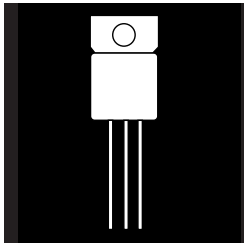


# ISOLATED HERMETIC TO-257AA ADJUSTABLE VOLTAGE REGULATOR



**Three Terminal, Adjustable Voltage, 1.5 Amp  
Precision Negative 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 MIL-STD -883
- Similar To Industry Standard P/N LM137

## DESCRIPTION

This three terminal negative 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 OM7603NT for non-isolated unit.

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

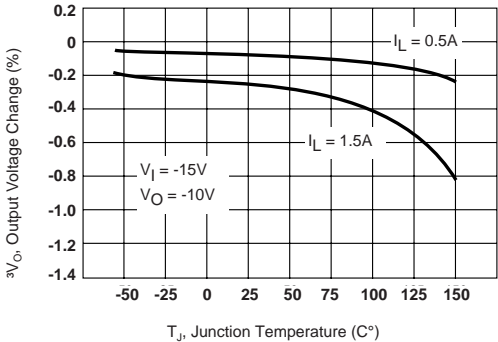
Parameter	Symbol	Test Conditions	Min.	Max.	Unit
Reference Voltage	$V_{REF}$	$V_{DIFF} = 3.0\text{V}$ , $T_A = 25^\circ\text{C}$	-1.262	-1.238	V
		$V_{DIFF} = 3.0\text{V}$	• -1.280	-1.220	
		$V_{DIFF} = 40\text{V}$	• -1.280	-1.220	
Line Regulation (Note 1)	$R_{LINE}$	3.0 V $V_{DIFF}$ 40V, $T_A = 25^\circ\text{C}$	-4.5	4.5	mV
		3.0V $V_{DIFF}$ 40V	• -13.8	13.8	
Load Regulation (Note 1)	$R_{LOAD}$	$V_{DIFF} = 5\text{V}$ , 8mA $I_L$ 1.5A	• -25	25	mV
		$V_{DIFF} = 12\text{V}$ , 8mA $I_L$ 1.5A, $T_A = 25^\circ\text{C}$	-25	25	
		$V_{DIFF} = 40\text{V}$ , 8mA $I_L$ 1.5A, $T_A = 25^\circ\text{C}$	-25	25	
		$V_{DIFF} = 40\text{V}$ , 8mA $I_L$ 1.5A	• -50	50	
Thermal Regulation	$V_{RTH}$	$V_{in} = -14.6\text{V}$ , $I_L = 1.5\text{A}$ $P_d = 20$ Watts, $t = 10$ ms, $T_A = 25^\circ\text{C}$	-5	5	mV
Ripple Rejection (Note 2)	$R_N$	$f = 120$ Hz, $V_{out} = V_{ref}$ $C_{Adj} = 10$ $\mu\text{F}$ , $I_{out} = 100$ mA	• 66		dB
Adjustment Pin Current	$I_{Adj}$	$V_{DIFF} = 3.0\text{V}$	•	100	$\mu\text{A}$
		$V_{DIFF} = 40\text{V}$	•	100	
Adjustment Pin Current Change	$^3I_{Adj}$ (line)	3V $V_{DIFF}$ 40V	• -5	5	$\mu\text{A}$
	$^3I_{Adj}$ (load)	$V_{DIFF} = 5\text{V}$ , 8mA $I_L$ 1.5A	• -5	5	$\mu\text{A}$
Minimum Load Current	$I_{Lmin}$	$V_{DIFF} = 3.0\text{V}$ , $V_{out} = -1.4\text{V}$ (forced)	•	3.0	mA
		$V_{DIFF} = 10\text{V}$ , $V_{out} = -1.4\text{V}$ (forced)	•	3.0	
		$V_{DIFF} = 40\text{V}$ , $V_{out} = -1.4\text{V}$ (forced)	•	5.0	
Current Limit (Note 2)	$I_{CL}$	$V_{DIFF} = 5\text{V}$	• 1.5	3.5	A
		$V_{DIFF} = 40\text{V}$ , $T_A = 25^\circ\text{C}$	0.24	1.2	

**Notes:**

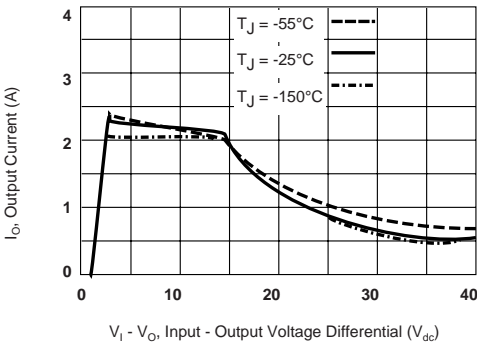
- Load and Line Regulation are specified at a constant junction temperature. Pulse testing with low duty cycle is used. Changes in output voltage due to heating effects must be taken into account separately.
- If not tested, shall be guaranteed to the specified limits.
- The • denotes the specifications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

