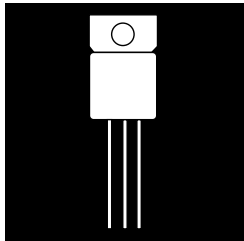


1.5 AMP LOW DROPOUT POSITIVE ADJUSTABLE REGULATOR APPROVED TO DESC DRAWING 5962-89981



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

FEATURES

- Similar To Industry Standard LT1086
- Approved To DESC Standardized Military Drawing Number 5962-89981
- 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 positive adjustable voltage regulator is designed to provide 1.5A with higher efficiency than conventional voltage regulators. This device is designed to operate to 1 Volt input to output differential and the dropout voltage is specified as a function of load current. Supplied in easy-to-use hermetic TO-257, TO-3 and TO-39 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-257, Isolated) | 4.2°C/W |
| θ_{JA} | 42°C/W |
| θ_{JC} (TO-3) | 3.0°C/W |
| θ_{JA} (TO-3) | 35°C/W |
| θ_{JC} (TO-39) | 40°C/W |
| θ_{JA} (TO-39) | 140°C/W |
| Maximum Output Current | 1.5 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 |

3.3

OM1860STM OM1860NKM OM1860NHM

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

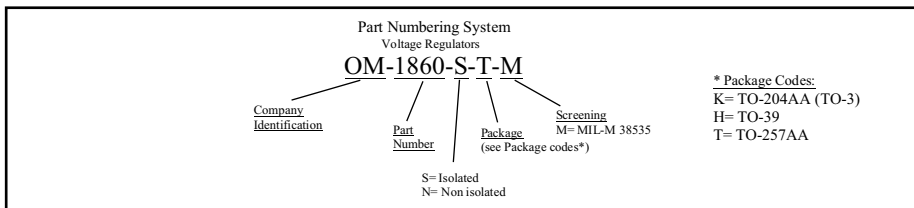
| Parameter | Symbol | Test Conditions | Min. | Max. | Unit | |
|-----------------------------------|---|--|------|-------|-------|-----|
| Reference Voltage | V _{REF} | V _{IN} - V _{OUT} = 3.0 V, T _A = 25° C I _{OUT} = 10 mA | | 1.238 | 1.262 | V |
| | | 1.5 V ≤ V _{IN} - V _{OUT} ≤ 25 V, 10 mA ≤ I _{OUT} ≤ 1.0 A | • | 1.220 | 1.270 | V |
| Line Regulation (Note 1) | $\frac{\Delta V_{OUT}}{\Delta V_{IN}}$ | 1.5 V ≤ V _{IN} - V _{OUT} ≤ 15 V, I _{OUT} = 10 mA, T _A = 25° C | | | 0.2 | % |
| | | 15 V ≤ V _{IN} - V _{OUT} ≤ 35 V, I _{OUT} = 10 mA | • | | 0.5 | % |
| Load Regulation (Note 1) | $\frac{\Delta V_{OUT}}{\Delta I_{OUT}}$ | V _{IN} - V _{OUT} = 3.0 V, T _A = 25° C 10 mA ≤ I _{OUT} ≤ 1.0 A | | | 0.8 | % |
| | | | • | | 1.0 | % |
| Dropout Voltage | V _{DO} | I _{OUT} = 1.0 A, ΔV _{REF} = 1% | • | | 1.5 | V |
| Thermal Regulation | - | 30 ms pulse, T _A = +25° C | | | 0.04 | %/W |
| Ripple Rejection | $\frac{\Delta V_{IN}}{\Delta V_{OUT}}$ | f = 120 Hz, C _{Adj} = 25 μF, C _{OUT} = 25 μF (tantalum), I _{OUT} = 1.0 A, V _{IN} - V _{OUT} = 3.0 V | • | 60 | | dB |
| Adjust Pin Current | I _{Adj} | 1.5 V ≤ V _{IN} - V _{OUT} ≤ 25 V, 10 mA ≤ I _{OUT} ≤ 1.0 A | • | | 120 | μA |
| Adjust Pin Current Change | ΔI _{Adj} | 1.5 V ≤ V _{IN} - V _{OUT} ≤ 25 V, 10 mA ≤ I _{OUT} ≤ 1.0 A | • | | 5.0 | μA |
| Minimum Load Current | I _{Min} | V _{IN} - V _{OUT} = 25 V | • | | 10 | mA |
| Current Limit | I _{Lim} | V _{IN} - V _{OUT} ≤ 5.0 V | • | 1.5 | 2.5 | A |
| | | V _{IN} - V _{OUT} = 25 V | • | 0.075 | | 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:

- 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 15 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.

