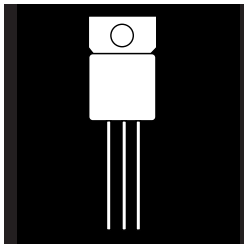
ISOLATED HERMETIC TO-257AA ADJUSTABLE VOLTAGE REGULATOR



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
q_{JC} . . . . . 3.5°C/W
q_{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_A 125°C, I_L = 8mA (unless otherwise specified)

Parameter	Symbol	Test Conditions		Min.	Max.	Unit
Reference Voltage	V_{REF}	V_{DIFF} = 3.0V, T_A = 25°C		1.238	1.262	
		V_{DIFF} = 3.3V	•	1.225	1.270	V
		V_{DIFF} = 40V	•	1.225	1.270	
Line Regulation	R_{LINE}	3.0V V_{DIFF} 40V, V_{out} = V_{ref}, T_A = 25°C		-4.5	4.5	mV
(Note 1)		3.3V V_{DIFF} 40V, V_{out} = V_{ref}	•	-9	9	
Load Regulation	R_{LOAD}	V_{DIFF} = 3.0V, 10mA I_L 1.5A, T_A = 25°C		-15	15	
(Note 1)		V_{DIFF} = 3.3V, 10mA I_L 1.5A	•	-15	15	mV
		V_{DIFF} = 40V, 10mA I_L 300mA, T_A = 25°C		-15	15	
		V_{DIFF} = 40V, 10mA I_L 195mA	•	-15	15	
Thermal Regulation	V_{RTH}	V_{in} = 14.6V, I_L = 1.5A		-5	5	mV
		P_d = 20 Watts, t = 20 ms, T_A = 25°C				
Ripple Rejection	R_N	f = 120 Hz, V_{out} = V_{ref}	•	66		dB
(Note 2)		C_{Adj} = 10 µF, I_{out} = 100 mA				
Adjustment Pin Current	I_{Adj}	V_{DIFF} = 3.0V, T_A = 25°C			100	
		V_{DIFF} = 3.3V	•		100	µA
		V_{DIFF} = 40V	•		100	
Adjustment Pin	$^3I_{Adj}$	V_{DIFF} = 3.0V, 10mA I_L 1.5A, T_A = 25°C		-5	5	
Current Change		V_{DIFF} = 3.3V, 10mA I_L 1.5A	•	-5	5	
		V_{DIFF} = 40V, 10mA I_L 300mA, T_A = 25°C		-5	5	
		V_{DIFF} = 40V, 10mA I_L 195mA	•	-5	5	µA
		3.0V V_{DIFF} 40V, T_A = 25°C		-5	5	
		3.3V V_{DIFF} 40V	•	-5	5	
Miminum Load Current	I_{Lmin}	V_{DIFF} = 3.0V, V_{OUT} = 1.4V (forced)			5.0	
		V_{DIFF} = 3.3V, V_{OUT} = 1.4V (forced)	•		5.0	mA
		V_{DIFF} = 40V, V_{OUT} = 1.4V (forced)	•		5.0	
Current Limit	I_{CL}	V_{DIFF} = 15V	•	1.5	3.5	
(Note 2)		V_{DIFF} = 40V, T_A = 25°C		0.18	1.5	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.

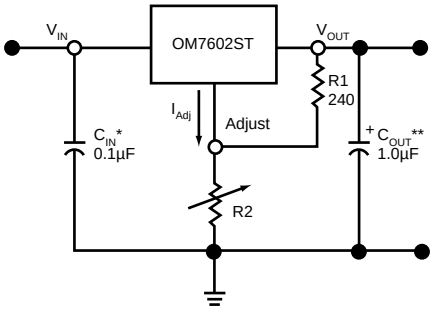
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STANDARD APPLICATION

* 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.

