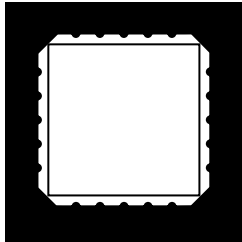


HERMETIC SURFACE MOUNT FIXED VOLTAGE NEGATIVE REGULATORS APPROVED TO DESC DRAWING



LCC 20, Fixed Voltage, Precision Negative Regulators In Hermetic Surface Mount Package

FEATURES

- Hermetic Surface Mount Package
- Output Voltages: -5V, -12V, -15V
- Output Voltages Set Internally To $\pm 1\%$
- Built-In Thermal Overload Protection
- Short Circuit Current Limiting
- Product Is Available Hi-Rel Screened

DESCRIPTION

These negative regulators are supplied in a hermetically sealed surface mount 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 .5 amps of output current. These units feature internally trimmed output voltages to $\pm 1\%$ of nominal voltage. Standard voltages are -5V, -12V, and -15V. These units are ideally suited for Military applications where a hermetic surface mount package is required.

PART NUMBER DESIGNATOR

Standard Military Drawing Number

5962-8874601 2X

5962-8874701 2X

5962-8874801 2X

Omnirel Part Number

OM1905N2M

OM1912N2M

OM1915N2M

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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 2W
	T_A 1040 mW
Thermal Resistance	θ_{JC} 25°C/W
	θ_{JA} 120°C/W

ELECTRICAL CHARACTERISTICS -5 Volt $V_{IN} = -10V, I_O = 100mA, -55^\circ C \ T_A \ 125^\circ C$ (unless otherwise specified)

Parameter	Symbol	Test Conditions	Min.	Max.	Unit
Output Voltage	V_{OUT}	$T_A = 25^\circ C$	-4.95	-5.05	V
		$V_{IN} = -7.5V$ to $-20V$ $I_O = 5\text{ mA}$ to 500 mA , $P \leq 2W$	• -4.85	-5.15	V
Line Regulation (Note 1) (Note 4)	V_{RLINE}	$V_{IN} = -7.5V$ to $-20V$	•	12 25	mV mV
		$V_{IN} = -8.0V$ to $-12V$	•	5 12	mV mV
Load Regulation (Note 1)	V_{RLOAD}	$I_O = 5\text{ mA}$ to 500 mA	•	25 50	mV mV
Standby Current Drain	I_{SCD}		•	2.5 3.0	mA mA
Standby Current Drain Change With Line	ΔI_{SCD} (Line)	$V_{IN} = -7.0V$ to $-20V$	•	0.4	mA
Standby Current Drain Change With Load	ΔI_{SCD} (Load)	$I_O = 5\text{ mA}$ to 500 mA	•	0.4	mA
Dropout Voltage	V_{DO}	$\Delta V_{OUT} = 100\text{mV}$, $I_O = 500\text{ mA}$	•	2.5	V
Peak Output Current	$I_{O(pk)}$	$T_A = 25^\circ C$	0.5	1.7	A
Short Circuit Current (Note 2)	I_{DS}	$V_{IN} = -35V$	•	.7 2.0	A A
Ripple Rejection	$\frac{\Delta V_{IN}}{\Delta V_{OUT}}$	$f = 120\text{ Hz}$, $\Delta V_{IN} = -10V$	•	63	dB
		(Note 3)	•	60	dB
Output Noise Voltage (Note 3)	N_O	$T_A = 25^\circ C$, $f = 10\text{ Hz}$ to 100KHz		40	$\mu V/V$ RMS
Long Term Stability (Note 3)	$\frac{\Delta V_{OUT}}{\Delta t}$	$T_A = 25^\circ C$, $t = 1000\text{ hrs.}$		75	mV

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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 = 5.0 mA.



ELECTRICAL CHARACTERISTICS -12 Volt $V_{IN} = -19V, I_O = 100 \text{ mA}, -55^\circ\text{C} \leq T_A \leq 125^\circ\text{C}$ (unless otherwise specified)

Parameter	Symbol	Test Conditions	Min.	Max.	Unit
Output Voltage	V_{OUT}	$T_A = 25^\circ\text{C}$	-11.88	-12.12	V
		$V_{IN} = -14.5V \text{ to } -27V$ $I_O = 5\text{mA to } 500 \text{ mA}, P_D \leq 2 \text{ W}$	-11.64	-12.36	V
Line Regulation (Note 1) (Note 4)	V_{RLINE}	$V_{IN} = -14.5V \text{ to } -27V$		20	mV
		$V_{IN} = -16V \text{ to } -22V$		50	mV
Load Regulation (Note 1)	V_{RLOAD}	$I_O = 5 \text{ mA to } 500 \text{ mA}$		10	mV
				30	mV
Standby Current Drain	I_{SCD}			32	mV
Standby Current Drain Change With Line (Line)	ΔI_{SCD}	$V_{IN} = -14.5V \text{ to } -27V$		3.5	mA
				4.0	mA
Standby Current Drain Change With Load (Load)	ΔI_{SCD}	$I_O = 5\text{mA to } 500 \text{ mA}$		0.8	mA
				0.5	mA
Dropout Voltage	V_{DO}	$\Delta V_{OUT} = 100\text{mV}, I_O = 500 \text{ mA}$		1.8	V
Peak Output Current	$I_{O(pk)}$	$T_A = 25^\circ\text{C}, I_O = 5 \text{ mA to } 1A$	0.5	1.7	A
Short Circuit Current (Note 2)	I_{DS}	$V_{IN} = -35V$.7	A
				2.0	A
Ripple Rejection	$\frac{\Delta V_{IN}}{\Delta V_{OUT}}$	$f = 120 \text{ Hz}, \Delta V_{IN} = -10V$		56	dB
		(Note 3)		53	dB
Output Noise Voltage (Note 3)	N_O	$T_A = 25^\circ\text{C}, f = 10 \text{ Hz to } 100 \text{ KHz}$		40	$\mu\text{V/V}$ RMS
Long Term Stability (Note 3)	$\frac{\Delta V_{OUT}}{\Delta t}$	$T_A = 25^\circ\text{C}, t = 1000 \text{ hrs.}$		120	mV

