

ISOLATED HERMETIC TO-257AA FIXED VOLTAGE NEGATIVE REGULATORS



Three Terminal, Fixed Voltage, 1.5 Amp
Precision Negative Regulators In Hermetic
JEDEC TO-257AA Package

FEATURES

- Isolated Hermetic Package, JEDEC TO-257AA Outline
- Output Voltages: -5V, -12V, -15V (Other Voltages Available)
- Output Voltages Set Internally To $\pm 1\%$ or $\pm 2\%$
- Built-In Thermal Overload Protection
- Short Circuit Current Limiting
- Product Is Available Screened To MIL-STD-883

DESCRIPTION

These three terminal negative regulators are 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 1.5 amps of output current. These units feature internally trimmed output voltages to $\pm 1\%$ or 2% of nominal voltage. Standard voltages are -5V, -12V, and -15V. However, other voltages are available up to -24 volts. These units are ideally suited for Military applications where a hermetically sealed package is required.

ABSOLUTE MAXIMUM RATINGS @ 25°C

Input Voltage	-35 V
Operating Junction Temperature Range	- 55°C to + 150°C
Storage Temperature Range	- 65°C to + 150°C
Typical Power/Thermal Characteristics:	
Rated Power @ 25° C	T_C 17.5W
	T_A 3W
Thermal Resistance	θ_{JC} 4.2°C/W
	θ_{JA} 42°C/W

Notes: Product also available in Non-Isolated construction. To order this version, delete "I" from part number.

Example:	<u>Isolated</u>	<u>Non-Isolated</u>
	OM79XXIH	OM79XXH

Use letter "A" after part number to designate $\pm 1\%$ output voltage tolerance.

Example: OM7905AIH

ELECTRICAL CHARACTERISTICS -5 Volt $V_{IN} = -10V$, $I_O = 500mA$, $-55^{\circ}C \leq T_A \leq 125^{\circ}C$ (unless otherwise specified)

Parameter	Symbol	Test Conditions		Min.	Max.	Unit
Output Voltage	V _{OUT}	T _A = 25°C	•	-4.95	-5.05	V
		V _{IN} = -7.5V to -20V	•	-4.85	-5.15	V
Line Regulation (Note 1)	V _{RLINE}	V _{IN} = -7.5V to -20V	•		12	mV
			•		25	mV
		V _{IN} = -8.0V to -12V	•		5	mV
Load Regulation (Note 1)	V _{RLOAD}	I _O = 5mA to 1.5 Amp	•		20	mV
			•		25	mV
		I _O = 250mA to 750 mA	•		15	mV
Standby Current Drain	I _{SCD}		•		30	mV
			•		2.5	mA
Standby Current Drain Change With Line	ΔI _{SCD} (Line)	V _{IN} = -7.0V to -20V	•		3.0	mA
			•		0.4	mA
Standby Current Drain Change With Load	ΔI _{SCD} (Load)	I _O = 5mA to 1000mA	•		0.4	mA
			•			
Dropout Voltage	V _{DO}	ΔV _{OUT} = 100mV, I _O = 1.0A	•		2.5	V
Peak Output Current	I _{O(pk)}	T _A = 25°C		1.5	3.3	A
Short Circuit Current (Note 2)	I _{OS}	V _{IN} = -35V	•		1.2	A
			•		2.8	A
Ripple Rejection	ΔV _{IN} ΔV _{OUT}	f = 120 Hz, ΔV _{IN} = -10V		63		dB
		(Note 3)	•	60		dB
Output Noise Voltage (Note 3)	N _O	T _A = 25°C, f = 10 Hz to 100KHz			40	μV/V RMS
Long Term Stability (Note 3)	ΔV _{OUT} Δt	T _A = 25°C, t = 1000 hrs.			75	mV

ELECTRICAL CHARACTERISTICS -12 Volt $V_{IN} = -19V$, $I_O = 500mA$, $-55^{\circ}C \leq T_A \leq 125^{\circ}C$ (unless otherwise specified)