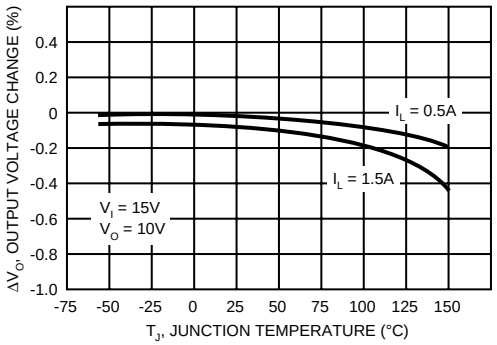
$$V_{OUT} = 1.25V \left(1 + \frac{R2}{R1}\right) + I_{Adj} R2$$

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

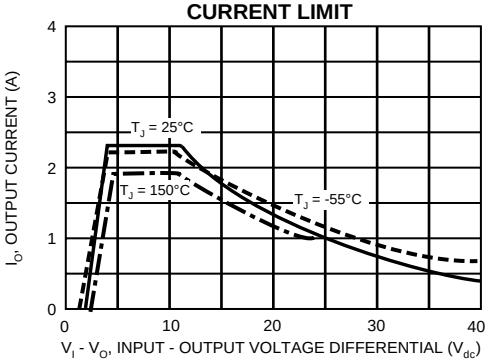


TYPICAL PERFORMANCE CHARACTERISTICS

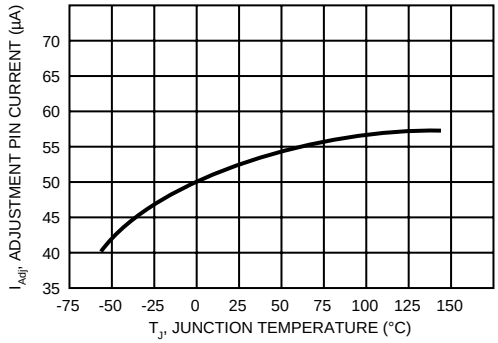
LOAD REGULATION



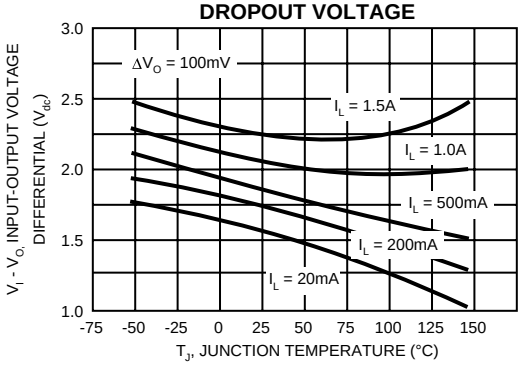
CURRENT LIMIT



ADJUSTMENT PIN CURRENT

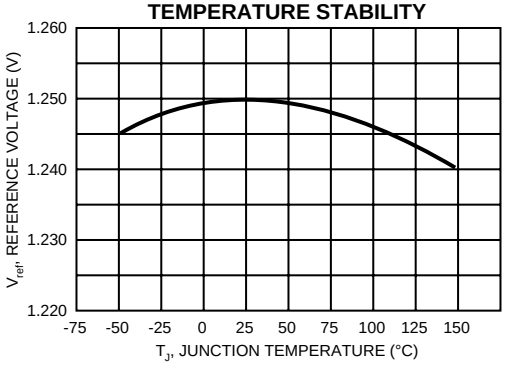


DROPOUT VOLTAGE

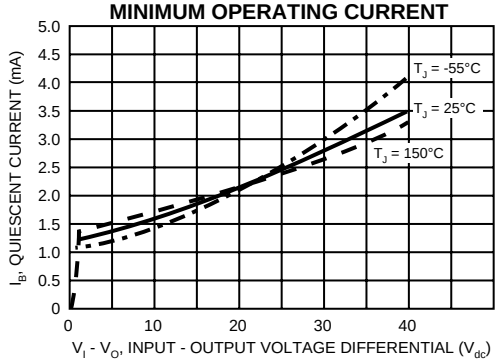


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TEMPERATURE STABILITY



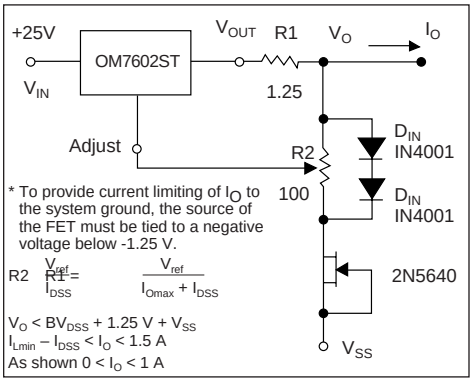
MINIMUM OPERATING CURRENT



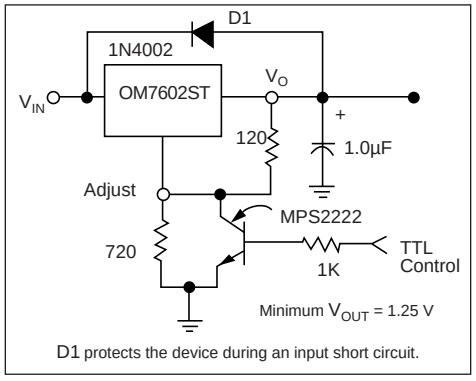
