

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 μ A 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 2K Ω Load

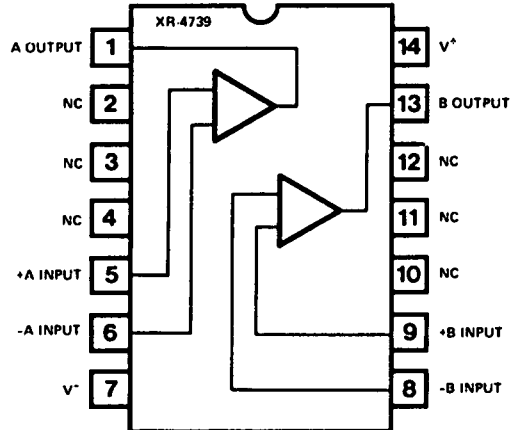
APPLICATIONS

- 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	± 18 V
Internal Power Dissipation (Note 1)	500 mW
Differential Input Voltage	± 30 V
Input Voltage (Note 2)	± 15 V
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 μ A739 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 in-line 14 Pin package, and operates over the commercial temperature range from 0°C to +70°C.

ELECTRICAL CHARACTERISTICS

Test Conditions: $T_A = 25^\circ\text{C}$, $V_{CC} = \pm 15\text{V}$, unless otherwise specified.

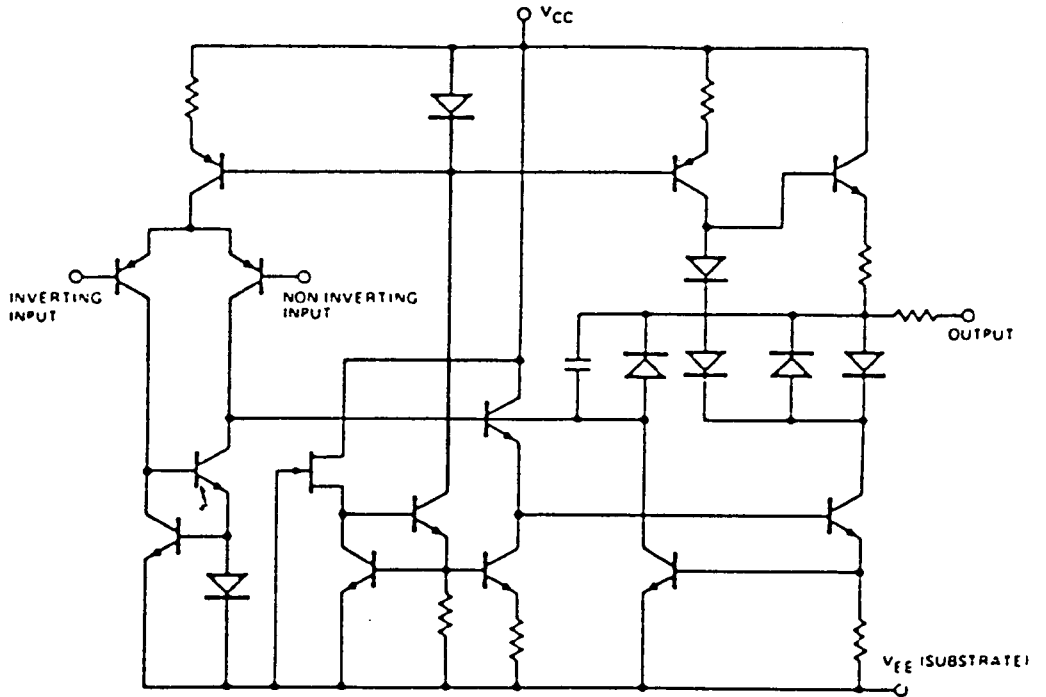
PARAMETERS	MIN	TYP	MAX	UNITS	CONDITIONS
Input Offset Voltage		2.0	6.0	mV	$R_S \leq 10\text{ k}\Omega$
Input Offset Current		5.0	200	nA	
Input Bias Current		40	500	nA	
Input Resistance	0.3	5.0		M Ω	
Large-Signal Voltage Gain	20	60		K	$R_L \geq 2\text{ k}\Omega$ $V_{out} = \pm 10\text{V}$
Output Voltage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

Notes:

1. Rating applies for ambient temperatures below $+75^\circ\text{C}$
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 $+125^\circ\text{C}$ ambient temperature.

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XR-4739



EQUIVALENT SCHEMATIC DIAGRAM

$\frac{1}{2}$ of XR-4739

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XR-1488/1489A

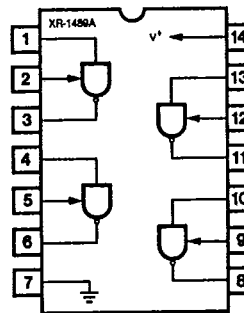
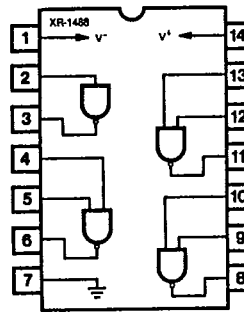
Quad Line Driver/Receiver

GENERAL DESCRIPTION

The XR-1488 is a monolithic quad line driver designed to interface data terminal equipment with data communications equipment in conformance with the specifications of EIA Standard No. RS232C. This extremely versatile integrated circuit can be used to perform a wide range of applications. Features such as output current limiting, independent positive and negative power supply driving elements, and compatibility with all DTL and TTL logic families greatly enhance the versatility of the circuit.

The XR-1489A is a monolithic quad line receiver designed to interface data terminal equipment with data communications equipment. The XR-1489A quad receiver along with its companion circuit, the XR-1488 quad driver, provide a complete interface system between DTL or TTL logic levels and the RS232C defined voltage and impedance levels.

FUNCTIONAL BLOCK DIAGRAMS



ABSOLUTE MAXIMUM RATINGS

Power Supply		
XR-1488		± 15 Vdc
XR-1489A		+ 10 Vdc
Power Dissipation		
Ceramic Package		1000 mW
Derate above +25°C		6.7 mW/°C
Plastic Package		650 mW/°C
Derate above +25°C		5 mW/°C

ORDERING INFORMATION

Part Number	Package	Operating Temperature
XR-1488N	Ceramic	0°C to +70°C
XR-1488P	Plastic	0°C to +70°C
XR-1489AN	Ceramic	0°C to +70°C
XR-1489AP	Plastic	0°C to +70°C

SYSTEM DESCRIPTION

The XR-1488 and XR-1489A are a matched set of quad line drivers and line receivers designed for interfacing between TTL/DTL and RS232C data communication lines.

The XR-1488 contains four independent split supply line drivers, each with a ± 10 mA current limited output. For RS232C applications, the slew rate can be reduced to the 30 V/μS limit by shunting the output to ground with a 410 pF capacitor. The XR-1489A contains four independent line receivers, designed for interfacing RS232C to TTL/DTL. Each receiver features independently programmable switching thresholds with hysteresis, and input protection to ± 30 V. The output can typically source 3 mA and sink 20 mA.