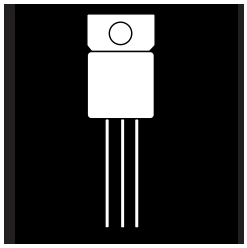
ISOLATED HERMETIC FIXED VOLTAGE NEGATIVE REGULATORS APPROVED TO DESC DRAWINGS



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
- Output Voltages Set Internally to ±1%
- Built-In Thermal Overload Protection
- Short Circuit Current Limiting
- Product Is Also Available In Non-Isolated Package
- Similar To Industry Standards 7905, 7912, 7915

DESCRIPTION

These three terminal negative regulators are supplied in a hermetically sealed metall 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 ±1% of nominal voltage. Standard voltages are -5V, -12V, -15V. These units are ideally suited for Military applications where a hermetically sealed package is required.

PART NUMBER DESIGNATOR

Standard Military Drawing Number	Omnirel Part Number
5962-8874601 UX	OM1905STM
5962-8874601 TX	OM1905NTM
5962-8874701 UX	OM1912STM
5962-8874701 TX	OM1912NTM
5962-8874801 UX	OM1915STM
5962-8874801 TX	OM1915NTM

"U" = Isolated

"T" = Non-Isolated

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 Charateristics:

Rated Power @ 25° C	T_C	15W
	T_A	3W
Thermal Resistance	q_{JC} (Case U)	4.2°C/W
	q_{JC} (Case T)	3.5°C/W
	q_{JA}	42°C/W

ELECTRICAL CHARACTERISTICS -5 Volt V_{IN} = -10V, I_o = 500mA, -55°C T_A 125°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 I_O = 5mA to 1.0, A, P ≤ 15W	•	-4.85	-5.15	V
Line Regulation	V_{RLINE}	V_{IN} = -7.5V to -20V			12	mV
(Note 1)			•		25	mV
(Note 4)		V_{IN} = -8.0V to -12V			5	mV
			•		12	mV
Load Regulation	V_{RLOAD}	I_O = 5mA to 1.5 Amp			20	mV
(Note 1)			•		25	mV
		I_O = 250mA to 750 mA			15	mV
			•		30	mV
Standby Current Drain	I_{SCD}				2.5	mA
			•		3.0	mA
Standby Current Drain	DI_{SCD}	V_{IN} = -7.0V to -20V	•		0.4	mA
Change With Line	(Line)					
Standby Current Drain	DI_{SCD}	I_O = 5mA to 1000mA	•		0.4	mA
Change With Load	(Load)					
Dropout Voltage	V_{DO}	DV_{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	I_{DS}	V_{IN} = -35V			1.2	A
(Note 2)			•		2.8	A
Ripple Rejection	$\frac{DV_{IN}}{DV_{OUT}}$	f =120 Hz, DV_{IN} = -10V		63		dB
		(Note 3)	•	60		dB
Output Noise Voltage	N_O	T_A = 25°C, f =10 Hz to 100KHz			40	µV/V
(Note 3)						RMS
Long Term Stability	$\frac{DV_{OUT}}{Dt}$	T_A = 25°C, t = 1000 hrs.			75	mV
(Note 3)						

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

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

ELECTRICAL CHARACTERISTICS -12 Volt

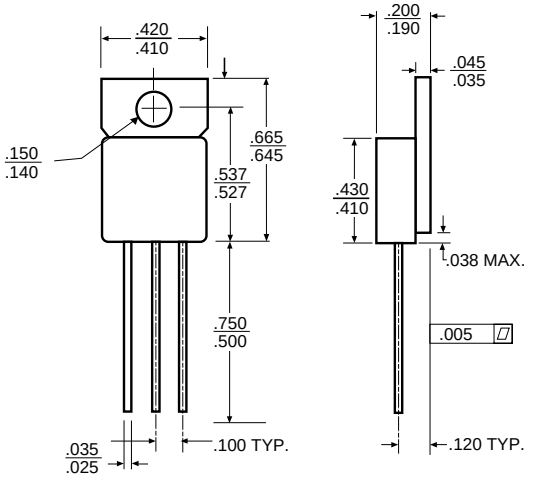
V_{IN} = -19V, I_o = 500mA, -55°C T_A 125°C (unless otherwise specified)

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 I_O = 5mA to 1.0 A, P ≤ 15W	•	-11.64	-12.36	V
Line Regulation	V_{RLINE}	V_{IN} = -14.5V to -27V			20	mV
(Note 1)			•		50	mV
(Note 4)		V_{IN} = -16V to -22V			10	mV
			•		30	mV
Load Regulation	V_{RLOAD}	I_O = 5mA to 1.5 Amp			32	mV
(Note 1)			•		60	mV
		I_O = 250mA to 750 mA			16	mV
			•		30	mV
Standby Current Drain	I_{SCD}				3.5	mA
			•		4.0	mA
Standby Current Drain	DI_{SCD}	V_{IN} = -14.5V to -27V	•		0.8	mA
Change With Line	(Line)					
Standby Current Drain	DI_{SCD}	I_O = 5mA to 1000mA	•		0.5	mA
Change With Load	(Load)					
Dropout Voltage	V_{DO}	DV_{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	I_{DS}	V_{IN} = -35V			1.2	A
(Note 2)			•		2.8	A
Ripple Rejection	$\frac{DV_{IN}}{DV_{OUT}}$	f =120 Hz, DV_{IN} = -10V		56		dB
		(Note 3)	•	53		dB
Output Noise Voltage	N_O	T_A = 25°C, f =10 Hz to 100KHz			40	µV/V
(Note 3)						RMS
Long Term Stability	$\frac{DV_{OUT}}{Dt}$	T_A = 25°C, t = 1000 hrs.			120	mV
(Note 3)						

