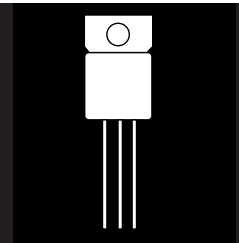


ISOLATED HERMETIC TO-257AA
ADJUSTABLE VOLTAGE REGULATOR



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	
θ_{JC}	3.5°C/W
θ_{JA}	42°C/W

3.3

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, $I_L = 8\text{mA}$ (unless otherwise specified)

Parameter	Symbol	Test Conditions	Min.	Max.	Unit
Reference Voltage	V_{REF}	$V_{DIFF} = 3.0\text{V}$, $T_A = 25^\circ\text{C}$ $V_{DIFF} = 3.3\text{V}$ $V_{DIFF} = 40\text{V}$	1.238 1.225 1.225	1.262 1.270 1.270	V
Line Regulation (Note 1)	R_{LINE}	3.0V V_{DIFF} 40V , $V_{OUT} = V_{REF}$, $T_A = 25^\circ\text{C}$ 3.3V V_{DIFF} 40V , $V_{OUT} = V_{REF}$	-4.5 -9	4.5 9	mV
Load Regulation (Note 1)	R_{LOAD}	$V_{DIFF} = 3.0\text{V}$, 10mA I_L 1.5A , $T_A = 25^\circ\text{C}$ $V_{DIFF} = 3.3\text{V}$, 10mA I_L 1.5A $V_{DIFF} = 40\text{V}$, 10mA I_L 300mA , $T_A = 25^\circ\text{C}$ $V_{DIFF} = 40\text{V}$, 10mA I_L 195mA	-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	$f = 120\text{ Hz}$, $V_{OUT} = V_{REF}$ $C_{Adj} = 10\text{ }\mu\text{F}$, $I_{OUT} = 100\text{ mA}$	66		dB
Adjustment Pin Current	I_{Adj}	$V_{DIFF} = 3.0\text{V}$, $T_A = 25^\circ\text{C}$ $V_{DIFF} = 3.3\text{V}$ $V_{DIFF} = 40\text{V}$		100 100 100	μA
Adjustment Pin Current Change	$^3I_{Adj}$	$V_{DIFF} = 3.0\text{V}$, 10mA I_L 1.5A , $T_A = 25^\circ\text{C}$ $V_{DIFF} = 3.3\text{V}$, 10mA I_L 1.5A $V_{DIFF} = 40\text{V}$, 10mA I_L 300mA , $T_A = 25^\circ\text{C}$ $V_{DIFF} = 40\text{V}$, 10mA I_L 195mA 3.0V V_{DIFF} 40V , $T_A = 25^\circ\text{C}$ 3.3V V_{DIFF} 40V	-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) $V_{DIFF} = 3.3\text{V}$, $V_{OUT} = 1.4\text{V}$ (forced) $V_{DIFF} = 40\text{V}$, $V_{OUT} = 1.4\text{V}$ (forced)		5.0 5.0 5.0	mA
Current Limit (Note 2)	I_{CL}	$V_{DIFF} = 15\text{V}$ $V_{DIFF} = 40\text{V}$, $T_A = 25^\circ\text{C}$	1.5 0.18	3.5 1.5	A

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.

