

Dual-Polarity Tracking Voltage Regulator

GENERAL DESCRIPTION

The XR-1468/1568 is a dual polarity tracking voltage regulator, internally trimmed for symmetrical positive and negative 15V outputs. Current output capability is 100 mA, and may be increased by adding external pass transistors. The device is intended for local "on-card" regulation, which eliminates the distribution problems associated with single point regulation.

The XR-1468CN and XR-1568N are guaranteed over the 0°C to 70°C commercial temperature range. The XR-1568M is rated over the full military temperature range of -55°C to +125°C.

FEATURES

- Internally Set for ± 15 V Outputs
- ± 100 mA Peak Output Current
- Output Voltages Balanced Within 1% (XR-1568)
- 0.06% Line and Load Regulation
- Low Stand-By Current
- Output Externally Adjustable from ± 8 to ± 20 Volts
- Externally Adjustable Current Limiting
- Remote Sensing

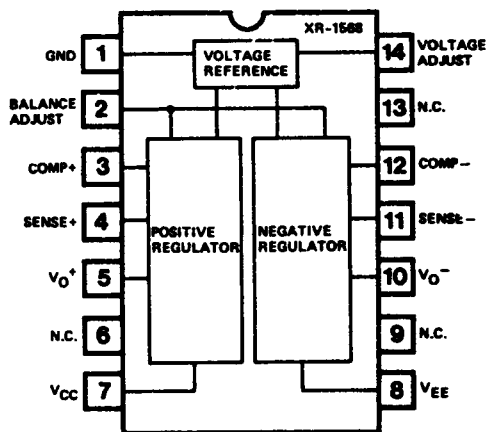
APPLICATIONS

- Main Regulation in Small Instruments
- On-Card Regulation in Analog and Digital Systems
- Point-of-Load Precision Regulation

ABSOLUTE MAXIMUM RATINGS

Power Supply	± 30 Volts
Minimum Short-Circuit Resistance	4.0 Ohms
Load Current, Peak	± 100 mA
Power Dissipation	
Ceramic (N) Package	1.0 Watt
Derate Above +25°C	6.7 mW/°C
Operating Temperature	
XR-1568M	-55°C to +125°C
XR-1568/XR-1468C	0°C to +70°C
Storage Temperature	-65°C to +150°C

FUNCTIONAL BLOCK DIAGRAM



ORDERING INFORMATION

Part Number	Temperature	Output Offset	Package
XR-1568M	-55°C to +125°C	± 150 mV max	Ceramic
XR-1568N	0°C to +70°C	± 150 mV max	Ceramic
XR-1468CN	0°C to +70°C	± 300 mV max	Ceramic

SYSTEM DESCRIPTION

The XR-1468/1568 is a dual polarity tracking voltage regulator combining two separate regulators with a common reference element in a single monolithic circuit, thus providing a very close balance between the positive and negative output voltages. Outputs are internally set to ± 15 Volts but can be externally adjusted between ± 8.0 to ± 20 Volts with a single control. The circuit features ± 100 mA output current, with externally adjustable current limiting, and provision for remote voltage sensing.

XR-1468/1568

ELECTRICAL CHARACTERISTICS

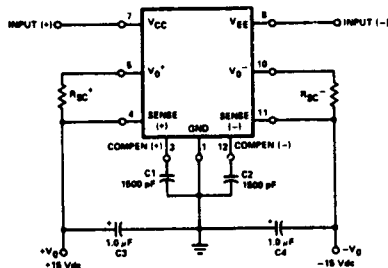
Test conditions: ($V_{CC} = +20V$, $V_{EE} = -20V$, $C1 = C2 = 1500 \mu F$, $C3 = C4 = 1.0 \mu F$, $R_{SC}^+ = R_{SC}^- = 4.0\Omega$, $I_L^+ = I_L^- = 0$, $T_C = +25^\circ C$ unless otherwise noted.)

PARAMETERS	XR-1468C			XR-1568			UNITS
	MIN	TYP	MAX	MIN	TYP	MAX	
Output Voltage	14.5	15	15.5	14.8	15	15.2	Vdc
Input Voltage	—	—	30	—	—	30	Vdc
Input-Output Voltage Differential	2.0	—	—	2.0	—	—	Vdc
Output Voltage Balance	—	± 50	± 300	—	± 50	± 150	mV
Line Regulation Voltage ($V_{in} = 18V$ to $30V$) (T_L^\dagger to $T_H^{\dagger\dagger}$)	—	—	10 20	—	—	10 20	mV
Load Regulation Voltage ($I_L = 0$ to 50 mA , $T_J = \text{constant}$) ($T_A = T_L$ to T_H)	—	—	10 30	—	—	10 30	mV
Output Voltage Range	8.0	—	20	8.0	—	20	Vdc
Ripple Rejection ($f = 120 \text{ Hz}$)	—	75	—	—	75	—	dB
Output Voltage Temperature Stability (T_L to T_H)	—	0.3	1.0	—	0.3	1.0	%
Short-Circuit Limit ($R_{SC} = 10 \text{ ohms}$)	—	60	—	—	60	—	mA
Output Noise Voltage ($BW = 10 \text{ Hz} - 10 \text{ kHz}$)	—	100	—	—	100	—	$\mu V(\text{rms})$
Positive Standby Current ($V_{in} = +30V$)	—	2.4	4.0	—	2.4	4.0	mA
Negative Standby Current ($V_{in} = -30V$)	—	1.0	3.0	—	1.0	3.0	mA
Long-Term Stability	—	0.2	—	—	0.2	—	%/kHr

$\dagger T_L = 0^\circ C$ for XR-1468C/1568
 $= -55^\circ C$ for XR-1568M

$\dagger\dagger T_H = +70^\circ C$ for XR-1468C/1568
 $= +125^\circ C$ for XR-1568M

$T_J = \text{Junction Temp.}$
 $T_C = \text{Case Temp.}$



C1 and C2 should be located as close to the device as possible. A $0.1 \mu F$ ceramic capacitor may be required on the input lines if the device is located an appreciable distance from the rectifier filter capacitors.

C3 and C4 may be increased to improve load transient response and to reduce the output noise voltage. At low temperature operation, it may be necessary to bypass C4 with a $0.1 \mu F$ ceramic disc capacitor.

Figure 1. Basic 50 mA Regulator

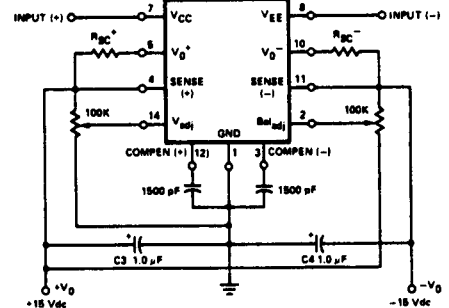


Figure 2. Voltage Adjust and Balance Adjust Circuit

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XR-1488/1489A

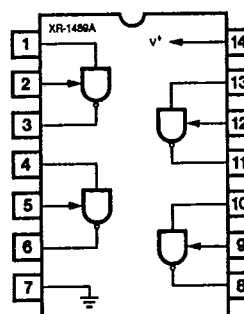
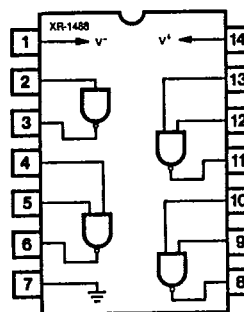
Quad Line Driver/Receiver

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/ μ S 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.

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