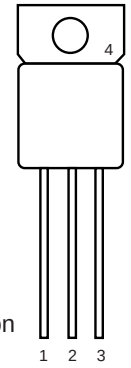
Notes:

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. Short Circuit protection is only assured up to V_{IN} = -35V.
3. If not tested, shall be guaranteed to the specified limits.
   The • denotes the specifications which apply over the full operating temperature range.
4. Minimum load current for full line regulation = 5 mA.

MECHANICAL OUTLINE



CONNECTION DIAGRAM



Case U
1 Ground
2 Input
3 Output
4 No Connection

Case T
1 Ground
2 Input
3 Output
4 Input

3.3

Omnirel

OM1905STM/NTM - OM1915STM/NTM

ELECTRICAL CHARACTERISTICS -15 Volt V_{IN} = -23V, I_o = 500mA, -55°C T_A 125°C (unless otherwise specified)

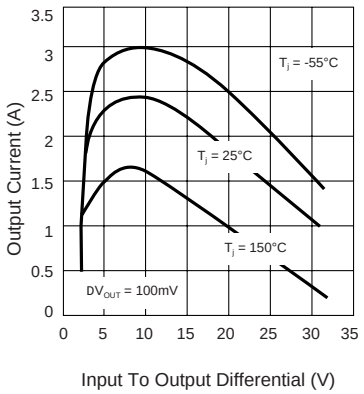
Parameter	Symbol	Test Conditions		Min.	Max.	Unit
Output Voltage	V_{OUT}	T_A = 25°C		-14.85	-15.15	V
		V_{IN} = -17.5V to -30V	•	-14.55	-15.45	V
		I_O = 5mA to 1.0 A, P ≤ 15 W				
Line Regulation	V_{RLINE}	V_{IN} = -17.5V to -30V			25	mV
(Note 1)			•		50	mV
(Note 4)		V_{IN} = -20V to -26V			15	mV
			•		25	mV
Load Regulation	V_{RLOAD}	I_O = 5mA to 1.5 Amp			35	mV
(Note 1)			•		75	mV
		I_O = 250mA to 750 mA			21	mV
			•		45	mV
Standby Current Drain	I_{SCD}				6.0	mA
			•		6.5	mA
Standby Current Drain	DI_{SCD}	V_{IN} = -17.5V to -30V	•		0.8	mA
Change With Line	(Line)					
Standby Current Drain	DI_{SCD}	I_O = 5mA to 1000 mA	•		0.5	mA
Change With Load	(Load)					
Dropout Voltage	V_{DO}	DV_{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	I_{DS}	V_{IN} = -35V			1.2	A
(Note 2)			•		2.8	A
Ripple Rejection	$\frac{DV_{IN}}{DV_{OUT}}$	f =120 Hz, DV_{IN} = -10V		53		dB
		(Note 3)	•	50		dB
Output Noise Voltage	N_O	T_A = 25°C, f =10 Hz to 100KHz			40	µV/V
(Note 3)						RMS
Long Term Stability	$\frac{DV_{OUT}}{Dt}$	T_A = 25°C, t = 1000 hrs.			150	mV
(Note 3)						

Notes:

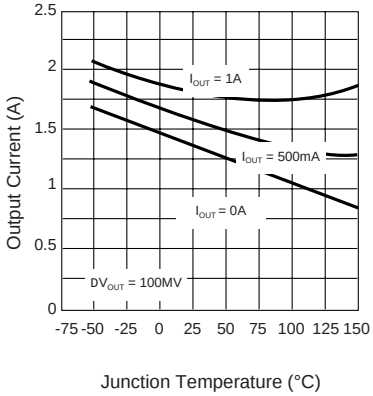
1. Load and Line Regulation are specified at a constant junction temperature. Pulse testing with low duty cycle is used. Changes in output voltage due to heating effects must be taken into account separately.
2. Short Circuit protection is only assured up to V_{IN} = -35V.
3. If not tested, shall be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

TYPICAL PERFORMANCE CHARACTERISTICS

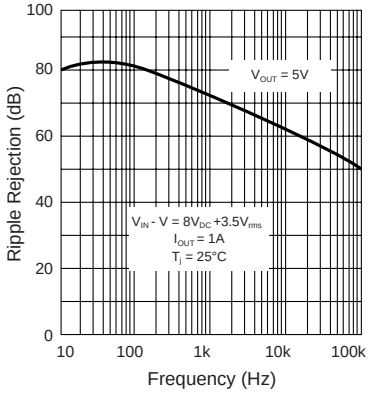
PEAK OUTPUT



DROPOUT VOLTAGE



RIPPLE REJECTION



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