Notes:

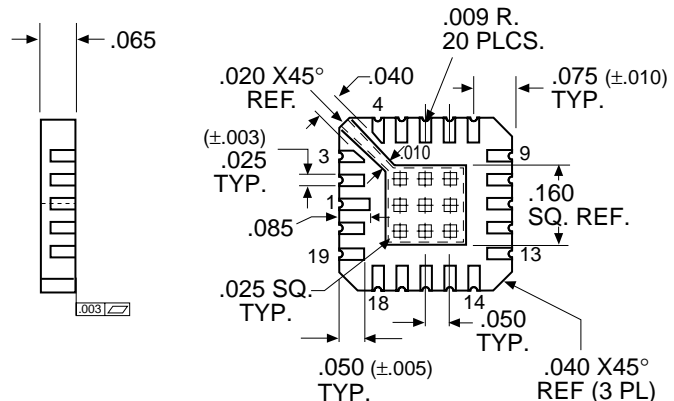
- Load and Line Regulation are specified at a constant junction temperature. Pulse testing with low duty cycle is used. Changes in output voltage due to heating effects must be taken into account separately.
- Short Circuit protection is only assured up to $V_{IN} = -35V$.
- If not tested, shall be guaranteed to the specified limits.
The • denotes the specifications which apply over the full operating temperature range.
- Minimum load current for full line regulation = 5.0 mA.

PIN CONNECTION

Terminal Number	
1	NC
2	$V_{INinput}$
3	NC
4	V_{OUTput}
5	V_{OUTput}
6	NC
7	V_{OUTput}
8	NC
9	NC
10	NC
11	NC
12	NC
13	NC
14	NC
15	Ground
16	NC
17	Ground
18	NC
19	NC
20	$V_{INinput}$

Note: The input pins (2 and 20) are to be connected together, the output pins (4,5, and 7) are to be connected together and the ground pins (15 and 17) are to be connected together for operation.

MECHANICAL OUTLINE



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ELECTRICAL CHARACTERISTICS -15 Volt $V_{IN} = -23V, I_O = 100mA, -55^{\circ}C \leq T_A \leq 125^{\circ}C$ (unless otherwise specified)

Parameter	Symbol	Test Conditions	Min.	Max.	Unit
Output Voltage	V_{OUT}	$T_A = 25^{\circ}C$	-14.85	-15.15	V
		$V_{IN} = -17.5V$ to $-30V$ $I_O = 5 mA$ to $500 mA, P_D \leq 2 W$	• -14.55	-15.45	V
Line Regulation (Note 1) (Note 4)	V_{RLINE}	$V_{IN} = -17.5V$ to $-30V$	•	25 50	mV mV
		$V_{IN} = -20V$ to $-26V$	•	15 25	mV mV
Load Regulation (Note 1)	V_{RLOAD}	$I_O = 5mA$ to $500 mA$	•	50 90	mV mV
			•		
Standby Current Drain	I_{SCD}		•	6.0 6.5	mA mA
			•		
Standby Current Drain Change With Line	ΔI_{SCD} (Line)	$V_{IN} = -17.5V$ to $-30V$	•	0.8	mA
Standby Current Drain Change With Load	ΔI_{SCD} (Load)	$I_O = 5mA$ to $500 mA$	•	0.5	mA
Dropout Voltage	V_{DO}	$\Delta V_{OUT} = 100mV, I_O = 500 mA$	•	2.5	V
Peak Output Current	$I_{O(pk)}$	$T_A = 25^{\circ}C$	0.5	1.7	A
Short Circuit Current (Note 2)	I_{DS}	$V_{IN} = -35V$	•	0.7 2.0	A A
			•		
Ripple Rejection	$\frac{\Delta V_{IN}}{\Delta V_{OUT}}$	$f = 120 Hz, \Delta V_{IN} = -10V$ (Note 3)	•	53 50	dB dB
			•		
Output Noise Voltage (Note 3)	N_O	$T_A = 25^{\circ}C, f = 10 Hz$ to $100KHz$		40	$\mu V/V$ RMS
Long Term Stability (Note 3)	$\frac{\Delta V_{OUT}}{\Delta t}$	$T_A = 25^{\circ}C, t = 1000 hrs.$		150	mV

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 = 5.0 mA.