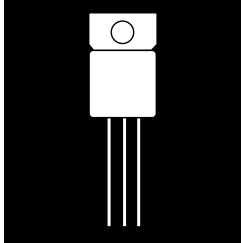


3 AMP NEGATIVE ADJUSTABLE REGULATOR APPROVED TO DESC DRAWING 5962-87741



Three Terminal, Negative Adjustable Voltage Regulator In Hermetic Packages

FEATURES

- Similar To Industry Standard LT1033
- Approved To DESC Standardized Military Drawing Number 5962-8774101
- Adjustable Output Voltage
- Built In Thermal Overload Protection
- Short Circuit Current Limiting
- Maximum Output Voltage Tolerance is Guaranteed To $\pm 1\%$
- Guaranteed Dropout Voltage At Multiple Current Levels
- TO-257 Available in Isolated and Non-Isolated Packages

DESCRIPTION

This three terminal negative adjustable voltage regulator is designed to provide 3A with higher efficiency than conventional voltage regulators. This device is designed to operate down to 1 Volt input to output differential and the dropout voltage is fully specified as a function of load current. Supplied in easy-to-use hermetic TO-257 and TO-3, this device is ideally suited for Military applications where small size and high reliability is required.

ABSOLUTE MAXIMUM RATINGS @ 25°C

Power Dissipation (P_d)	Internally Limited
Input - Output Voltage Differential	35 V
Operating Junction Temperature Range	- 55°C to + 150°C
Storage Temperature Range	- 65°C to + 150°C
Lead Temperature (Soldering 10 seconds)	300°C
Thermal Resistance Junction to Case:	
(TO-257, Isolated)	3.5°C/W
(TO-257, Non-Isolated)	2.3°C/W
(TO-3)	3.0°C/W
Recommended Operating Conditions:	
Output Voltage Range	-3V to -15 V
Ambient Operating Temperature Range (T_A)	- 55°C to + 125°C
Input Voltage Range	- 5V to -35 V

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ELECTRICAL CHARACTERISTICS $-55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$ (unless otherwise specified)

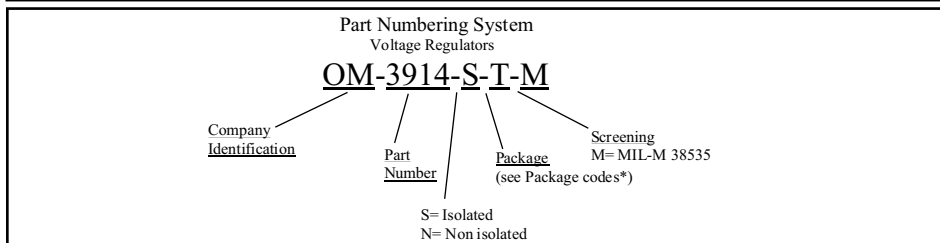
Parameter	Symbol	Test Conditions	Min.	Max.	Unit	
Reference Voltage	V_{REF}	$ V_{IN} - V_{OUT} = 5\text{ V}, I_{OUT} = 5\text{ mA}, T_A = 25^{\circ}\text{C}$	-1.238	-1.262	V	
		$3\text{ V} \leq V_{IN} - V_{OUT} \leq 35\text{ V}$	• -1.215	-1.285		
Line Regulation (Note 1)	$\frac{\Delta V_{OUT}}{\Delta V_{IN}}$	$3\text{ V} \leq V_{IN} - V_{OUT} \leq 35\text{ V}$		0.015	%V	
			•	0.04		
Load Regulation (Note 1)	$\frac{\Delta V_{OUT}}{\Delta I_{OUT}}$	$ V_{OUT} \leq 5\text{ V}, T_A = 25^{\circ}\text{C}$ $10\text{ mA} \leq I_{OUT} \leq I_{MAX}$		50	mV	
			•	75		
		$ V_{OUT} \geq 5.0\text{ V}$ $10\text{ mA} \leq I_{OUT} \leq I_{MAX}$		1.0	%	
			•	1.5		
Thermal Regulation	-	30 ms pulse, $T_A = 25^{\circ}\text{C}$		0.02	%/W	
Ripple Rejection (Note 2)	$\frac{\Delta V_{IN}}{\Delta V_{REF}}$	$ V_{OUT} = -10\text{ V}, f = 120\text{ Hz}, C_{Adj} = 0$		56	dB	
			•	53		
		$ V_{OUT} = -10\text{ V}, f = 120\text{ Hz}, C_{Adj} = 10\text{ }\mu\text{F}$		70	dB	
			•	60		
Adjust Pin Current	I_{Adj}	$V_{DIFF} = 35\text{ V}, I_L = 10\text{ mA}$	•	100	μA	
Adjust Pin Current Change	ΔI_{Adj}	$10\text{ mA} \leq I_{OUT} \leq I_{MAX}$	•	2.0	μA	
		$3\text{ V} \leq V_{IN} - V_{OUT} \leq 35\text{ V}$	•	5.0		
Minimum Load Current	I_{Min}	$ V_{IN} - V_{OUT} \leq 35\text{ V}$	•	5.0	mA	
		$ V_{IN} - V_{OUT} \leq 10\text{ V}$	•	3.0		
Current Limit	I_{Lim}	$ V_{IN} - V_{OUT} \leq 10\text{ V}$		3.0	A	
			•	3.0		
		$ V_{IN} - V_{OUT} = 35\text{ V}$		0.5	2.5	A
			•	0.5		
Temperature Stability (Note 2)	$\frac{\Delta V_{OUT}}{\Delta T}$	$-55^{\circ}\text{C} \leq T_J \leq +125^{\circ}\text{C}$	•	1.5	%	
Long Term Stability (Note 2)	$\frac{\Delta V_{OUT}}{\Delta T}$	$T_A = +125^{\circ}\text{C}, t = 1000\text{ hrs}$		1.0	%	