3.3

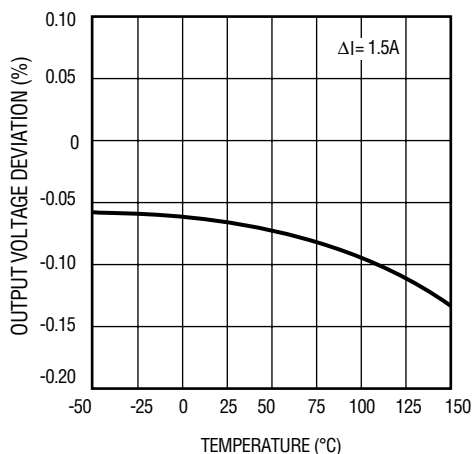
| PART NUMBER DESIGNATOR | | |
|----------------------------------|---------------------|-------------------|
| Standard Military Drawing Number | Omnirel Part Number | Package |
| 5962-8998101Y | OM1860NHM | TO-39 |
| 5962-8998101X | OM1860NKM | TO-3 |
| 5962-8998101U | OM1860STM | TO-257 (Isolated) |



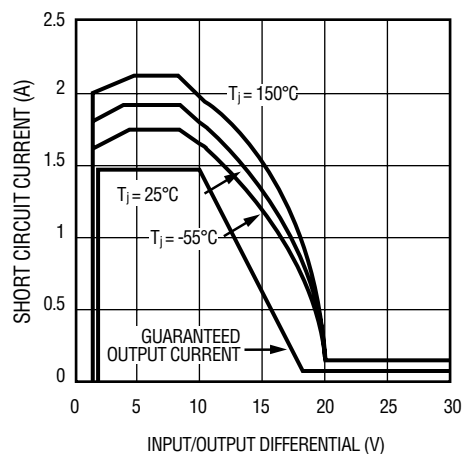
International Rectifier Companies
The Hi-Rel Components & Subsystems Group