3.3

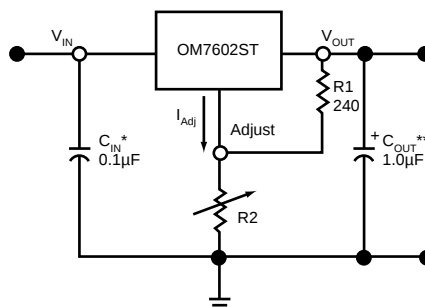
STANDARD APPLICATION

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

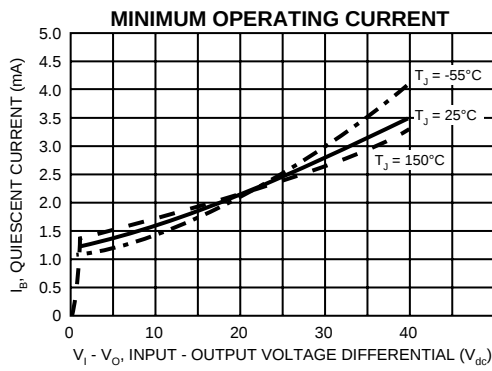
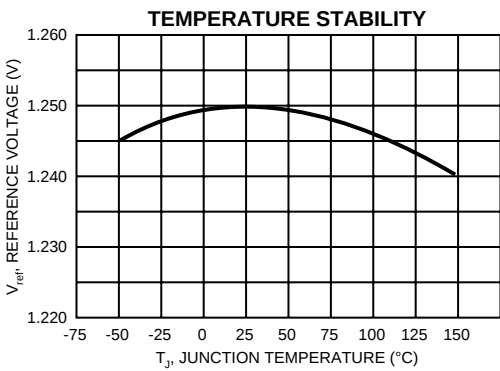
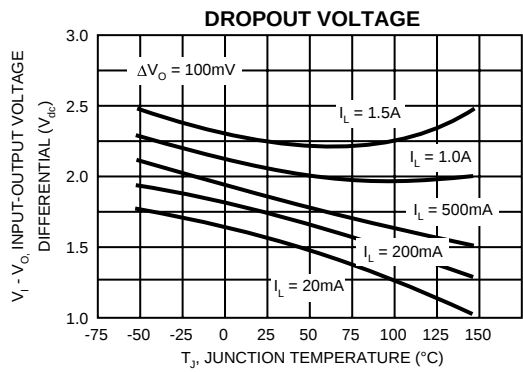
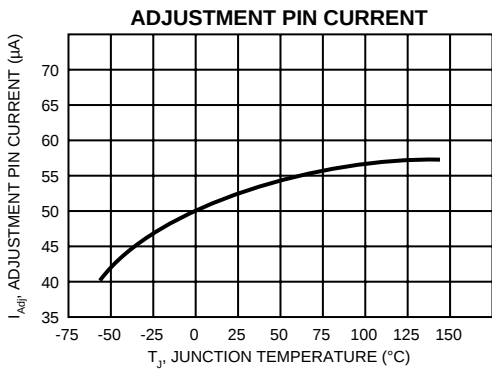
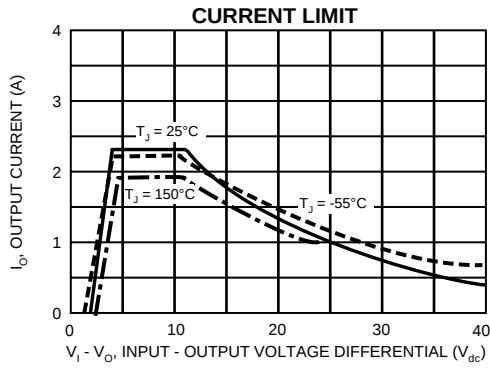
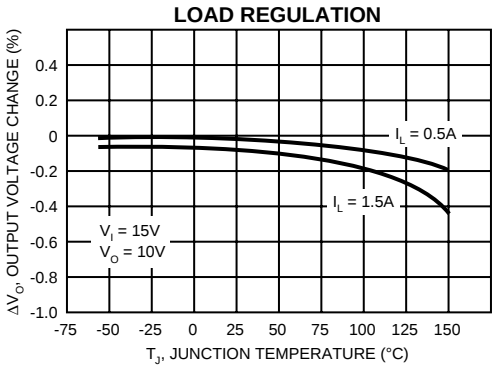
** C_O is not needed for stability, however it does improve transient response.

