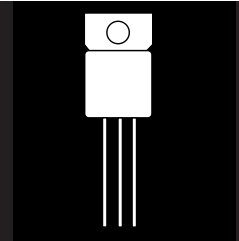


# ISOLATED HERMETIC TO-257AA ADJUSTABLE VOLTAGE REGULATOR



**Three Terminal, Adjustable Voltage, 1.5 Amp  
Precision Positive Regulator In Hermetic  
JEDEC TO-257AA Package**

### FEATURES

- Isolated Hermetic Package, JEDEC TO-257AA Outline
- Adjustable Output Voltage
- Eliminates Stocking Fixed Voltages
- Built-In Thermal Overload Protection
- Short Circuit Current Limiting
- Product Is Available Screened To OM803
- Similar To Industry Standard P/N LM117

### 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, 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 37 volts.

### ABSOLUTE MAXIMUM RATINGS @ 25°C

Input-Output Voltage Differential . . . . .	40V
Operating Junction Temperature Range . . . . .	-55°C to +150°C
Storage Temperature Range. . . . .	-65° to +150°C
Typical Power/Thermal Characteristics:	
Rated Power @ 25°C	
$T_C$ . . . . .	17.5W
$T_A$ . . . . .	3W
Thermal Resistance	
$\theta_{JC}$ . . . . .	3.5°C/W
$\theta_{JA}$ . . . . .	42°C/W

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**Note:** This device is also available in a non-isolated JEDEC TO-257AA package. Use part number OM7602NT for non-isolated unit.

**ELECTRICAL CHARACTERISTICS** -55°C T<sub>A</sub> 125°C, I<sub>L</sub> = 8mA (unless otherwise specified)

Parameter	Symbol	Test Conditions	Min.	Max.	Unit
Reference Voltage	V <sub>REF</sub>	V <sub>DIFF</sub> = 3.0V, T <sub>A</sub> = 25°C	1.238	1.262	V
		V <sub>DIFF</sub> = 3.3V	• 1.225	1.270	
		V <sub>DIFF</sub> = 40V	• 1.225	1.270	
Line Regulation (Note 1)	R <sub>LINE</sub>	3.0V V <sub>DIFF</sub> 40V, V <sub>out</sub> = V <sub>ref</sub> , T <sub>A</sub> = 25°C	-4.5	4.5	mV
		3.3V V <sub>DIFF</sub> 40V, V <sub>out</sub> = V <sub>ref</sub>	• -9	9	
Load Regulation (Note 1)	R <sub>LOAD</sub>	V <sub>DIFF</sub> = 3.0V, 10mA I <sub>L</sub> 1.5A, T <sub>A</sub> = 25°C	-15	15	mV
		V <sub>DIFF</sub> = 3.3V, 10mA I <sub>L</sub> 1.5A	• -15	15	
		V <sub>DIFF</sub> = 40V, 10mA I <sub>L</sub> 300mA, T <sub>A</sub> = 25°C	-15	15	
		V <sub>DIFF</sub> = 40V, 10mA I <sub>L</sub> 195mA	• -15	15	
Thermal Regulation	V <sub>RTH</sub>	V <sub>in</sub> = 14.6V, I <sub>L</sub> = 1.5A P <sub>d</sub> = 20 Watts, t = 20 ms, T <sub>A</sub> = 25°C	-5	5	mV
Ripple Rejection (Note 2)	R <sub>N</sub>	f = 120 Hz, V <sub>out</sub> = V <sub>ref</sub> C <sub>Adj</sub> = 10 μF, I <sub>out</sub> = 100 mA	• 66		dB
Adjustment Pin Current	I <sub>Adj</sub>	V <sub>DIFF</sub> = 3.0V, T <sub>A</sub> = 25°C V <sub>DIFF</sub> = 3.3V V <sub>DIFF</sub> = 40V		100 100 100	μA
Adjustment Pin Current Change	<sup>3</sup> I <sub>Adj</sub>	V <sub>DIFF</sub> = 3.0V, 10mA I <sub>L</sub> 1.5A, T <sub>A</sub> = 25°C	-5	5	μA
		V <sub>DIFF</sub> = 3.3V, 10mA I <sub>L</sub> 1.5A	• -5	5	
		V <sub>DIFF</sub> = 40V, 10mA I <sub>L</sub> 300mA, T <sub>A</sub> = 25°C	-5	5	
		V <sub>DIFF</sub> = 40V, 10mA I <sub>L</sub> 195mA	• -5	5	
		3.0V V <sub>DIFF</sub> 40V, T <sub>A</sub> = 25°C 3.3V V <sub>DIFF</sub> 40V	• -5	5	
Minimum Load Current	I <sub>Lmin</sub>	V <sub>DIFF</sub> = 3.0V, V <sub>OUT</sub> = 1.4V (forced)		5.0	mA
		V <sub>DIFF</sub> = 3.3V, V <sub>OUT</sub> = 1.4V (forced)	•	5.0	
		V <sub>DIFF</sub> = 40V, V <sub>OUT</sub> = 1.4V (forced)	•	5.0	
Current Limit (Note 2)	I <sub>CL</sub>	V <sub>DIFF</sub> = 15V	• 1.5	3.5	A
		V <sub>DIFF</sub> = 40V, T <sub>A</sub> = 25°C	0.18	1.5	