# TYPICAL PERFORMANCE APPLICATIONS

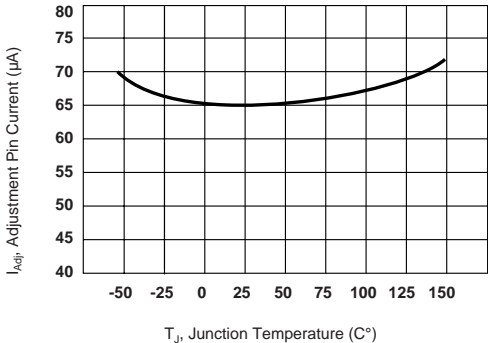
**LOAD REGULATION**



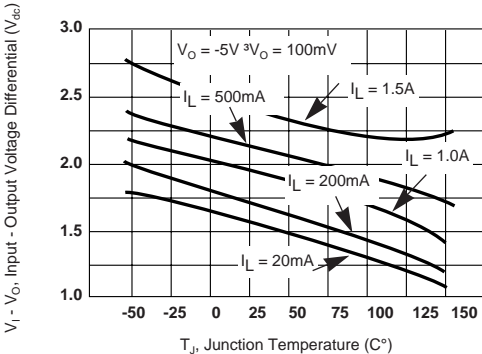
**CURRENT LIMIT**



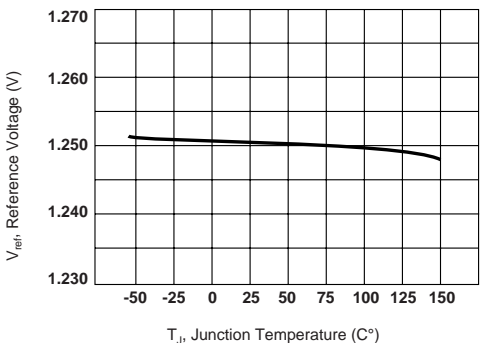
**ADJUSTMENT PIN CURRENT**



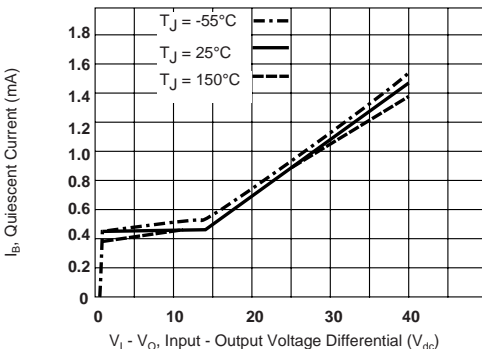
**DROPOUT VOLTAGE**



**TEMPERATURE STABILITY**



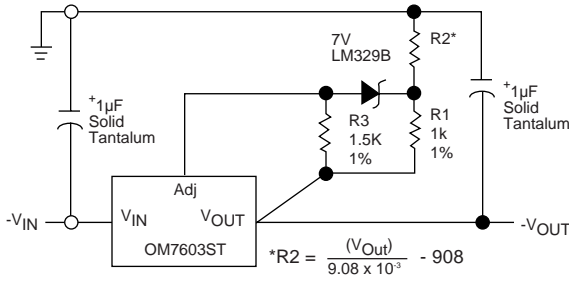
**MINIMUM OPERATING CURRENT**



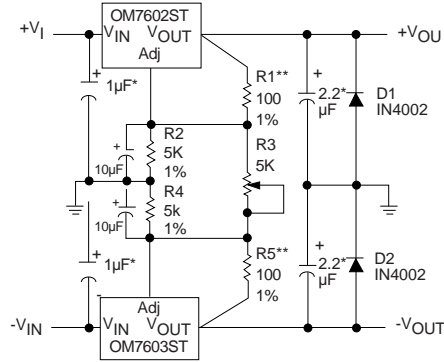
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## TYPICAL APPLICATIONS

### HIGH STABILITY REGULATOR



### DUAL TRACKING SUPPLY ±1.25V TO ±20V



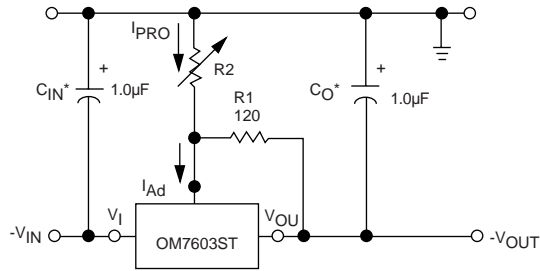
\* Solid Tantalum  
\*\* R1 or R5 may be trimmed slightly to improve tracking.

### STANDARD APPLICATION

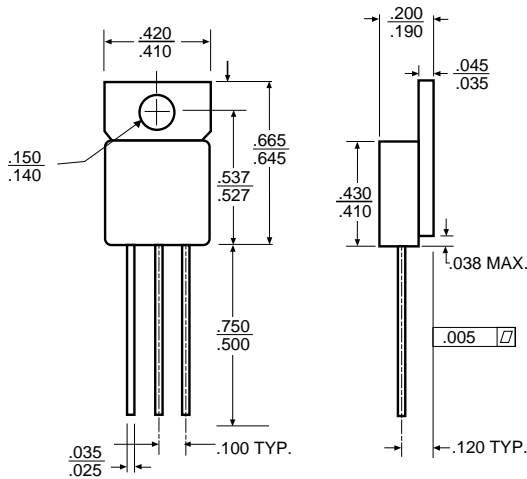
\*  $C_{IN}$  is required if regulator is located more than 4 inches from power supply filter. A 1µF solid tantalum or 10µF aluminum electrolytic is recommended.

\*\*  $C_O$  is necessary for stability. A 1µF solid tantalum or 10µF aluminum electrolytic is recommended.

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



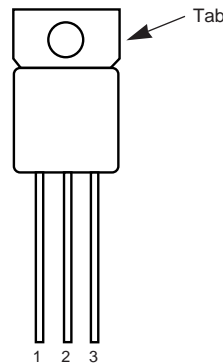
### MECHANICAL OUTLINE



#### NOTES

- Case is metal/hermetically sealed
- Isolated Tab

### PIN CONNECTION



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