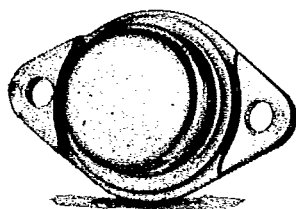


## LAMBDA LINEAR REGULATORS

T-58-11-23

# LAS 79HG

## 5 AMP NEGATIVE ADJUSTABLE VOLTAGE REGULATOR



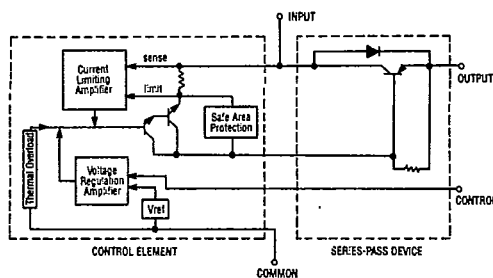
### ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MINIMUM	MAXIMUM	UNITS
Input Voltage	$V_{IN}$		-40	Volts
Power Dissipation	$P_D$		$I_{SB}$ Limited	
Thermal Resistance Junction To Case	$\theta_{JC}$		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.

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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 <sup>1,2</sup>	$V_0$	$V_1$ 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 <sup>2</sup>	REG (LINE)	$V_1$ to $V_3$	5A	25°C		2.0	% $V_0$
Load Regulation <sup>2</sup>	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 <sup>3</sup> Voltage	$V_N$	$V_1$	0.1A	0-125°C		10	$\mu V_{rms}/V$
Ripple Attenuation <sup>4</sup>	$R_A$	$V_1$	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.

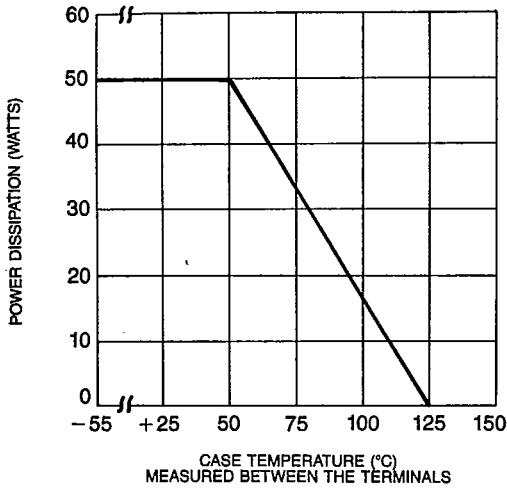
Ripple attenuation is minimum of 54 dB at 5V output and is 1 dB less for each volt increase in the output voltage.

# LAS 79HG

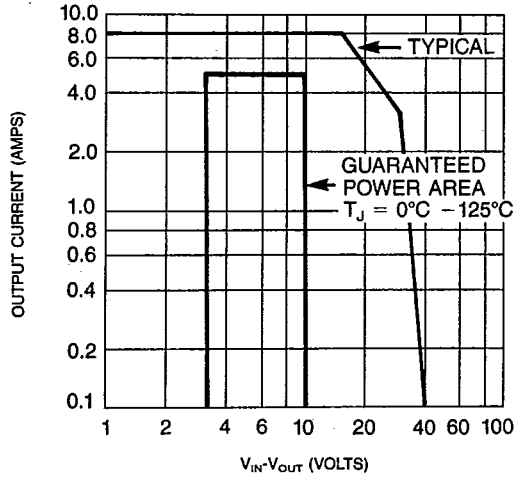
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## OPERATIONAL DATA

POWER DERATING

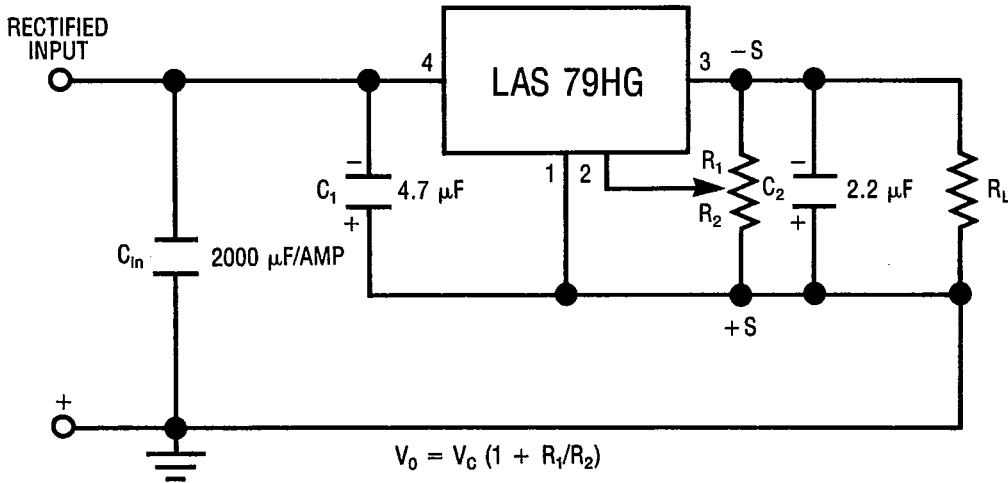


SAFE OPERATING AREA



## TYPICAL APPLICATIONS

ADJUSTABLE VOLTAGE REGULATOR<sup>1,2</sup>



<sup>1</sup> C<sub>1</sub> and C<sub>2</sub> should be placed as close as possible to the regulator; exact values are application dependent.

