

GENERAL DESCRIPTION

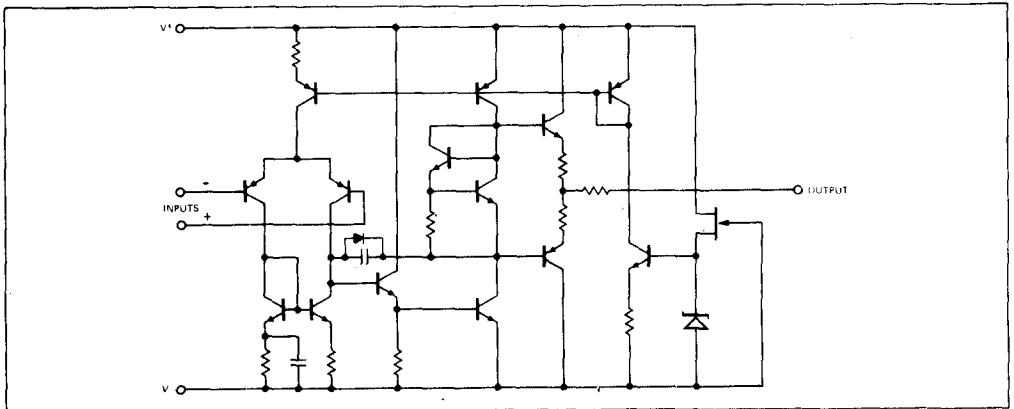
The RC4739 dual low-noise operational amplifier is fabricated on a single silicon chip using the planar epitaxial process. It was designed primarily for preamplifiers in consumer and industrial signal processing equipment. The device is pin compatible with the μ A739 and MC1303, however, compensation is internal. This permits a lowered external parts count and simplified application.

The RC4739 is available in molded dual in-line 14-pin package and operated over the commercial temperature range from 0°C to +70°C.

DESIGN FEATURES

- Internally Compensated Replacement for μ A739 and MC1303
- Signal-to-Noise Ratio 76 dB (RIAA 10 mV ref.)
- Channel Separation 125 dB
- Unity Gain Bandwidth 3MHz
- Output Short-Circuit Protected
- 0.1% Distortion at 8.5 V RMS Output into 2 k Ω Load

SCHEMATIC DIAGRAM (1/2 Shown)



CONNECTION INFORMATION

DB
Dual In-line Package
(Top View)

PIN	FUNCTION
1	A OUTPUT
2	NC
3	NC
4	NC
5	+A INPUT
6	-A INPUT
7	V ⁻
8	B INPUT
9	+B INPUT
10	NC
11	NC
12	NC
13	B OUTPUT
14	V ⁺

Order Part No.:
RC4739DB

ABSOLUTE MAXIMUM RATINGS

Supply Voltage	±18 V	Storage Temperature Range	-65°C to +150°C
Internal Power Dissipation (Note 1)	500 mW	Operating Temperature Range	0°C to +70°C
Differential Input Voltage	±30 V	Lead Temperature (Soldering, 60s)	300°C
Input Voltage (Note 2)	±15 V	Output Short-Circuit Duration (Note 3)	Indefinite

ELECTRICAL CHARACTERISTICS (V_{CC} = ±15V, T_A = +25°C unless otherwise noted.)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Input Offset Voltage	R _S ≤ 10 kΩ		2.0	6.0	mV
Input Offset Current			5.0	200	nA
Input Bias Current			40	500	nA
Input Resistance		0.3	5.0		MΩ
Large-Signal Voltage Gain	R _L ≥ 2 kΩ V _{out} = ±10V	20,000	300,000		V/V
Output Voltage Swing	R _L ≥ 10 kΩ	±12	±14		V
	R _L ≥ 2 kΩ	±10	±13		V
Input Voltage Range		±12	±14		V
Common Mode Rejection Ratio	R _S ≤ 10 kΩ	70	100		dB
Supply Voltage Rejection Ratio	R _S ≤ 10 kΩ		10	150	μV/V
Power Consumption			105	170	mW
Transient Response (unity gain) Risetime	V _{in} = 20 mV R _L = 2 kΩ C _L ≤ 100pF		0.15		μs
Transient Response (unity gain) Overshoot	V _{in} = 20 mV R _L = 2 kΩ C _L ≤ 100 pF		10		%
Slew Rate (unity gain)	R _L ≥ 2 kΩ		1.0		V/μs
Broadband Noise Voltage	B _W = 10-30 KHz R _S = 1 kΩ		2.5		μV _{RMS}
Channel Separation	f = 1.0 kHz A _V = 40 dB R _S = 1 kΩ		125		dB

The following specification apply for 0°C ≤ T_A ≤ 70°C unless otherwise specified.