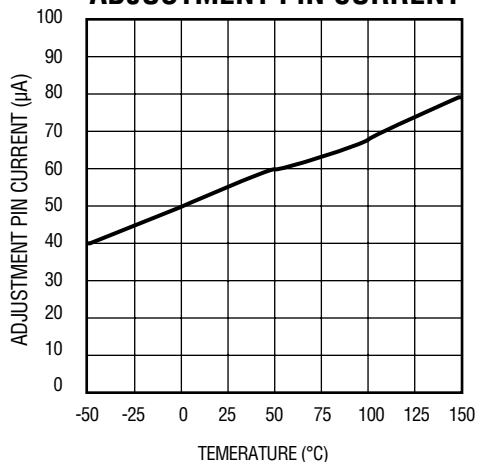
LOAD REGULATION



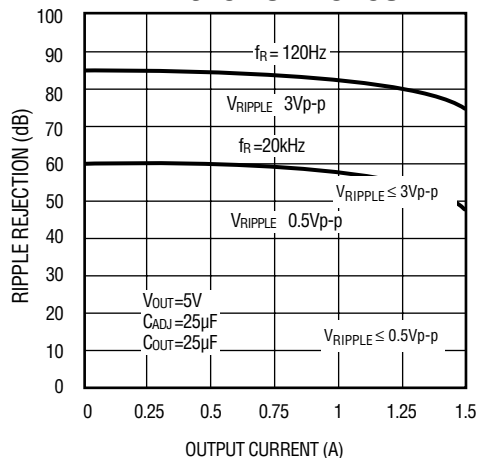
SHORT CIRCUIT CURRENT



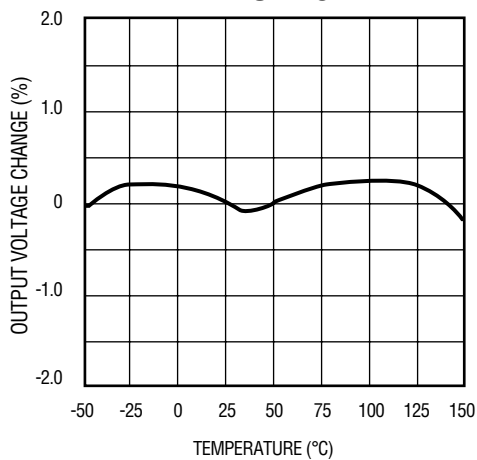
ADJUSTMENT PIN CURRENT



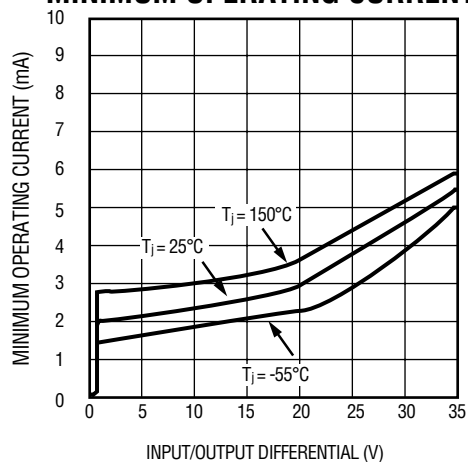
RIPPLE REJECTION VS. CURRENT



TEMPERATURE STABILITY

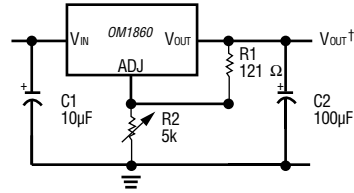


MINIMUM OPERATING CURRENT



TYPICAL APPLICATIONS

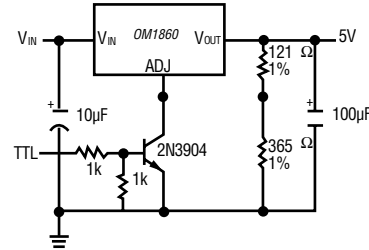
1.2V - 15V Adjustable Regulator



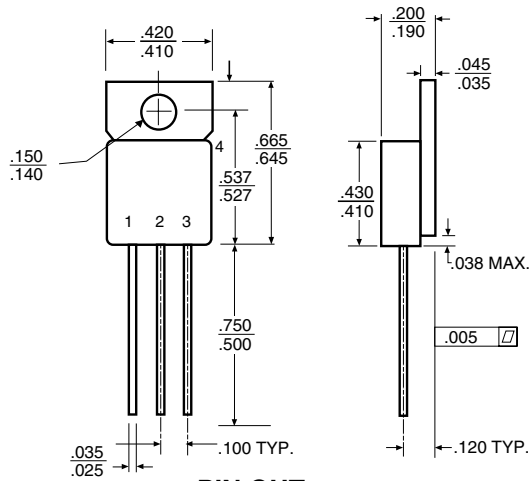
*NEEDED IF DEVICE IS FAR FROM FILTER CAPACITORS

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

5V Regulator with Shutdown



MECHANICAL OUTLINE OM1860STM

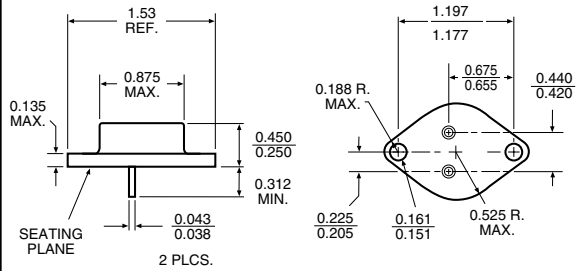


PIN OUT
 1 Adjust
 2 V_{OUT}
 3 V_{IN}
 4 Isolated

NOTES

- Case is metal/hermetically sealed
- Isolated Tab

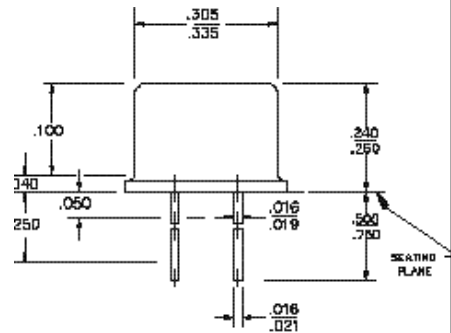
MECHANICAL OUTLINE TO-3 OM1860NKM



PIN OUT

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

MECHANICAL OUTLINE TO-39



OM1860NHM TO-39

Pin 1 Adjust
 Pin 2 Input
 Case Output

