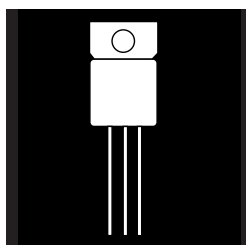


1.5 AMP HIGH VOLTAGE POSITIVE ADJUSTABLE REGULATOR



**Three Terminal, High Voltage, Precision
Adjustable Positive Voltage Regulator In
Hermetic JEDEC TO-257AA**

FEATURES

- Similar To Industry Standard LT117AHV
- Adjustable Output Voltage
- Built In Thermal Overload Protection
- Short Circuit Current Limiting
- Available In Isolated and Non-Isolated Package
- Maximum Output Voltage Tolerance Is Guaranteed To $\pm 1\%$
- Available Hi-Rel Screened

DESCRIPTION

This three terminal positive regulator is supplied in a hermetically sealed metal package whose outline is similar to the industry standard TO-220 plastic package. All protective features are designed into the circuit, including thermal shutdown, current limiting, and safe-area control. With heat sinking, these devices can deliver up to 1.5 amps of output current. The unit also features output voltages that can be fixed from 1.2 volts to 57 volts using external resistors.

ABSOLUTE MAXIMUM RATINGS @ 25°C

3.3

Power Dissipation (P_d) (Internally Limited)	20 W
Input - Output Voltage Differential	60 V
Operating Junction Temperature Range	- 55°C to + 150°C
Storage Temperature Range	- 65°C to + 150°C
Lead Temperature (Soldering 10 seconds)	300°C
Thermal Resistance:	
θ_{JC} (Isolated)	4.2°C/W
θ_{JC} (Non-Isolated)	3.5°C/W
θ_{JA}	42°C/W
Maximum Output Current	1.5 A

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

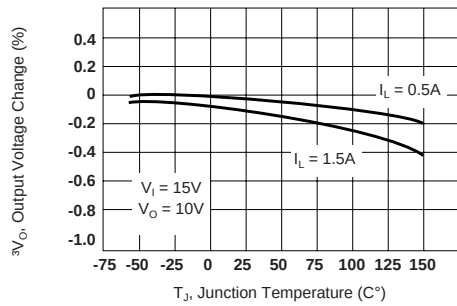
Parameter	Symbol	Test Conditions	Min.	Max.	Unit
Reference Voltage	V_{REF}	$V_{DIFF} = 3.0\text{V}, T_A = 25^\circ\text{C}$ $V_{DIFF} = 3.3\text{V}$ $V_{DIFF} = 40\text{V}$ $V_{DIFF} = 60\text{V}$	1.238 • 1.225 • 1.225 • 1.225	1.262 1.270 1.270 1.270	V
Line Regulation (Note 1)	R_{LINE}	$3.0\text{V } V_{DIFF} \text{ } 40\text{V}, V_{OUT} = V_{ref}, T_A = 25^\circ\text{C}$ $3.3\text{V } V_{DIFF} \text{ } 40\text{V}, V_{OUT} = V_{ref}$ $40\text{V } V_{DIFF} \text{ } 60\text{V}, V_{OUT} = V_{ref}, T_A = 25^\circ\text{C}$ $40\text{V } V_{DIFF} \text{ } 60\text{V}, V_{OUT} = V_{ref}$	-4.5 • -9 -5 • -10	4.5 9 5 10	mV
Load Regulation (Note 1)	R_{LOAD}	$V_{DIFF} = 3.0\text{V}, 10\text{mA } I_L \text{ } 1.5\text{A}, T_A = 25^\circ\text{C}$ $V_{DIFF} = 3.3\text{V}, 10\text{mA } I_L \text{ } 1.5\text{A}$ $V_{DIFF} = 40\text{V}, 10\text{mA } I_L \text{ } 300\text{mA}, T_A = 25^\circ\text{C}$ $V_{DIFF} = 40\text{V}, 10\text{mA } I_L \text{ } 195\text{mA}$ $V_{DIFF} = 60\text{V}, 10\text{mA } I_L \text{ } 30\text{mA}$	-15 • -15 -15 • -15 • -15	15 15 15 15 15	mV
Thermal Regulation	V_{RTH}	$V_{IN} = 14.6\text{V}, I_L = 1.5\text{A}$ $P_d = 20 \text{ Watts}, t = 20 \text{ ms}, T_A = 25^\circ\text{C}$	-5	5	mV
Ripple Rejection (Note 2)	R_N	$f = 120 \text{ Hz}, V_{OUT} = V_{ref}$ $C_{Adj} = 10 \mu\text{F}, I_{OUT} = 100 \text{ mA}$	• 66		dB
Adjustment Pin Current	I_{Adj}	$V_{DIFF} = 3.0\text{V}, T_A = 25^\circ\text{C}$ $V_{DIFF} = 3.3\text{V}$ $V_{DIFF} = 40\text{V}$ $V_{DIFF} = 60\text{V}$	• • • •	100 100 100 100	μA
Adjustment Pin Current Change	$^3I_{Adj}$	$V_{DIFF} = 3.0\text{V}, 10\text{mA } I_L \text{ } 1.5\text{A}, T_A = 25^\circ\text{C}$ $V_{DIFF} = 3.3\text{V}, 10\text{mA } I_L \text{ } 1.5\text{A}$ $V_{DIFF} = 40\text{V}, 10\text{mA } I_L \text{ } 300\text{mA}, T_A = 25^\circ\text{C}$ $V_{DIFF} = 40\text{V}, 10\text{mA } I_L \text{ } 195\text{mA}$ $3.0\text{V } V_{DIFF} \text{ } 40\text{V}, T_A = 25^\circ\text{C}$ $3.3\text{V } V_{DIFF} \text{ } 40\text{V}$ $3.3\text{V } V_{DIFF} \text{ } 60\text{V}$	-5 • -5 -5 • -5 -5 • -5 • -5	5 5 5 5 5 5 5	μA
Minimum Load Current	I_{Lmin}	$V_{DIFF} = 3.0\text{V}, V_{OUT} = 1.4\text{V (forced)}, T_A = 25^\circ\text{C}$ $V_{DIFF} = 3.3\text{V}, V_{OUT} = 1.4\text{V (forced)}$ $V_{DIFF} = 40\text{V}, V_{OUT} = 1.4\text{V (forced)}$ $V_{DIFF} = 60\text{V}, V_{OUT} = 1.4\text{V (forced)}$	• • • •	5 5 5 7	mA
Current Limit (Note 2)	I_{CL}	$V_{DIFF} = 5\text{V}$ $V_{DIFF} = 40\text{V}, T_A = 25^\circ\text{C}$ $V_{DIFF} = 60\text{V}, T_A = 25^\circ\text{C}$	• 1.5 0.3 0.05	3.5 1.5 0.50	A

