute maximum input voltage is equal to the supply voltage.

NOTE 3: Short circuit may be to ground or either supply. Rating applies to $+125^{\circ}\text{C}$ case temperature or $+75^{\circ}\text{C}$ ambient temperature for RC4558 and to $+85^{\circ}\text{C}$ ambient temperature for RV4558.

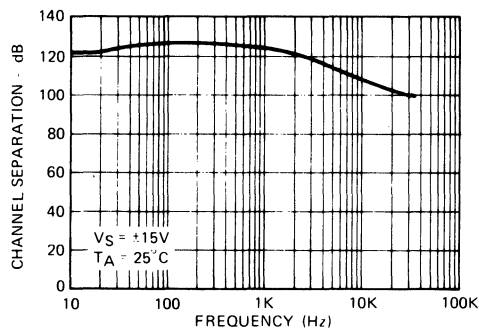
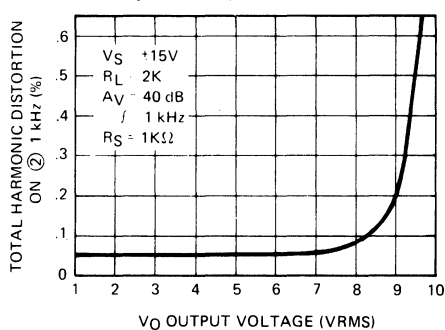
TYPICAL ELECTRICAL DATA



TYPICAL ELECTRICAL DATA

Input Noise Voltage
as a Function of FrequencyInput Noise Current
as a Function of Frequency

Channel Separation

Total Harmonic Distortion
vs Output VoltageDistortion vs Frequency
 $V_O = 1 \text{ vrms}$ 