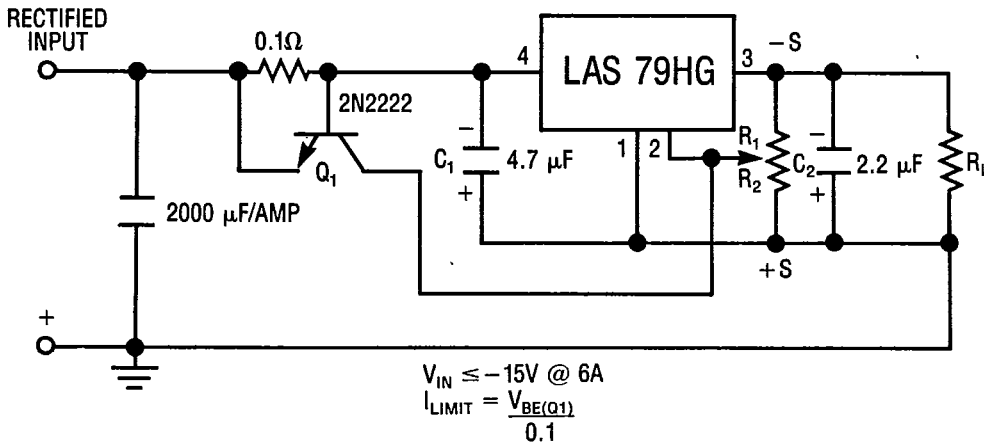
<sup>2</sup>  $V_0 \geq 10\text{mA}$   
 $R_1 + R_2$

# LAS 79HG

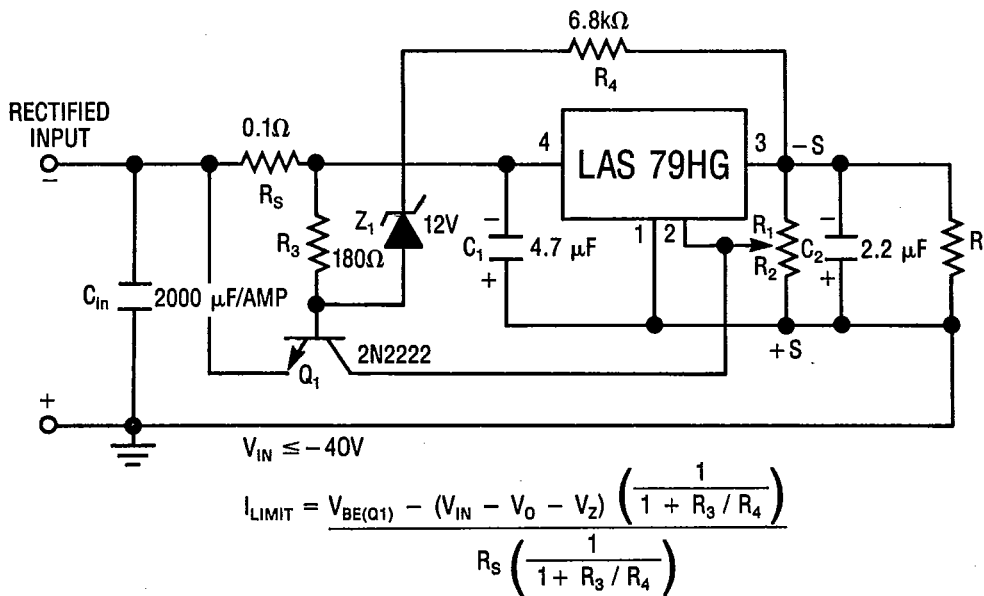
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## TYPICAL APPLICATIONS

### ADJUSTABLE NEGATIVE REGULATOR WITH REMOTE SENSE AND CURRENT LIMIT @ 6A<sup>1,2,3,4</sup>



### ADJUSTABLE NEGATIVE REGULATOR WITH SAFE OPERATING AREA PROTECTION<sup>1,2,3,4,5</sup>



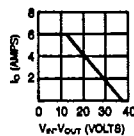
<sup>1</sup>  $V_O = V_C (1 + R_1 / R_2)$

<sup>2</sup>  $\frac{V_O}{R_1 + R_2} \geq 10 \text{ mA}$

<sup>3</sup>  $R_1 + R_2$  should be placed as close as possible to the regulator; exact values are application dependent.

<sup>4</sup> Transient response can be improved by adding capacitor across output.

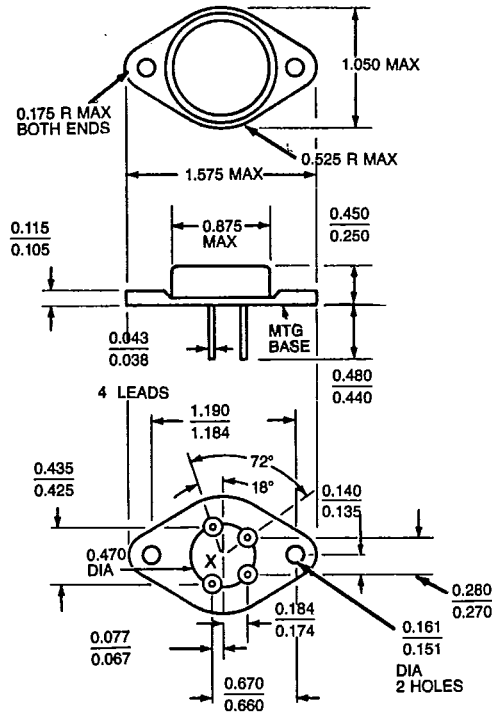
#### <sup>5</sup> TYPICAL SAFE OPERATING AREA



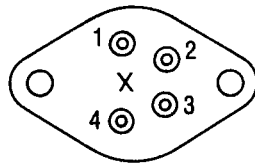
# LAS 79HG

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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.