Notes:

- Line and Load Regulation are measured at a constant junction temperature using a low duty cycle pulse technique. Although power dissipation is internally limited, regulation is guaranteed up to the maximum power dissipation of 30 W. Power dissipation is determined by the input/output differential voltage and the output current. Guaranteed maximum power dissipation will not be available over the full input/output voltage range.
- Guaranteed by design, characterization or correlation to other tested parameters.
- The • denotes the specifications which apply over the full operating temperature range.

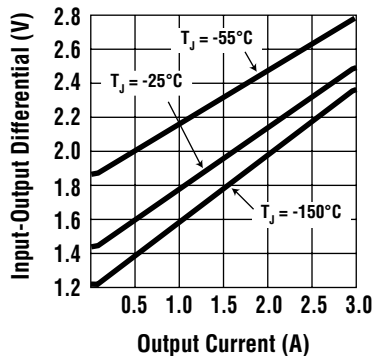
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PART NUMBER DESIGNATOR	
Standard Military Drawing Number	Omnirel Part Number
5962-8774101U	OM3914STM
5962-8774101T	OM3914NTM
5962-8774101X	OM3914NKM
"U" = Isolated	
"T" = Non-Isolated	

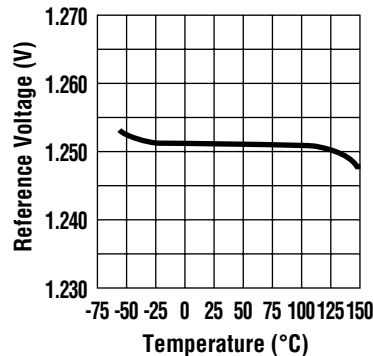


