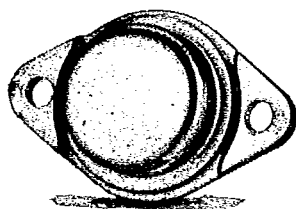


LAMBDA LINEAR REGULATORS

T-58-11-23

LAS 79HG

5 AMP NEGATIVE ADJUSTABLE VOLTAGE REGULATOR



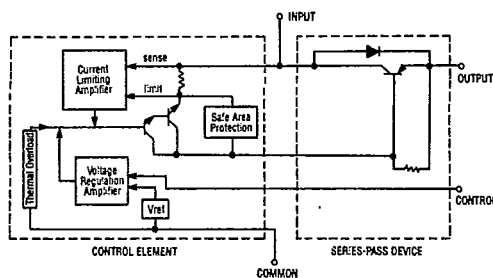
ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MINIMUM	MAXIMUM	UNITS
Input Voltage	V_{IN}		-40	Volts
Power Dissipation	P_D		I_{SB} Limited	
Thermal Resistance Junction To Case	θ_{JC}		1.5	$^{\circ}\text{C}/\text{Watt}$
Operating Junction Temperature Range	T_J	-55	150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-65	150	$^{\circ}\text{C}$
Lead Temperature (Soldering, 60 Seconds Time Limit)	T_{LEAD}		300	$^{\circ}\text{C}$

FEATURES

- Guaranteed Power Dissipation: 50 Watts @ 50 $^{\circ}\text{C}$ case
- Guaranteed input-output differential: 2.6 Volts
- Low noise, band gap reference
- Remote sense capability
- Guaranteed thermal resistance junction to case: 1.5 $^{\circ}\text{C}/\text{W}$

BLOCK DIAGRAM



DESCRIPTION

The LAS 79HG, a four terminal adjustable regulator, is a dual die circuit designed for use in applications requiring a well regulated negative output voltage. The regulator consists of one monolithic IC and a discrete series pass power transistor. The LAS 79HG supplies full power usage up to 5.0 amperes of load current over a -2.6 to -30 volts output range and provides remote sense capability with a single potentiometer. Hermetically sealed copper TO-3 packages are utilized for high reliability and low thermal resistance. A low-noise

temperature stable band gap reference is the key design factor insuring excellent temperature regulation of the LAS 79HG. This, coupled to a very low output impedance, insures superior load regulation.

LAS 79HG

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ELECTRICAL CHARACTERISTICS

Input voltage test conditions are as follows: $V_1 = V_0 - 5$ Volts, $V_2 = V_0 - 10$ Volts, $V_3 = V_0 - 15$ Volts, or the maximum input, whichever is less.

Parameter	Symbol	Test Conditions			Test Limits		Units
		V_{IN}	I_O	T_J	Min	Max	
Output Voltage ^{1,2}	V_0	V_1 to V_2	10mA to 5.0A	25°C	-2.6	-30.0	Volts
Input-Output Differential	$V_{IN}-V_0$		5A	0-125°C	2.6		Volts
Line Regulation ²	REG (LINE)	V_1 to V_3	5A	25°C		2.0	% V_0
Load Regulation ²	REG (LOAD)	$V_0 + 5V$	10mA to 5.0A	25°C		1.0	% V_0
Quiescent Current	I_Q	V_1	10mA	25°C		11.0	mA
Quiescent Current Line	I_Q (LINE)	V_1 to V_2	10mA	25°C		2.6	mA
Quiescent Current Load	I_Q (LOAD)	V_1	10mA to 5.0A	25°C		1.5	mA
Temperature Coefficient	T_C	V_1	0.1A	0-125°C		0.03	% V_0 /°C
Output Noise ³ Voltage	V_N	V_1	0.1A	0-125°C		10	$\mu V_{rms}/V$
Ripple Attenuation ⁴	R_A	V_1	1.0A	0-125°C	54		dB
Control Voltage	V_C	V_1 to V_2	10mA	25°C	-2.25	-2.6	Volts
Power Dissipation	P_D	$V_{IN}-V_{OUT}$ 2.6V to 10.0V	10mA to 5A	0-125°C		50	Watts

(1) $V_0 = V_C (1 + R1 / R2)$

R1 = Resistance from output to control

R2 = Resistance from control to common

 $R1 + R2 \leq V_0/10mA$

(2) Low duty cycle pulse testing with Kelvin connections required. Die temperature changes must be accounted for separately.

(3) BW = 10Hz - 100KHz

(4) Ripple attenuation is specified for a 1Vrms, 120Hz, input ripple.