Parameter	Symbol	Test Conditions	Min.	Max.	Unit	
Output Voltage	V _{OUT}	T _A = 25°C		-11.88	-12.12	V
		V _{IN} = -14.5V to -27V	•	-11.64	-12.36	V
Line Regulation (Note 1)	V _{RLINE}	V _{IN} = -14.5V to -27V	•	20	mV	
			•	50	mV	
		V _{IN} = -16V to -22V	•	10	mV	
Load Regulation (Note 1)	V _{RLOAD}	I _O = 5mA to 1.5 Amp	•	32	mV	
			•	60	mV	
		I _O = 250mA to 750 mA	•	16	mV	
Standby Current Drain	I _{SCD}		•	30	mV	
			•	3.5	mA	
Standby Current Drain Change With Line	ΔI _{SCD} (Line)	V _{IN} = -14.5V to -27V	•	4.0	mA	
			•	0.8	mA	
Standby Current Drain Change With Load	ΔI _{SCD} (Load)	I _O = 5mA to 1000mA	•	0.5	mA	
			•			
Dropout Voltage	V _{DO}	ΔV _{OUT} = 100mV, I _O = 1.0A	•	1.8	V	
Peak Output Current	I _{O(pk)}	T _A = 25°C, I _O = 5mA to 1A	1.5	3.3	A	
Short Circuit Current (Note 2)	I _{OS}	V _{IN} = -35V		1.2	A	
			•	2.8	A	
Ripple Rejection	ΔV _{IN} ΔV _{OUT}	f = 120 Hz, ΔV _{IN} = -10V	56		dB	
		(Note 3)	•	53	dB	
Output Noise Voltage (Note 3)	N _O	T _A = 25°C, f = 10 Hz to 100KHz		40	μV/V RMS	
Long Term Stability (Note 3)	ΔV _{OUT} Δt	T _A = 25°C, t = 1000 hrs.		120	mV	

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.
- Short Circuit protection is only assured up to $V_{IN} = -35V$.
- If not tested, shall be guaranteed to the specified limits.

The • denotes the specifications which apply over the full operating temperature range.

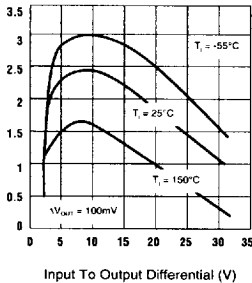
ELECTRICAL CHARACTERISTICS -15 Volt $V_{IN} = -23V, I_O = 500mA, -55^{\circ}C \leq T_A \leq 125^{\circ}C$ (unless otherwise specified)

Parameter	Symbol	Test Conditions		Min.	Max.	Unit
Output Voltage	V _{OUT}	T _A = 25°C		-14.85	-15.15	V
		V _{IN} = -17.5V to -30V	•	-14.55	-15.45	V
Line Regulation (Note 1)	V _{RLINE}	V _{IN} = -17.5V to -30V	•		25	mV
			•		50	mV
		V _{IN} = -20V to -26V	•		15	mV
Load Regulation (Note 1)	V _{RLOAD}	I _O = 5mA to 1.5 Amp	•		25	mV
			•		75	mV
		I _O = 250mA to 750 mA	•		21	mV
Standby Current Drain	I _{SCD}		•		45	mV
			•		6.0	mA
Standby Current Drain Change With Line	ΔI _{SCD} (Line)	V _{IN} = -17.5V to -30V	•		6.5	mA
			•		0.8	mA
Standby Current Drain Change With Load	ΔI _{SCD} (Load)	I _O = 5mA to 1000mA	•		0.5	mA
Dropout Voltage	V _{DO}	ΔV _{OUT} = 100mV, I _O = 1.0A	•		2.5	V
Peak Output Current	I _{O (PK)}	T _A = 25°C		1.5	3.3	A
Short Circuit Current (Note 2)	I _{DS}	V _{IN} = -35V			1.2	A
			•		2.8	A
Ripple Rejection	ΔV _{IN} ΔV _{OUT}	f = 120 Hz, ΔV _{IN} = -10V		53		dB
		(Note 3)	•	50		dB
Output Noise Voltage (Note 3)	N _O	T _A = 25°C, f = 10 Hz to 100KHz			40	μV/V RMS
Long Term Stability (Note 3)	ΔV _{OUT} Δt	T _A = 25°C, t = 1000 hrs.			150	mV