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

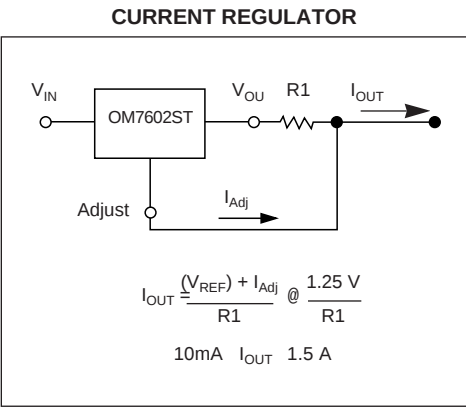
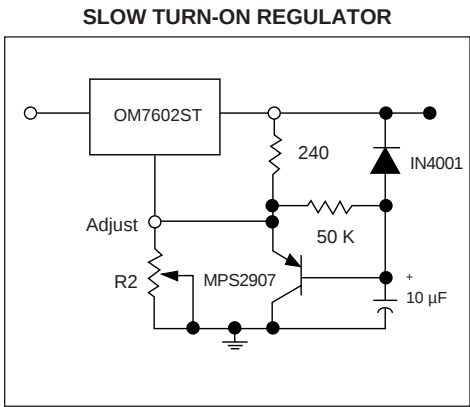
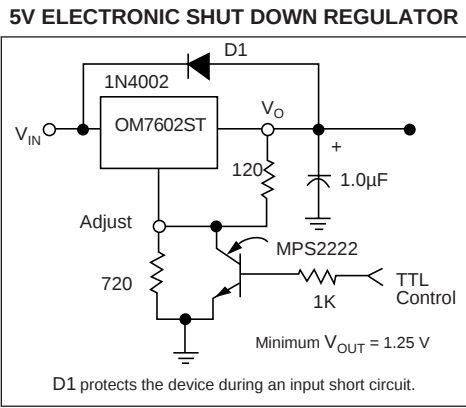
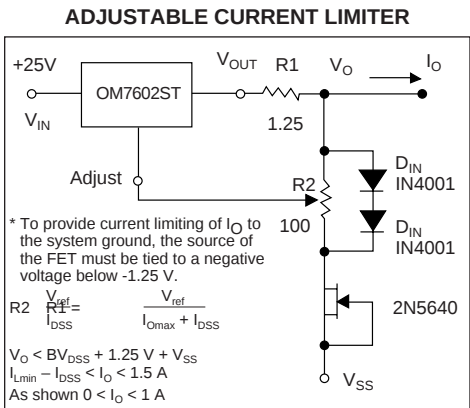
Since I_{Adj} is controlled to less than $100\mu\text{A}$, the error associated with this term is negligible in most applications.



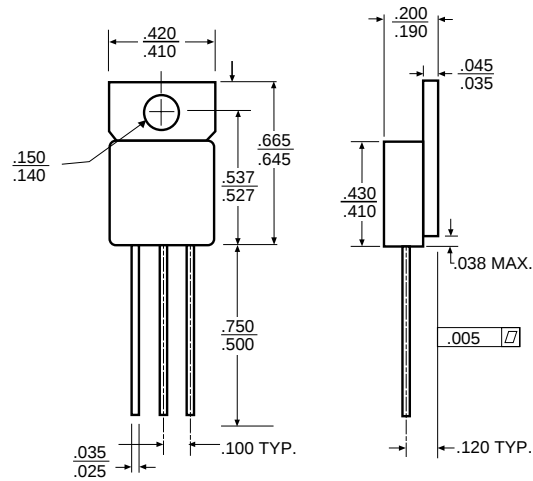
TYPICAL PERFORMANCE CHARACTERISTICS



TYPICAL APPLICATIONS



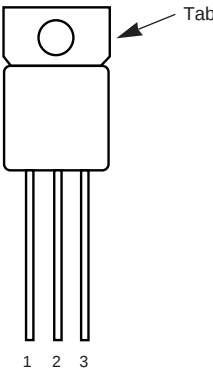
MECHANICAL OUTLINE



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: Output	Pin 2: Output
Pin 3: Input	Pin 3: Input
Tab: Isolated	Tab: Output