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TYPICAL APPLICATIONS

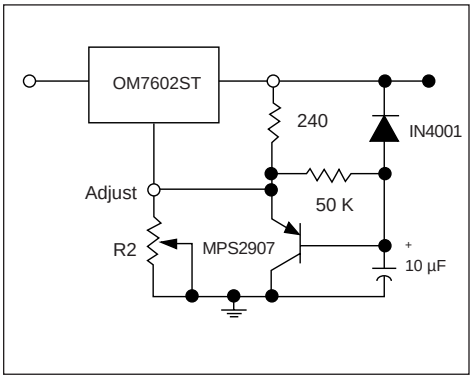
ADJUSTABLE CURRENT LIMITER



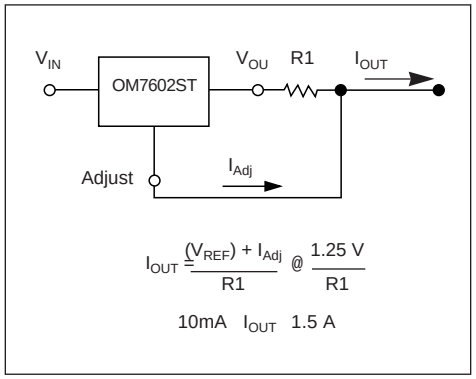
5V ELECTRONIC SHUT DOWN REGULATOR



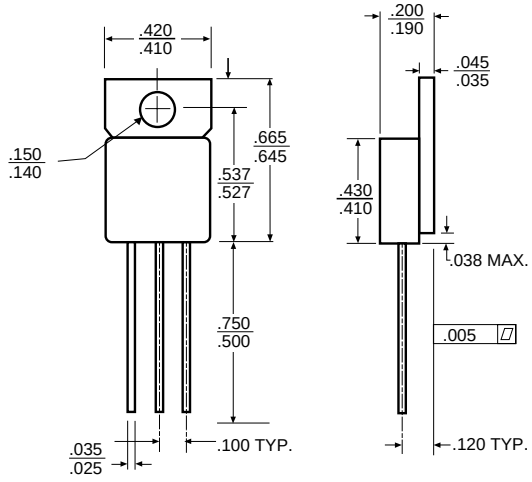
SLOW TURN-ON REGULATOR



CURRENT REGULATOR

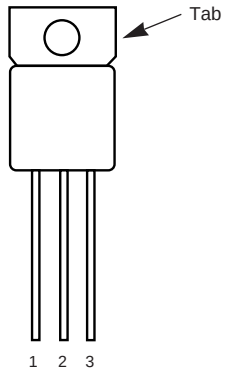


MECHANICAL OUTLINE



NOTES
- Case is metal/hermetically sealed
- Isolated Tab

PIN CONNECTION



ISOLATED
Front View
Pin 1: Adjust
Pin 2: Output
Pin 3: Input
Tab: Isolated

NON-ISOLATED
Front View
Pin 1: Adjust
Pin 2: Output
Pin 3: Input
Tab: Output

Omnirel 205 Crawford Street, Leominster, MA 01453 USA (508) 534-5776 FAX (508) 537-4246