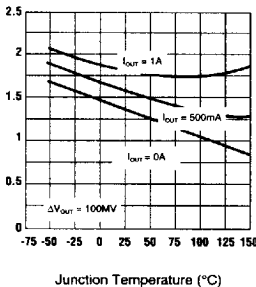
- Notes:
- Load and Line Regulation are specified at a constant junction temperature. Pulse testing with low duty cycle is used. Changes in output voltage due to heating effects must be taken into account separately.
 - Short Circuit protection is only assured up to $V_{IN} = -35V$.
 - If not tested, shall be guaranteed to the specified limits.
- The • denotes the specifications which apply over the full operating temperature range.

TYPICAL PERFORMANCE CHARACTERISTICS

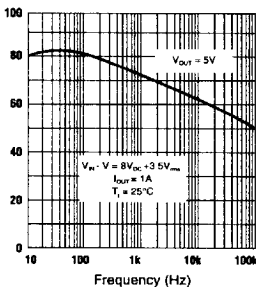
PEAK OUTPUT CURRENT



DROPOUT VOLTAGE



RIPPLE REJECTION

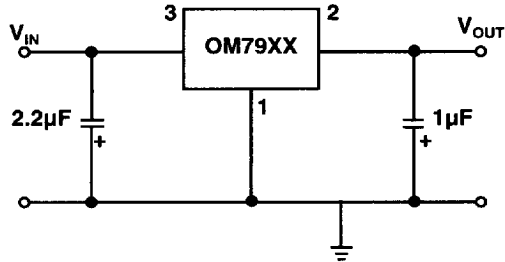


TYPICAL APPLICATIONS

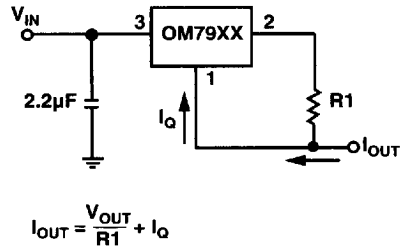
Input bypass capacitors are recommended for stable operation of the OM7900 series of regulators over the input voltage and output current ranges. Output bypass capacitors will improve the transient response of the regulator.

The bypass capacitors, (2.2μF on the input, 1μF on the output) should be ceramic or solid tantalum which have good high frequency characteristics. If aluminum electrolytics are used, their values should be 10μF or larger. The bypass capacitors should be mounted with the shortest leads, and if possible, directly across the regulator terminals.

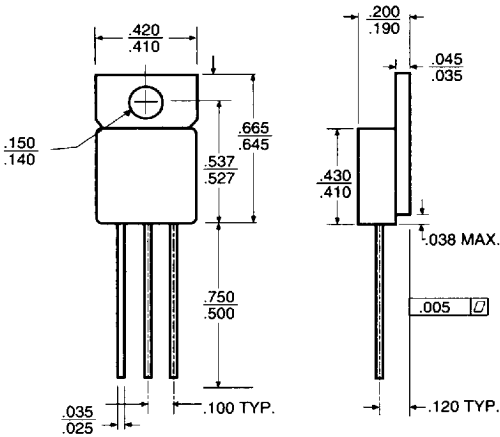
Fixed Output Regulator



Basic Current Regulator



MECHANICAL OUTLINE



Note:

- Case is metal/hermetically sealed
- Isolated Tab
- Outline similar to JEDEC TO-220 outline

PIN CONNECTION

