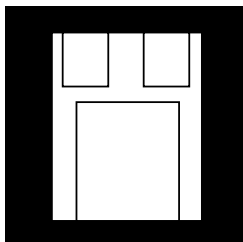


# SURFACE MOUNT 1.5 AMP HIGH VOLTAGE POSITIVE ADJUSTABLE REGULATOR



**Three Terminal, High Voltage, Precision Adjustable Positive Voltage Regulator In Hermetic Surface Mount Package**

## FEATURES

- Hermetic Surface Mount Package
- Adjustable Output Voltage
- Built-In Thermal Overload Protection
- Short Circuit Current Limiting
- Product Is Available Hi-Rel Screened
- Electrically Similar To Industry Standard Type LM117HV

## DESCRIPTION

This three terminal positive regulator is supplied in a hermetically sealed surface mount package. All protective features are designed into the circuit, including thermal shutdown, current limiting and safe-area control. With heat sinking, they can deliver over 1.0 amp of output current. This unit features output voltages that can be trimmed using external resistors, from 1.2 volts to 57 volts.

## ABSOLUTE MAXIMUM RATINGS @ 25°C

Input to Output Voltage Differential . . . . . 60 V  
 Operating Junction Temperature Range . . . . . - 55°C to + 150°C  
 Storage Temperature Range . . . . . - 55°C to + 150°C  
 Typical Power/Thermal Characteristics:

Rated Power:

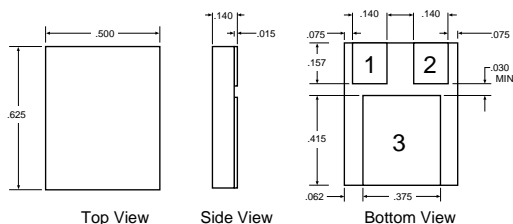
$T_C$  . . . . . 17.5 W  
 $T_A$  . . . . . 3 W

Thermal Resistance:

$\theta_{JC}$  . . . . . 3.5 °C/W  
 $\theta_{JA}$  . . . . . 42 °C/W

Lead Temperature at Case (5 sec) . . . . . 225 °C

## MECHANICAL OUTLINE



### Pin Connection

Pin 1: Adjust  
 Pin 2:  $V_{IN}$   
 Pin 3:  $V_{OUT}$

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**ELECTRICAL CHARACTERISTICS** -55°C  $T_A$  125°C,  $I_L = 8\text{mA}$  (unless otherwise specified)

