Dual Low-Noise Operational Amplifier

GENERAL DESCRIPTION

The XR-4739 is a monolithic dual op amp featuring low noise and a large gain bandwidth product. The device is ideal for preamplifiers, signal processing equipment, and active filters.

FEATURES

Internally Compensated Replacement for μA 739 and MC1303
Signal-to-Noise Ratio 76dB (RIAA 10 mV ref.)
Channel Separation 125dB
Unity Gain Bandwidth 3MHz
Output Short-circuit Protected
0.1% Distortion at 8.5V RMS Output into 2KΩ Load

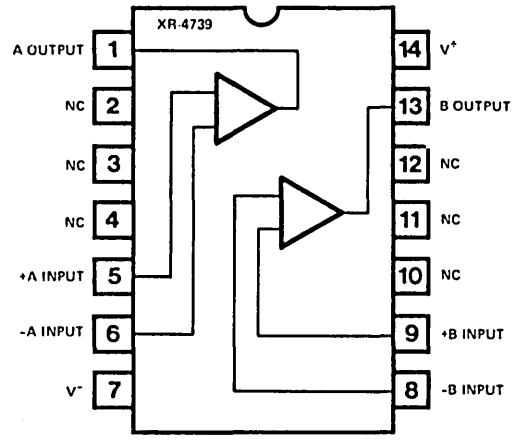
APPLICATIONS

Buffer Amplifiers
Summing/Differencing Amplifiers
Instrumentation Amplifiers
Active Filters
Signal Processing
Sample and Differencing
I to V Converters
Integrators
Simulated Components
Analog Computers

ABSOLUTE MAXIMUM RATINGS

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

FUNCTIONAL BLOCK DIAGRAM



ORDERING INFORMATION

Part Number	Package	Operating Temperature
XR-4739CN	Ceramic	0°C to +70°C
XR-4739CP	Plastic	0°C to +70°C

SYSTEM DESCRIPTION

The XR-4739 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 μA739 and MC1303, however, compensation is internal. This permits a lowered external parts count and simplified application.

The XR-4739 is available in a ceramic or molded dual inline 14 Pin package, and operates over the commercial temperature range from 0°C to +70°C.

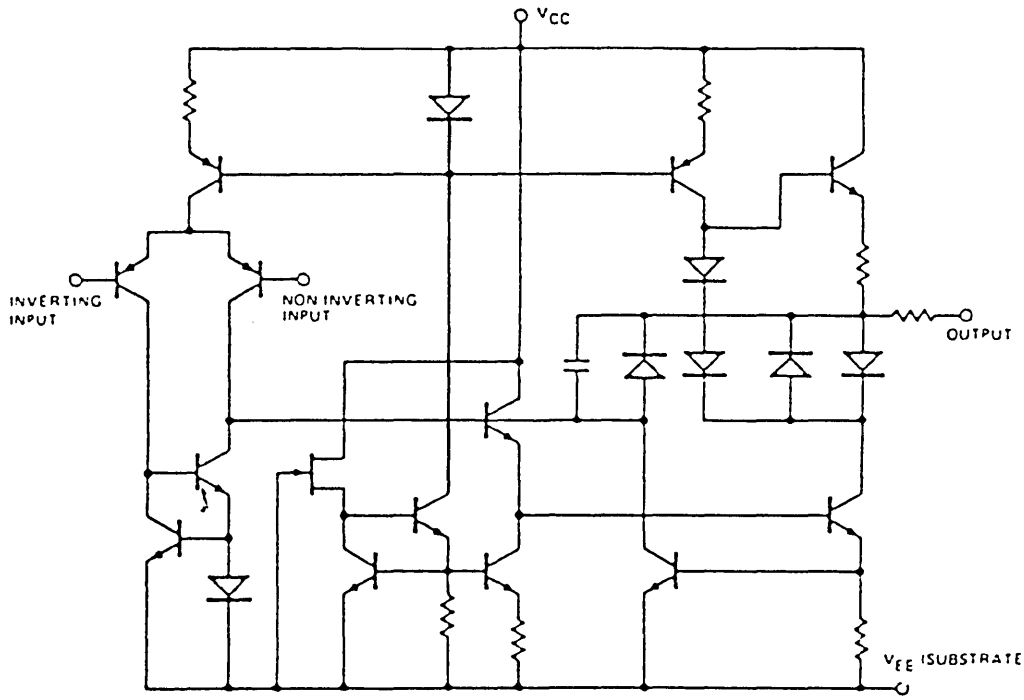
ELECTRICAL CHARACTERISTICS

Test Conditions: T_A = 25°C, V_{CC} = ±15V, unless otherwise specified.

PARAMETERS	MIN	TYP	MAX	UNITS	CONDITIONS
Input Offset Voltage		2.0	6.0	mV	$R_S \leq 10$ kΩ
Input Offset Current		5.0	200	nA	
Input Bias Current		40	500	nA	
Input Resistance	0.3	5.0		MΩ	
Large-Signal Voltage Gain	20	60		K	$R_L \geq 2$ kΩ V_{out} = ±10V
Output Voltage Swing	±12 ±10	±14 ±13		V V	$R_L \geq 10$ kΩ $R_L \geq 2$ kΩ
Input Voltage Range	±12	±14		V	
Common Mode Rejection Ratio	70	100		dB	$R_S \leq 10$ kΩ
Supply Voltage Rejection Ratio		10	150	μV/V	$R_S \leq 10$ kΩ
Power Consumption		40	120	mW	
Transient Response (unity gain) Risetime		0.15		μs	V_{in} = 20 mV R_L = 20 kΩ $C_L \leq 100$ pF
Transient Response (unity gain) Overshoot		10		%	V_{in} = 20 mV R_L = 2 kΩ $C_L \leq 100$ pF
Slew Rate (unity gain)		1.0		V/μs	$R_L \geq 2$ kΩ
Broadband Noise Voltage		2.5		μV_{RMS}	B_W = 10 Hz-30 KHz R_S = 1 kΩ
Channel Separation		125		dB	f = 1.0 kHz A_V = 40 dB R_S = 1 kΩ
The following specifications apply for 0°C ≤ T_A ≤ 75°C unless otherwise specified.					
Input Offset Voltage		3.0	7.5	mV	$R_S \leq 10$ kΩ
Input Offset Current		7.0	300	nA	
Input Bias Current		50	800	nA	
Large-Signal Voltage Gain	15,000	200,000			$R_L \geq 2$ kΩ V_{out} = ±10V
Output Voltage Swing	±10	±13		V	$R_L \geq 2$ kΩ
Power Consumption		100 110	150 200	mW mW	V_S = ±15V T_A = 70°C T_A = 0°C

Notes:

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



EQUIVALENT SCHEMATIC DIAGRAM

½ of XR-4739