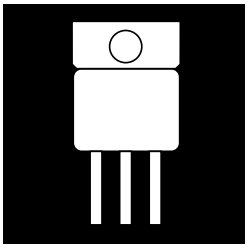
5 AMP LOW DROPOUT POSITIVE ADJUSTABLE REGULATOR APPROVED TO DESC DRAWING 5962-89521



Three Terminal, Positive Adjustable Low Dropout Voltage Regulator In Hermetic Packages

FEATURES

- Similar To Industry Standard LT1084
- Approved To DESC Standardized Military Drawing Number 5962-89521
- Adjustable Output Voltage
- Built In Thermal Overload Protection
- Short Circuit Current Limiting
- Maximum Output Voltage Tolerance is Guaranteed To ±1%
- Guaranteed Dropout Voltage At Multiple Current Levels
- TO-258 Available in Isolated and Non-Isolated Packages

DESCRIPTION

This three terminal positive adjustable voltage regulator is designed to provide 5A 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-258 and TO-3 packages, 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:
θ_{JC} (TO-258 Isolated) . . . . . .3.0°C/W
θ_{JC} (TO-258 Non-Isolated) . . . . . .2.3°C/W
θ_{JC} (TO-3) . . . . . .3.0°C/W
Maximum Output Current . . . . . 5.0 A
Recommended Operating Conditions:
Output Voltage Range. . . . . .3.3V to 15 V
Ambient Operating Temperature Range (T_A) . . . . . - 55°C to + 125°C
Input Voltage Range. . . . . 5V to 25 V

ELECTRICAL CHARACTERISTICS -55°C ≤ T_A ≤ +125°C (unless otherwise specified)

Parameter	Symbol	Test Conditions		Min.	Max.	Unit
Reference Voltage	V_{REF}	$\lvert V_{IN} - V_{OUT} \rvert$ = 3.0 V, I_{OUT} = 10 mA, T_A = 25° C		1.238	1.262	V
		1.5 V ≤ $\lvert V_{IN} - V_{OUT} \rvert$ ≤ 25 V, I_{OUT} = 10 mA, I_{FL} = 3.0 A	•	1.225	1.270	V
Line Regulation (Note 1)	$\frac{\Delta V_{OUT}}{\Delta V_{IN}}$	1.5 V ≤ $\lvert V_{IN} - V_{OUT} \rvert$ ≤ 15 V, I_{OUT} = 10 mA, T_A = 25° C			0.2	%
		15 V ≤ $\lvert V_{IN} - V_{OUT} \rvert$ ≤ 35 V, I_{OUT} = 10 mA	•		0.5	%
Load Regulation (Note 1)	$\frac{\Delta V_{OUT}}{\Delta I_{OUT}}$	$\lvert V_{IN} - V_{OUT} \rvert$ = 3.0 V, T_A = 25° C I_{OUT} = 10 mA, I_{FL} = 3.0 A			0.3	%
			•		0.4	%
Dropout Voltage	V_{DO}	I_{FL} = 3.0 A, ΔV_{REF} = 1%	•		1.5	V
Thermal Regulation	-	30 ms pulse, T_A = +25° C			0.015	%/W
Ripple Rejection	$\frac{\Delta V_{IN}}{\Delta V_{OUT}}$	f = 120 Hz, C_{Adj} = 25 µF, C_{OUT} = 25 µF (tantalum), I_{FL} = 3.0 A, $\lvert V_{IN} - V_{OUT} \rvert$ = 3.0 V	•	60		dB
Adjust Pin Current	I_{Adj}	1.5 V ≤ $\lvert V_{IN} - V_{OUT} \rvert$ ≤ 25 V, I_{OUT} = 10 mA, I_{FL} = 3.0 A	•		120	µA
Adjust Pin Current Change	ΔI_{Adj}	1.5 V ≤ $\lvert V_{IN} - V_{OUT} \rvert$ ≤ 25 V, 10 mA ≤ I_{OUT} ≤ 3.0 A	•		5.0	µA
Miminum Load Current	I_{Min}	$\lvert V_{IN} - V_{OUT} \rvert$ = 25 V	•		10	mA
Current Limit	I_{Lim}	$\lvert V_{IN} - V_{OUT} \rvert$ ≤ 5.0 V	•	5.5		A
		$\lvert V_{IN} - V_{OUT} \rvert$ = 25 V	•	0.3		A
Temperature Stability (Note 2)	$\frac{\Delta V_{OUT}}{\Delta T}$	-55° C ≤ T_J ≤ +125° C	•		1.5	%
Long Term Stability (Note 2)	$\frac{\Delta V_{OUT}}{\Delta T}$	T_A = +125° C, t = 1000 hrs			1.0	%

Notes:

1. 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 45 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.
2. Guaranteed by design, characterization or correlation to other tested parameters.
3. The • denotes the specifications which apply over the full operating temperature range.