| Parameter                        | Symbol     | Test Conditions  | Min.                             | Max.                         | Unit          |
|----------------------------------|------------|--|----------------------------------|------------------------------|---------------|
| Reference Voltage                | $V_{REF}$  | $V_{DIFF} = 3.0\text{V}$ , $T_A = 25^\circ\text{C}$<br>$V_{DIFF} = 3.3\text{V}$ •<br>$V_{DIFF} = 40\text{V}$ •<br>$V_{DIFF} = 60\text{V}$ •  | 1.20<br>1.20<br>1.20<br>1.20     | 1.30<br>1.30<br>1.30<br>1.30 | V             |
| Line Regulation<br>(Note 1)      | $R_{LINE}$ | $3.0\text{V } V_{DIFF} \text{ 40V, } V_{OUT} = V_{ref}$ , $T_A = 25^\circ\text{C}$<br>$3.3\text{V } V_{DIFF} \text{ 40V, } V_{OUT} = V_{ref}$ •<br>$40\text{V } V_{DIFF} \text{ 60V, } V_{OUT} = V_{ref}$ , $T_A = 25^\circ\text{C}$<br>$40\text{V } V_{DIFF} \text{ 60V, } V_{OUT} = V_{ref}$ •   | -9<br>-23<br>-5<br>-10           | 9<br>23<br>5<br>10           | mV            |
| Load Regulation<br>(Note 1)      | $R_{LOAD}$ | $V_{DIFF} = 3.0\text{V}$ , $10\text{mA } I_L \text{ 1.5A, } T_A = 25^\circ\text{C}$<br>$V_{DIFF} = 3.3\text{V}$ , $10\text{mA } I_L \text{ 1.5A}$ •<br>$V_{DIFF} = 40\text{V}$ , $10\text{mA } I_L \text{ 300mA, } T_A = 25^\circ\text{C}$<br>$V_{DIFF} = 40\text{V}$ , $10\text{mA } I_L \text{ 195mA}$ •<br>$V_{DIFF} = 60\text{V}$ , $10\text{mA } I_L \text{ 30mA}$ •  | -15<br>-15<br>-15<br>-15         | 15<br>15<br>15<br>15         | mV            |
| Thermal Regulation               | $V_{RTH}$  | $V_{IN} = 14.6\text{V}$ , $I_L = 1.5\text{A}$<br>$P_d = 20\text{ Watts}$ , $t = 20\text{ ms}$ , $T_A = 25^\circ\text{C}$   | -16                              | 16                           | mV            |
| Ripple Rejection<br>(Note 2)     | $R_N$      | $f = 120\text{ Hz}$ , $V_{OUT} = V_{ref}$ •<br>$C_{Adj} = 10\text{ }\mu\text{F}$ , $I_{OUT} = 100\text{ mA}$   | 66                               |                              | dB            |
| Adjustment Pin Current           | $I_{Adj}$  | $V_{DIFF} = 3.0\text{V}$ , $T_A = 25^\circ\text{C}$<br>$V_{DIFF} = 3.3\text{V}$ •<br>$V_{DIFF} = 40\text{V}$ •<br>$V_{DIFF} = 60\text{V}$ •  |                                  | 100<br>100<br>100<br>100     | $\mu\text{A}$ |
| Adjustment Pin<br>Current Change | $I_{Adj}$  | $V_{DIFF} = 3.0\text{V}$ , $10\text{mA } I_L \text{ 1.5A, } T_A = 25^\circ\text{C}$<br>$V_{DIFF} = 3.3\text{V}$ , $10\text{mA } I_L \text{ 1.5A}$ •<br>$V_{DIFF} = 40\text{V}$ , $10\text{mA } I_L \text{ 300mA, } T_A = 25^\circ\text{C}$<br>$V_{DIFF} = 40\text{V}$ , $10\text{mA } I_L \text{ 195mA}$ •<br>$3.0\text{V } V_{DIFF} \text{ 40V, } T_A = 25^\circ\text{C}$<br>$3.3\text{V } V_{DIFF} \text{ 40V}$ •<br>$3.3\text{V } V_{DIFF} \text{ 60V}$ • | -5<br>-5<br>-5<br>-5<br>-5<br>-5 | 5<br>5<br>5<br>5<br>5<br>5   | $\mu\text{A}$ |
| Minimum Load Current             | $I_{Lmin}$ | $V_{DIFF} = 3.0\text{V}$ , $V_{OUT} = 1.4\text{V}$ (forced)<br>$V_{DIFF} = 3.3\text{V}$ , $V_{OUT} = 1.4\text{V}$ (forced) •<br>$V_{DIFF} = 40\text{V}$ , $V_{OUT} = 1.4\text{V}$ (forced) •<br>$V_{DIFF} = 60\text{V}$ , $V_{OUT} = 1.4\text{V}$ (forced) •   |                                  | 5.0<br>5.0<br>5.0<br>7.0     | mA            |
| Current Limit<br>(Note 2)        | $I_{CL}$   | $V_{DIFF} = 5\text{V}$ •<br>$V_{DIFF} = 40\text{V}$ , $T_A = 25^\circ\text{C}$<br>$V_{DIFF} = 60\text{V}$ , $T_A = 25^\circ\text{C}$   | 1.5<br>0.3<br>0.05               | 3.5<br>1.5<br>0.50           | A             |

**Notes:**

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1. Load and Line Regulation are specified at a constant junction temperature. Pulse testing with low duty cycle is used. Changes in output voltage due to heating effects must be taken into account separately.
2. If not tested, shall be guaranteed to the specified limits.
3. The • denotes the specifications which apply over the full operating temperature range.