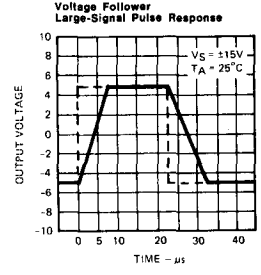
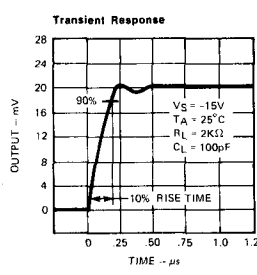
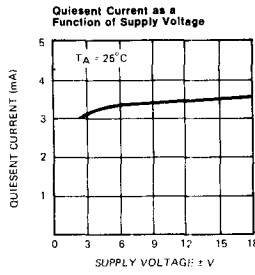
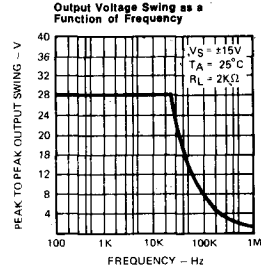
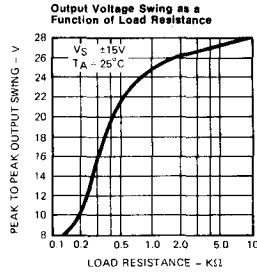
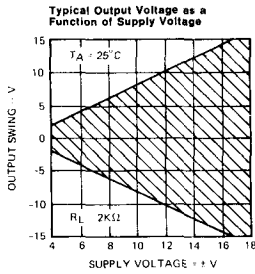
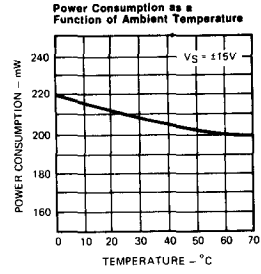
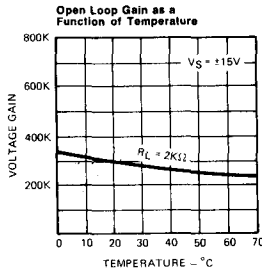
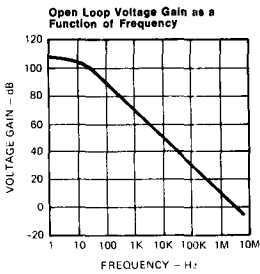
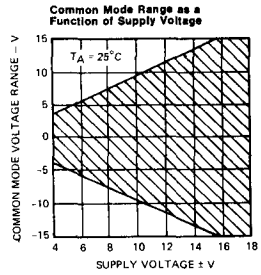
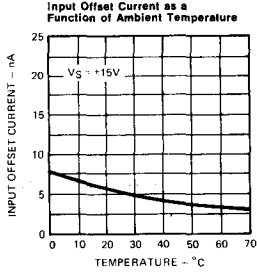
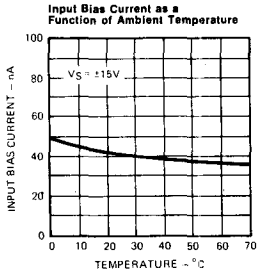
Input Offset Voltage	R _S ≤ 10 kΩ		3.0	7.5	mV
Input Offset Current			7.0	300	nA
Input Bias Current			50	800	nA
Large-Signal Voltage Gain	R _L ≥ 2 kΩ V _{out} = ±10V	15,000	200,000		
Output Voltage Swing	R _L ≥ 2 kΩ	±10	±13		V
Power Consumption	V _S = ±15V				
	T _A = 70°C		100	150	mW
	T _A = 0°C		110	220	mW

NOTES:

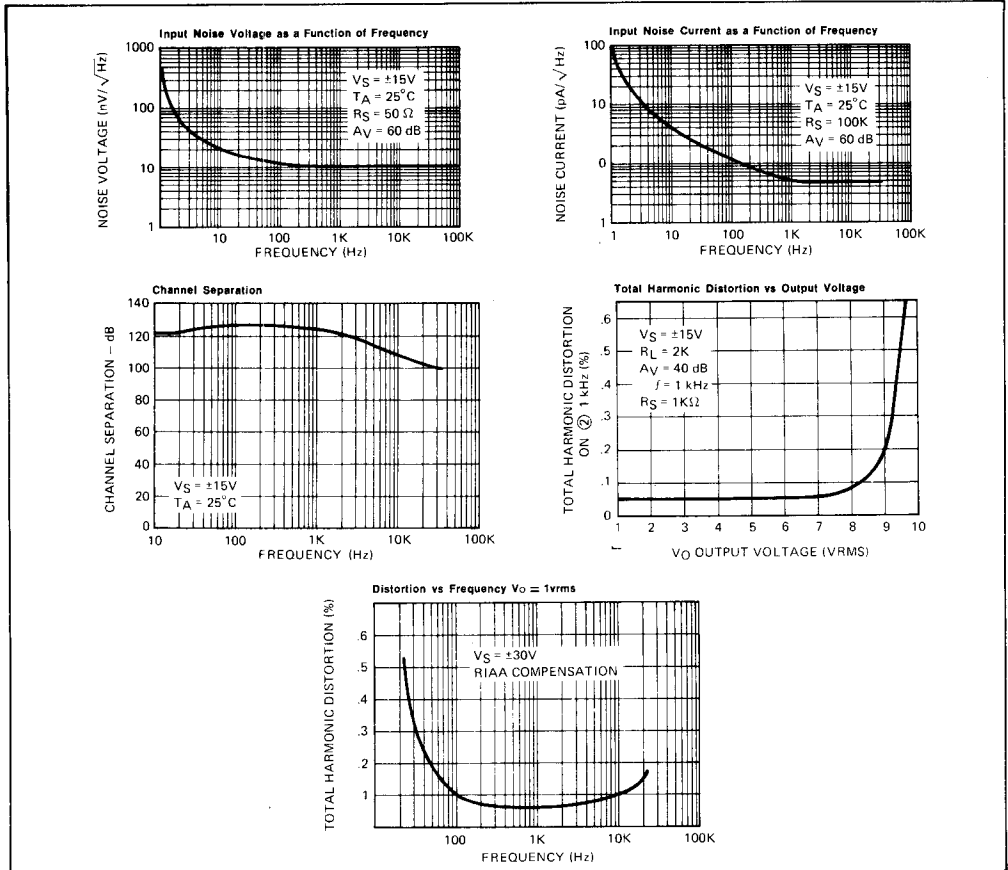
1. Rating applies for ambient temperatures below +70°C.
2. For supply voltages less than ±15V, the absolute maximum input voltage is equal to the supply voltage.
3. Short-circuit may be to ground, typically 45 mA. Rating applies to +125°C case temperature or +75°C ambient temperature.



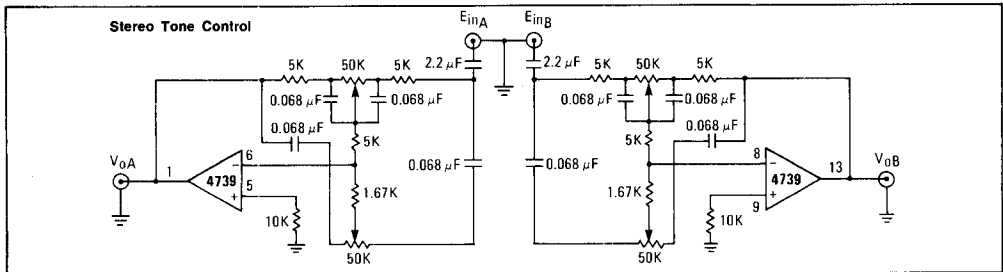
TYPICAL ELECTRICAL DATA



TYPICAL ELECTRICAL DATA



TYPICAL APPLICATIONS



	SYMBOL	RM/RC4558			RM/RC4559			RC4739			UNIT
Maximum Ratings		±4 to			±4 to			±4 to			
Supply Voltage Range	V _{CC}	±18			±18			±18			V
Differential Input Voltage	V _{ID}	±30			±30			±30			V
Input Voltage		±15			±15			±15			V
Power Dissipation	P _D	500			500			500			mW
Electrical Characteristics	@ 25°C	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	
Test Conditions	V _{CC}		±15			±15			±15		V
Input Offset Voltage	V _{ID}		1.0 2.0*	5.0 6.0*		1.0 2.0*	5.0 6.0*		2.0 6.0		mV
Input Offset Current	I _{IO}		5.0	200		5.0	200		5.0	200	nA
Input Bias Current	I _{IB}		40/200*	500		40/200*	500		40	500	nA
Input Common Mode Voltage Range	V _{ICR}	±12	±14		±12	±14		±12	±14		V
Supply Current	I _D		3.5	5.6		3.5	5.6		3.5	5.6	mA
Open Loop Voltage Gain	A _{VOL}	50/20*	300		50/20*	300		20	300		V/mV
Output Voltage Swing	V _{OR}	±12	±14		±12	±14		±12	±14		V
Common Mode Rejection Ratio	CMRR	70	100		70	100		70	100		dB
Power Supply Rejection Ratio	PSSR		10	150		10	150		10	150	μV/V
Unity Gain Bandwidth	BW	2.5/2.0*	3.0		3	4		3.0			MHz
Slew Rate	SR		0.5		1.5	2.0		1.0			V/μs
Channel Separation			-90			-90			-125		dB
Noise Voltage	V _N		10		2.0†	1.4†			2.5†		nV/(Hz) ^{1/2}
Operating Temperature Range	T _A	-55 0	RM RC	+125 70	-55 0	RM RC	+125 70	0		70	°C
Package:	Hermetic TO-5		TE			TE					
	Hermetic Dip		DE			DE					
	Plastic Dip		NB			NB			DB		

* Commercial temp range device.

† Broad Band noise voltage -20 Hz to 20 kHz (μV_{RMS}).