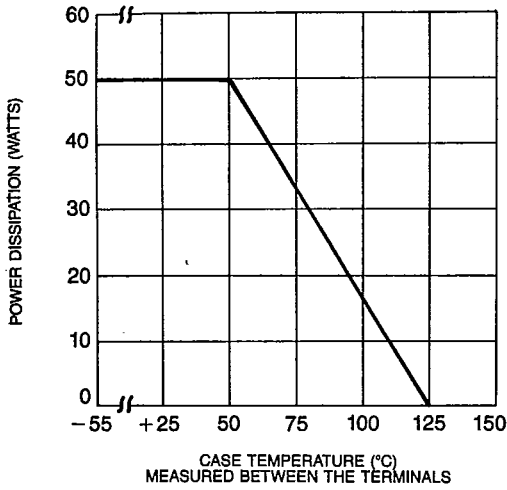
Ripple attenuation is minimum of 54 dB at 5V output and is 1 dB less for each volt increase in the output voltage.

LAS 79HG

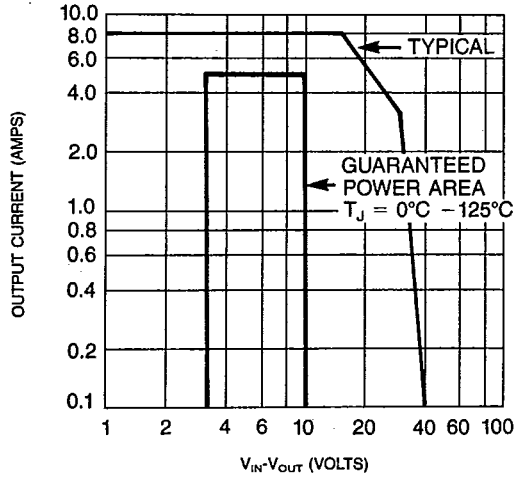
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OPERATIONAL DATA

POWER DERATING

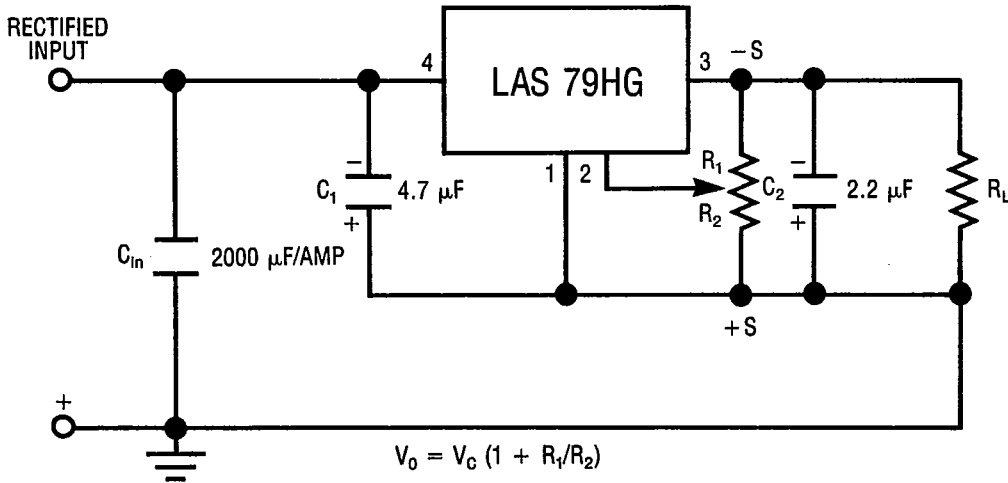


SAFE OPERATING AREA



TYPICAL APPLICATIONS

ADJUSTABLE VOLTAGE REGULATOR^{1,2}



¹ C₁ and C₂ should be placed as close as possible to the regulator; exact values are application dependent.