**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.

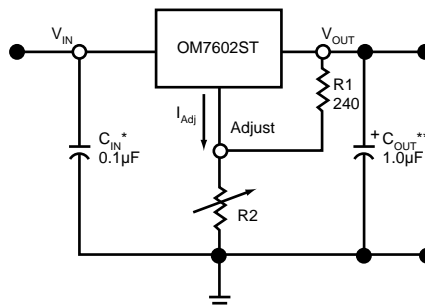
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**STANDARD APPLICATION**

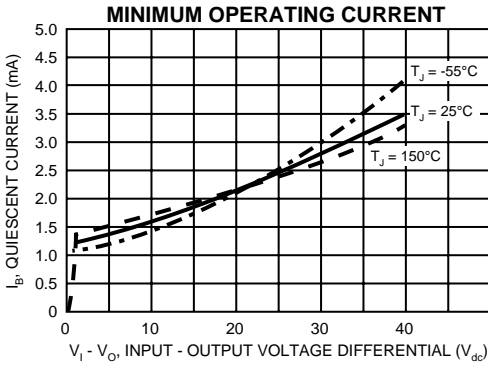
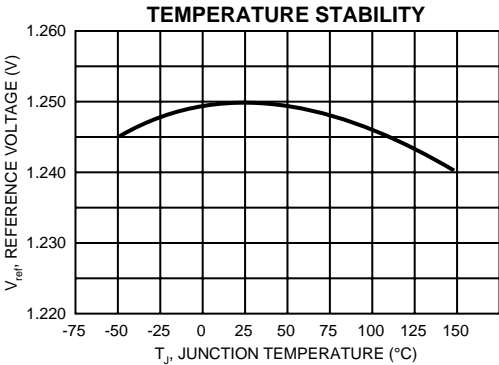
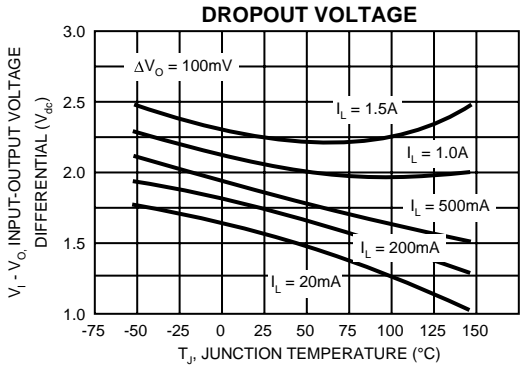
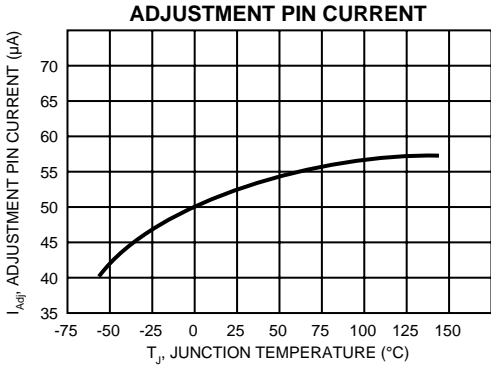
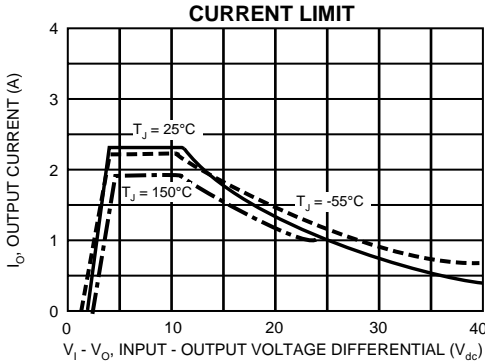
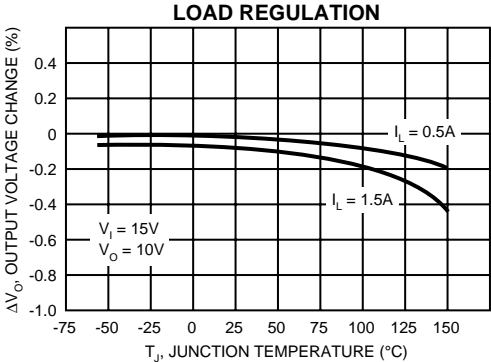
- \* C<sub>IN</sub> is required if regulator is located an appreciable distance from power supply filter.
- \*\* C<sub>O</sub> is not needed for stability, however it does improve transient response.