Notes:

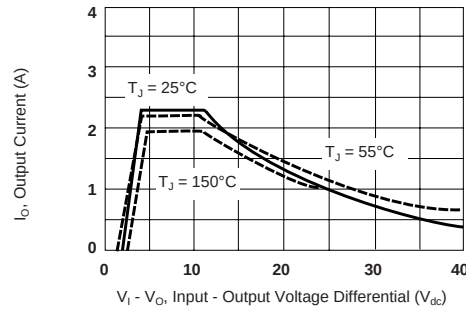
1. Load and Line Regulation are specified at a constant junction temperature. Pulse testing with low duty cycle is used. Changes in output voltage due to heating effects must be taken into account separately.
2. If not tested, shall be guaranteed to the specified limits.
3. The • denotes the specifications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

TYPICAL APPLICATIONS

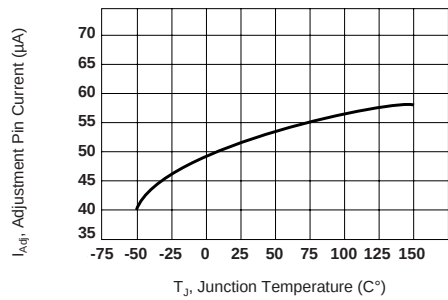
LOAD REGULATION



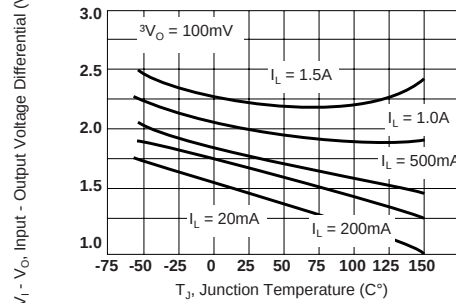
CURRENT LIMIT



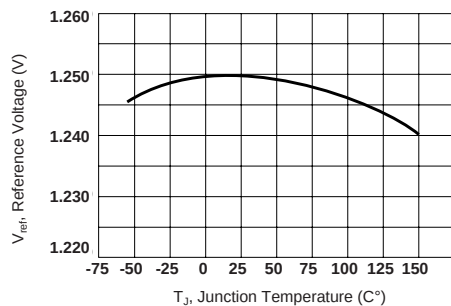
ADJUSTMENT PIN CURRENT



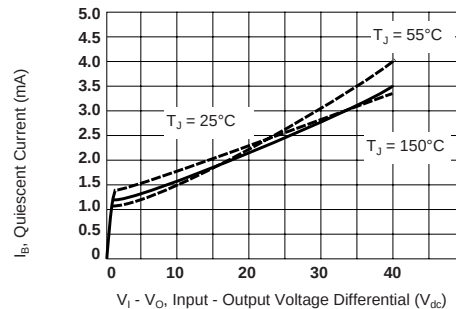
DROPOUT VOLTAGE



TEMPERATURE STABILITY



MINIMUM OPERATING CURRENT



3.3

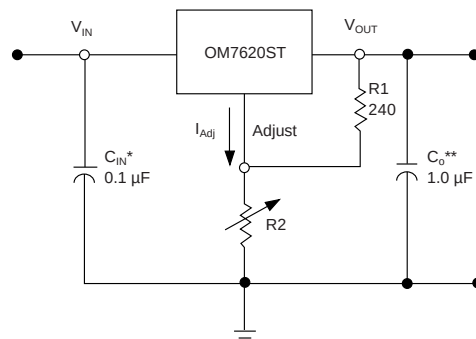
STANDARD APPLICATION

* C_{IN} is required if regulator is located an appreciable distance from power supply filter.