3.3

PART NUMBER DESIGNATOR	
Standard Military Drawing Number	**Omnirel Part Number**
8952101Y	OM1840SCM
8952101Z	OM1840NCM
8952101X	OM1840NKM
"Y" = Isolated "Z" = Non-Isolated	

Part Numbering System

Voltage Regulators

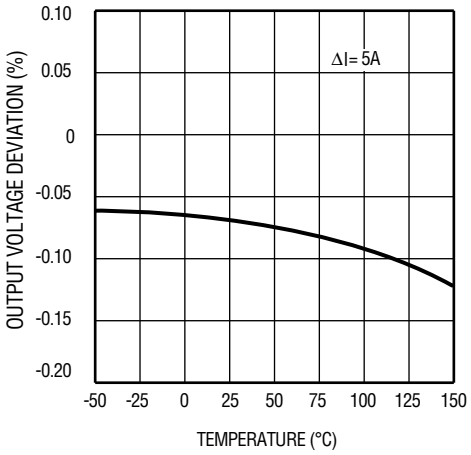
OM-1840-S-C-M

- Company Identification
- Part Number
- S= Isolated, N= Non isolated
- Package (see Package codes*)
- Screening M= MIL-M 38535

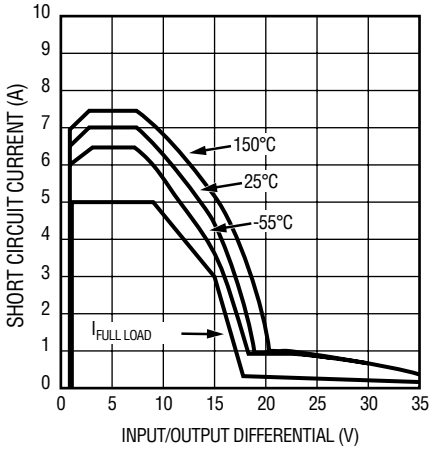
* Package Codes:
K= TO-204AA (TO-3)
Z= TO-259AA (Z-Tab)
C = TO-258AA