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

Since I<sub>Adj</sub> is controlled to less than 100μA, the error associated with this term is negligible in most applications.



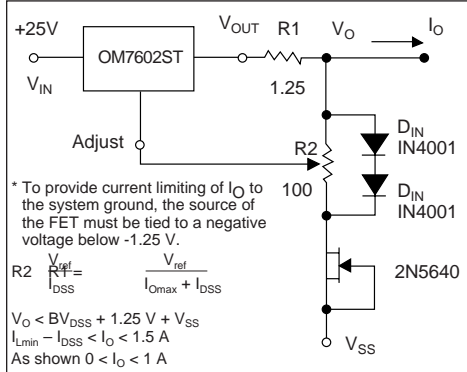
# TYPICAL PERFORMANCE CHARACTERISTICS



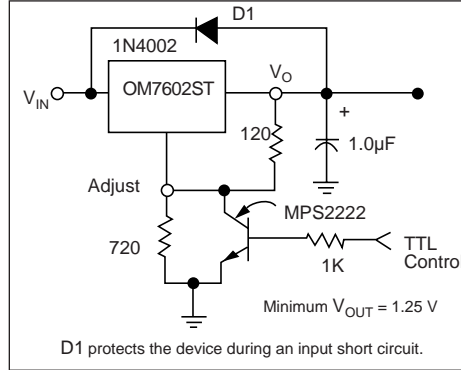
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## TYPICAL APPLICATIONS

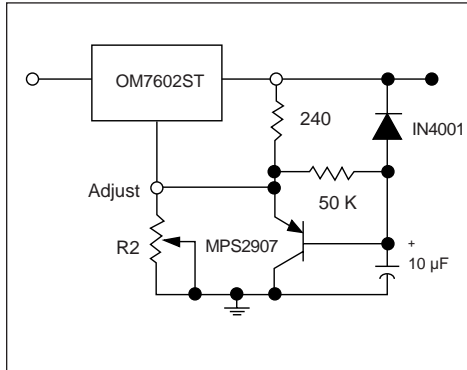
### ADJUSTABLE CURRENT LIMITER



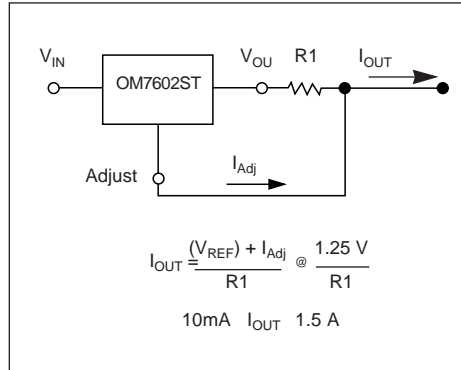
### 5V ELECTRONIC SHUT DOWN REGULATOR



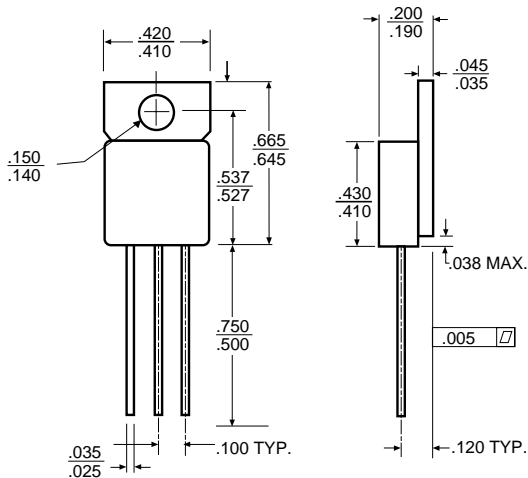
### SLOW TURN-ON REGULATOR



### CURRENT REGULATOR



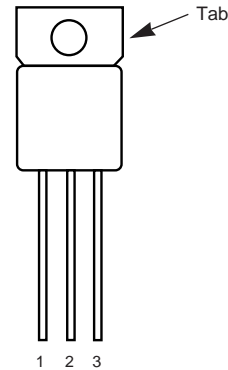
### MECHANICAL OUTLINE



#### NOTES

- Case is metal/hermetically sealed
- Isolated Tab

### PIN CONNECTION



- |                 |                     |
|-----------------|---------------------|
| <b>ISOLATED</b> | <b>NON-ISOLATED</b> |
| 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         |