TYPICAL PERFORMANCE CHARACTERISTICS

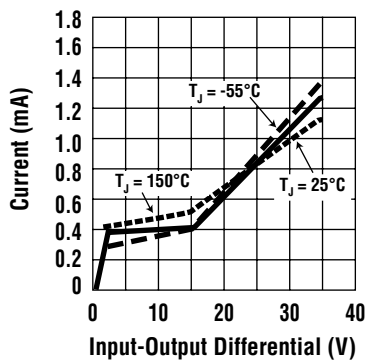
DROPOUT VOLTAGE



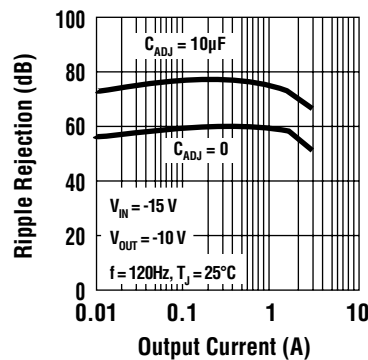
TEMPERATURE STABILITY



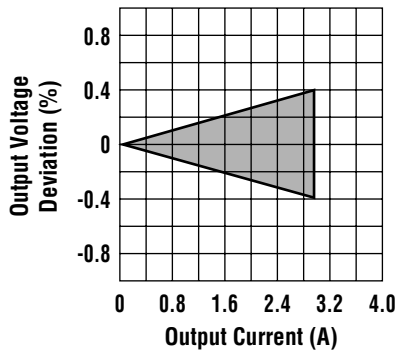
MINIMUM LOAD CURRENT



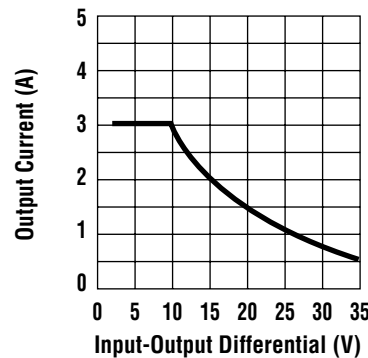
RIPPLE REJECTION



LOAD REGULATION

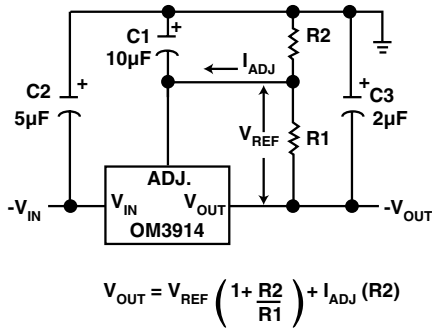


GUARANTEED MINIMUM OUTPUT CURRENT



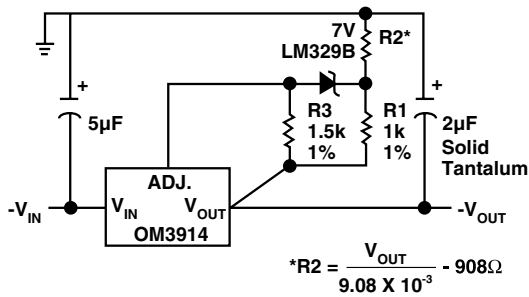
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TYPICAL APPLICATIONS



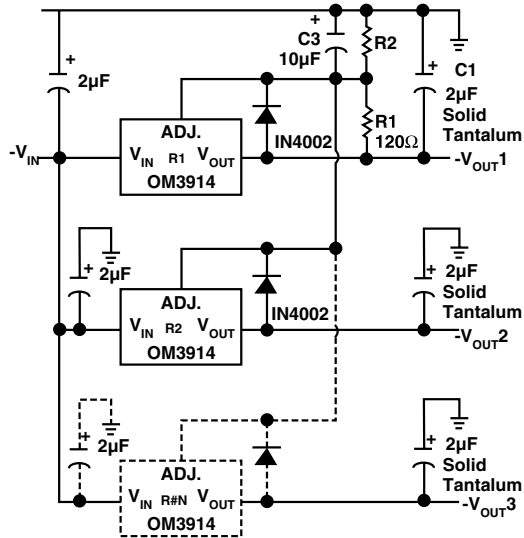
$$V_{OUT} = V_{REF} \left(1 + \frac{R2}{R1} \right) + I_{ADJ} (R2)$$

HIGH STABILITY REGULATOR

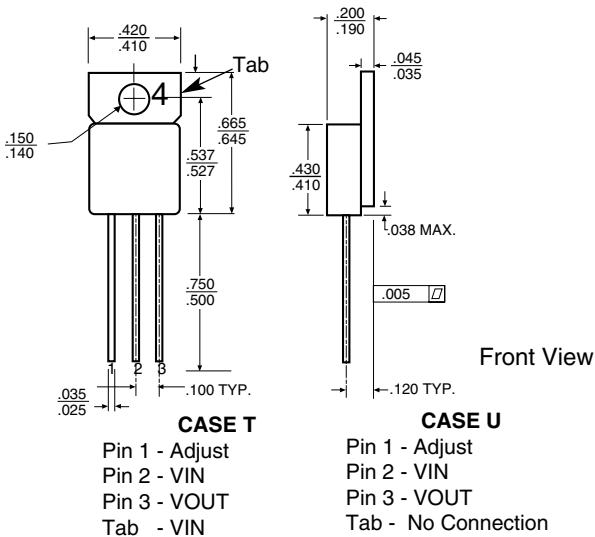


$$*R2 = \frac{V_{OUT}}{9.08 \times 10^{-3}} - 908\Omega$$

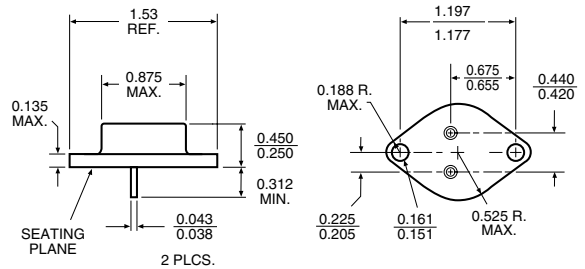
MULTIPLE TRACKING REGULATORS



MECHANICAL OUTLINES



TO-3



OM3914NKM

Pin 1 - Adjust
 Pin 2 - Vout
 Case - Vin

NOTES:

- Case is metal/hermetically sealed
- Isolated Tab