** C_O is not needed for stability, however it does improve transient response.

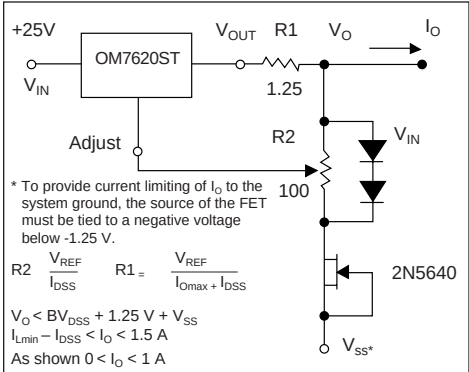
$$V_{OUT} = 1.25 V \left(1 + \frac{R2}{R1} \right) + I_{Adj} R2$$

Since I_{Adj} is controlled to less than 100 μA , the error associated with this term is negligible in most applications.

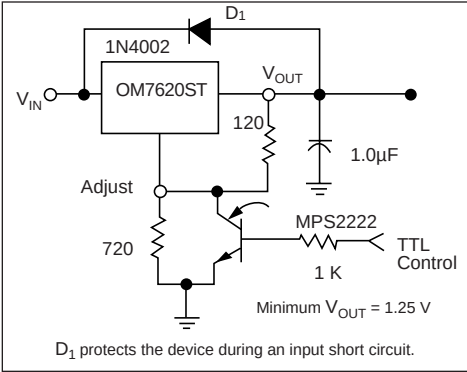


TYPICAL APPLICATIONS

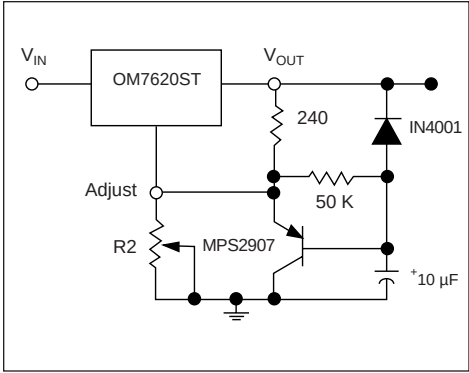
ADJUSTABLE CURRENT LIMITER



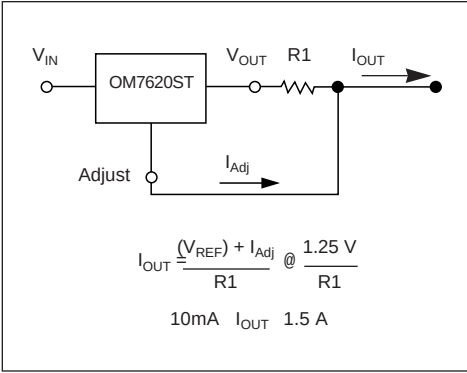
5 V ELECTRONIC SHUT DOWN REGULATOR



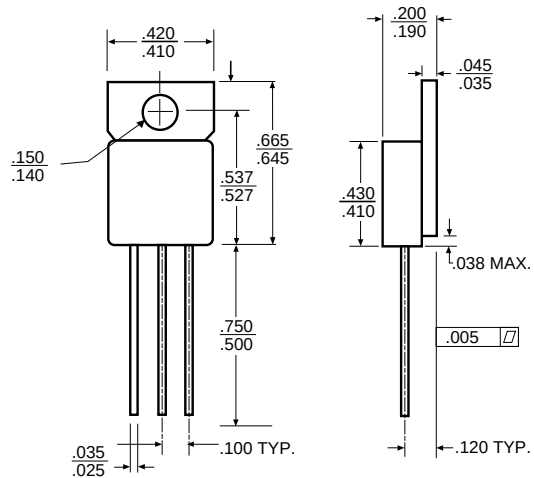
SLOW TURN-ON CURRENT



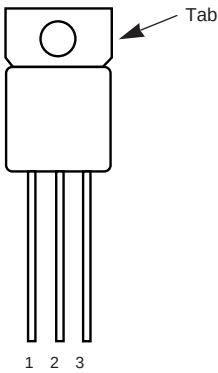
CURRENT REGULATOR



MECHANICAL OUTLINE



CONNECTION DIAGRAM



- NOTES
- Case is metal/hermetically sealed
 - Isolated Tab

- | | |
|-----------------|---------------------|
| Isolated | Non-Isolated |
| Front View | Front View |
| Pin 1 - Adjust | Pin 1 - Adjust |
| Pin 2 - Output | Pin 2 - Output |
| Pin 3 - Input | Pin 3 - Input |
| Tab - Isolated | Tab - Output |