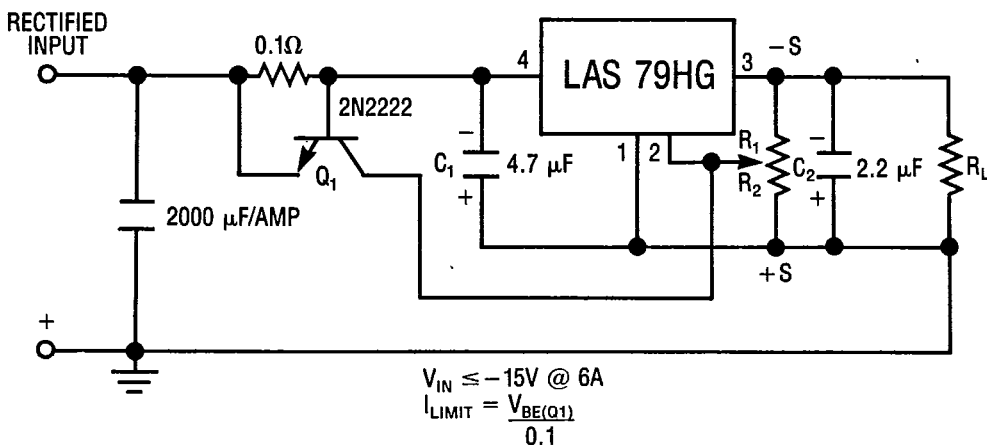
² $V_0 \geq 10\text{mA}$
 $R_1 + R_2$

LAS 79HG

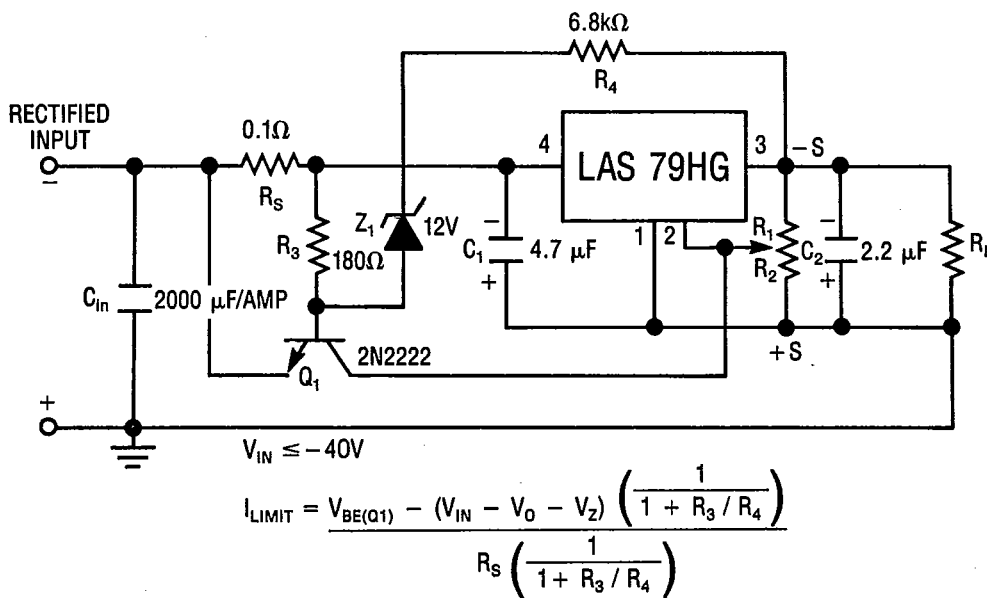
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TYPICAL APPLICATIONS

ADJUSTABLE NEGATIVE REGULATOR WITH REMOTE SENSE AND CURRENT LIMIT @ 6A^{1,2,3,4}



ADJUSTABLE NEGATIVE REGULATOR WITH SAFE OPERATING AREA PROTECTION^{1,2,3,4,5}



¹ $V_O = V_C (1 + R_1 / R_2)$

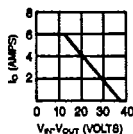
² $\frac{V_O}{R_1 + R_2} \geq 10 \text{ mA}$

³ $R_1 + R_2$

⁴ C_1 and C_2 should be placed as close as possible to the regulator; exact values are application dependent.

⁵ Transient response can be improved by adding capacitor across output.

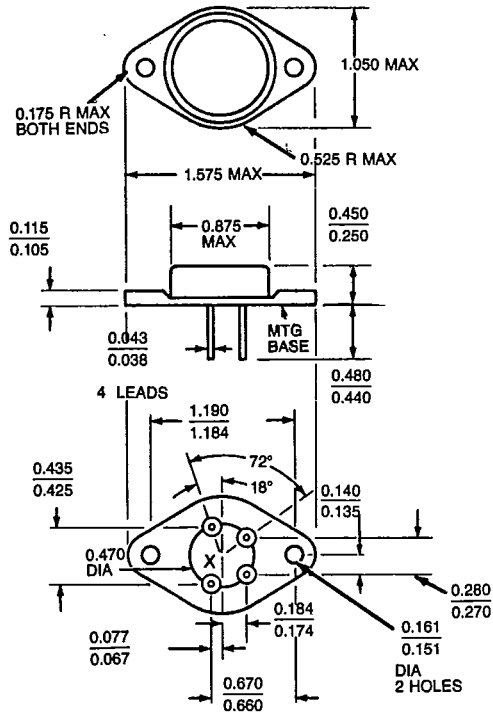
⁵ TYPICAL SAFE OPERATING AREA



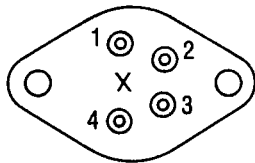
LAS 79HG

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DEVICE OUTLINE



Bottom View



- | | |
|---------------|---------|
| 1 | Common |
| 2 | Control |
| 3 | Output |
| 4 | Input |
| Case is Input | |

NOTE: Case temperature measured at point X.
All dimensions are in inches.