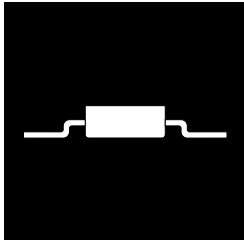


# SURFACE MOUNT NEGATIVE ADJUSTABLE 1.0 AMP VOLTAGE REGULATOR



**Isolated Hermetic Surface Mount Package  
1.0 Amp, High Voltage, Negative Adjustable  
Voltage Regulator**

## FEATURES

- Isolated Hermetic Surface Mount Package
- Adjustable Output Voltage
- Eliminates Stocking Fixed Voltages
- Built-In Thermal Overload Protection
- Short Circuit Current Limiting
- Product Is Available Hi-Rel Screened
- Electrically Similar To Industry Standard Type LM137HV

## DESCRIPTION

This three terminal negative regulator is supplied in a hermetically sealed metal 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 -47 volts.

## ABSOLUTE MAXIMUM RATINGS @ 25°C

|                                                  |                   |
|--------------------------------------------------|-------------------|
| Input To Output Voltage Differential . . . . .   | 50 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 <sub>C</sub> . . . . .                         | 17.5W             |
| T <sub>A</sub> . . . . .                         | 3W                |
| Thermal Resistance:                              |                   |
| θ <sub>JC</sub> . . . . .                        | 4.0°C/W           |
| θ <sub>JA</sub> . . . . .                        | 42°C/W            |
| Max. Lead Solder Temperature for 5 sec . . . . . | 225°C             |

3.5



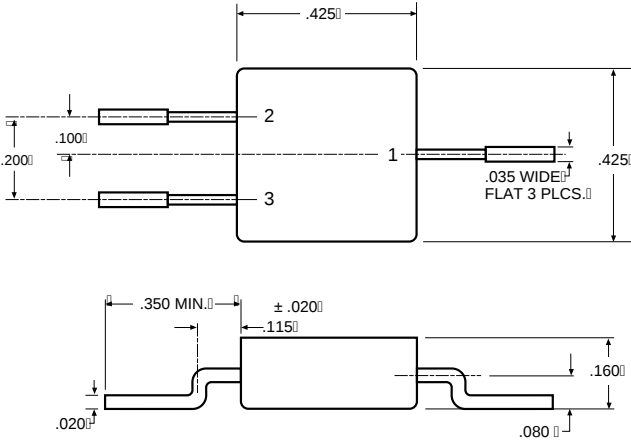
**ELECTRICAL CHARACTERISTICS**  $-55^{\circ}\text{C} \leq T_A \leq 125^{\circ}\text{C}$ ,  $I_L = 8\text{mA}$  (unless otherwise specified)

| Parameter                        | Symbol                  | Test Conditions                                                                                                                                                                                                                                                                                                           | Min.                             | Max.                             | Unit          |
|----------------------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|----------------------------------|---------------|
| Reference Voltage                | $V_{\text{REF}}$        | $ V_{\text{DIFF}}  = 3.0\text{V}$ , $T_A = 25^{\circ}\text{C}$<br>$ V_{\\text{DIFF}}  = 3\text{V}$<br>$ V_{\text{DIFF}}  = 50\text{V}$ , $T_A = 25^{\circ}\text{C}$<br>$ V_{\text{DIFF}}  = 50\text{V}$                                                                                                                   | -1.30<br>-1.30<br>-1.30<br>-1.30 | -1.20<br>-1.20<br>-1.20<br>-1.20 | V             |
| Line Regulation<br>(Note 1)      | $R_{\text{LINE}}$       | $3.0\text{V} \leq  V_{\text{DIFF}}  \leq 50\text{V}$ , $T_A = 25^{\circ}\text{C}$                                                                                                                                                                                                                                         | -10<br>-25                       | 10<br>25                         | mV            |
| Load Regulation<br>(Note 1)      | $R_{\text{LOAD}}$       | $ V_{\text{DIFF}}  = 50\text{V}$ , $8\text{mA} \leq I_L \leq 110\text{mA}$<br>$T_A = 25^{\circ}\text{C}$<br>$ V_{\text{DIFF}}  = 5\text{V}$ , $8\text{mA} \leq I_L \leq 1.5\text{A}$ , $T_A = 25^{\circ}\text{C}$                                                                                                         | -25<br>-25<br>-45                | 25<br>25<br>45                   | mV            |
| Thermal Regulation               | $V_{\text{RTH}}$        | $V_{\text{IN}} = -14.6\text{V}$ , $I_L = 1.5\text{A}$<br>$P_d = 20\text{ Watts}$ , $t = 10\text{ ms}$ , $T_A = 25^{\circ}\text{C}$                                                                                                                                                                                        | -5                               | 5                                | mV            |
| Ripple Rejection<br>(Note 2)     | $R_N$                   | $f = 120\text{ Hz}$ , $V_{\text{OUT}} = V_{\text{ref}}$<br>$C_{\text{Adj}} = 10\text{ }\mu\text{F}$ , $I_{\text{OUT}} = 100\text{ mA}$                                                                                                                                                                                    | 66                               |                                  | dB            |
| Adjustment Pin Current           | $I_{\text{Adj}}$        | $ V_{\text{DIFF}}  = 3.0\text{V}$<br>$ V_{\text{DIFF}}  = 40\text{V}$<br>$ V_{\text{DIFF}}  = 50\text{V}$                                                                                                                                                                                                                 |                                  | 100<br>100<br>100                | $\mu\text{A}$ |
| Adjustment Pin<br>Current Change | $\Delta I_{\text{Adj}}$ | $ V_{\text{DIFF}}  = 5\text{V}$ , $8\text{mA} \leq I_{\text{OUT}} \leq 1.5\text{A}$<br>$3\text{V} \leq  V_{\text{DIFF}}  \leq 50\text{V}$                                                                                                                                                                                 | -5<br>-6                         | 5<br>6                           | $\mu\text{A}$ |
| Mimumum Load Current             | $I_{\text{Lmin}}$       | $ V_{\text{DIFF}}  = 3.0\text{V}$ , $V_{\text{OUT}} = -1.4\text{V}$ (forced)<br>$ V_{\text{DIFF}}  = 10\text{V}$ , $V_{\text{OUT}} = -1.4\text{V}$ (forced)<br>$ V_{\text{DIFF}}  = 40\text{V}$ , $V_{\text{OUT}} = -1.4\text{V}$ (forced)<br>$ V_{\text{DIFF}}  = 50\text{V}$ , $V_{\text{OUT}} = -1.4\text{V}$ (forced) |                                  | 3.0<br>3.0<br>5.0<br>5.0         | mA            |
| Current Limit<br>(Note 2)        | $I_{\text{CL}}$         | $ V_{\text{DIFF}}  = 50\text{V}$ , $T_A = 25^{\circ}\text{C}$                                                                                                                                                                                                                                                             | 0.2                              | 1.0                              | A             |

**Notes:**

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.

**MECHANICAL OUTLINE**



**Pin Connections**

- Pin 1:  $V_{\text{IN}}$   
Pin 2: Adjust  
Pin 3:  $V_{\text{OUT}}$   
Case: Isolated