TYPICAL PERFORMANCE CHARACTERISTICS

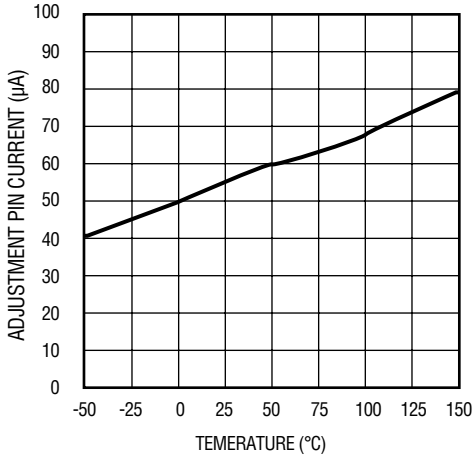
LOAD REGULATION



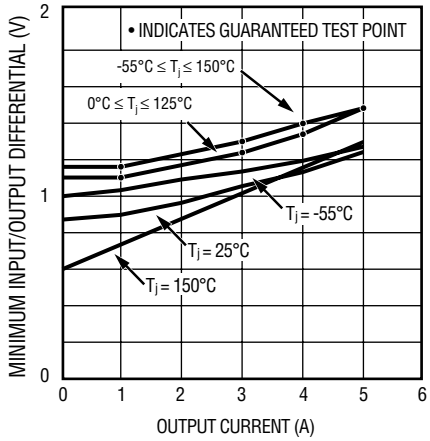
SHORT CIRCUIT CURRENT



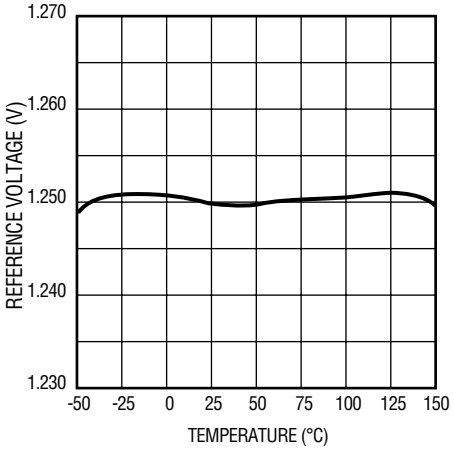
ADJUSTMENT PIN CURRENT



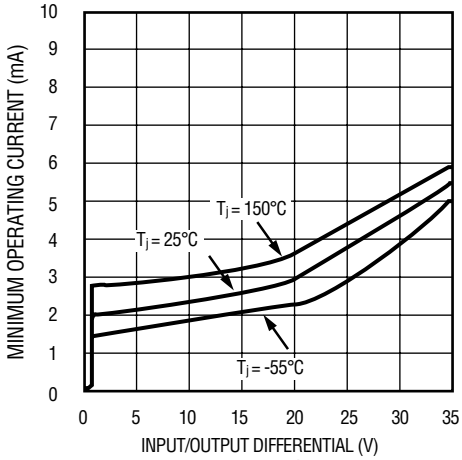
DROPOUT VOLTAGE



TEMPERATURE STABILITY



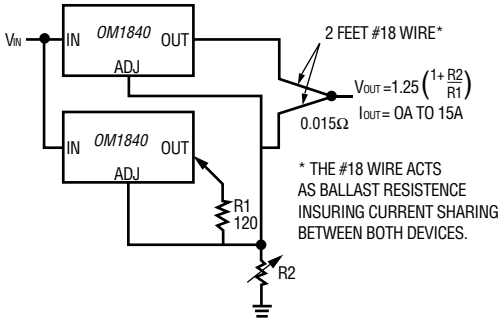
MINIMUM OPERATING CURRENT



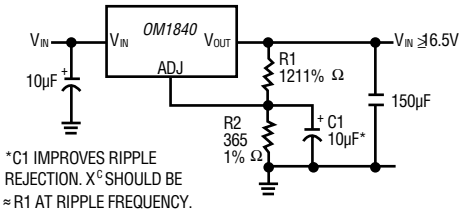
3.3

TYPICAL APPLICATIONS

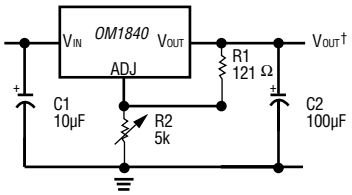
Parelleling Regulators



Improving Ripple Rejection



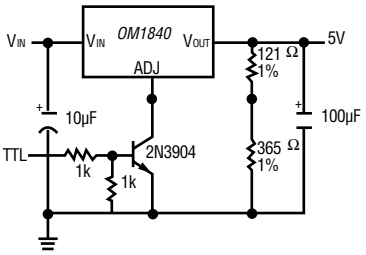
1.2V - 15V Adjustable Regulator



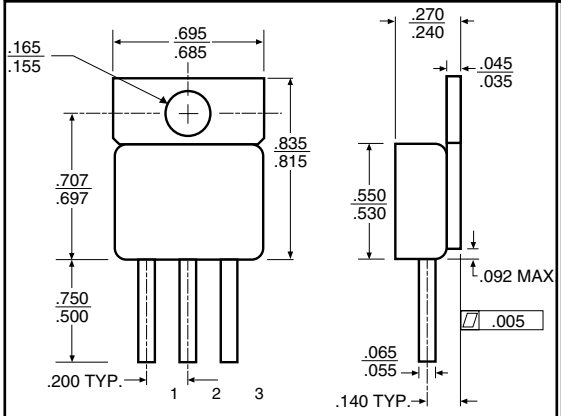
*NEEDED IF DEVICE IS FAR FROM FILTER CAPACITORS

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

5V Regulator with Shutdown



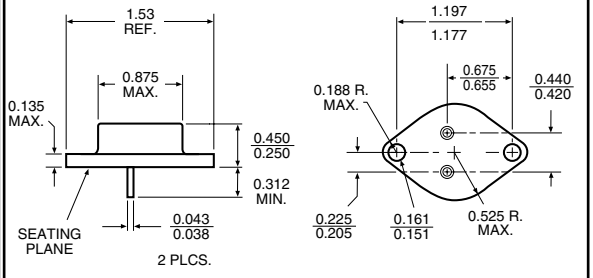
MECHANICAL OUTLINE



PIN OUT

1	Adjust
2	V_{OUT}
3	V_{IN}

MECHANICAL OUTLINE TO-3



PIN OUT

1	Adjust
2	V_{IN}
Case	V_{OUT}

NOTES

- Case is metal/hermetically sealed
- Isolated Tab

3.3