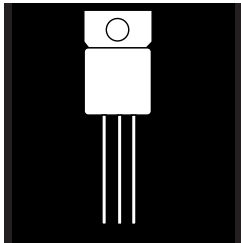


OM1805STM OM1812STM OM1815STM  
OM1805NTM OM1812NTM OM1815NTM

## ISOLATED HERMETIC TO-257AA FIXED VOLTAGE REGULATORS APPROVED TO DESC DRAWINGS



### Three Terminal, Fixed Voltage, 1.5 Amp Precision Positive 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  $\pm 1\%$
- Built-In Thermal Overload Protection
- Short Circuit Current Limiting
- Product Is Also Available In Non-Isolated Package
- Similar To Industry Standards 7805, 7812, 7815

## DESCRIPTION

These three terminal positive regulators are supplied in a hermetically sealed metal 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  $\pm 1\%$  of nominal voltage. These units are ideally suited for Military applications where a hermetically sealed package is required.

## PART NUMBER DESIGNATOR

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| Standard Military Drawing Number | Omnirel Part Number |
|----------------------------------|---------------------|
| 5962-8778201 UX                  | OM1805STM           |
| 5962-8778201 TX                  | OM1805NTM           |
| 5962-8777601 UX                  | OM1812STM           |
| 5962-8777601 TX                  | OM1812NTM           |
| 5962-8855301 UX                  | OM1815STM           |
| 5962-8855301 TX                  | OM1815NTM           |

“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 Characteristics:

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  
 $q_{JA}$  Case T . . . . . 42°C/W

**ELECTRICAL CHARACTERISTICS 5 Volt**  $V_{IN} = 10V, I_O = 500mA, -55^\circ C \quad T_A \quad 125^\circ C$  (unless otherwise specified)

| Parameter                                 | Symbol                     | Test Conditions                                              | Min.   | Max.       | Unit             |
|-------------------------------------------|----------------------------|--------------------------------------------------------------|--------|------------|------------------|
| Output Voltage                            | $V_{OUT}$                  | $T_A = 25^\circ C$                                           | 4.92   | 5.08       | V                |
|                                           |                            | $V_{IN} = 7.5V$ to 20V<br>$I_O = 5mA$ to 1.0 A, $P \leq 15W$ | • 4.85 | 5.15       | V                |
| Line Regulation<br>(Note 1)<br>(Note 4)   | $V_{RLINE}$                | $V_{IN} = 7.5V$ to 20V                                       | •      | 5<br>12    | mV<br>mV         |
|                                           |                            | $V_{IN} = 8.0V$ to 12V                                       | •      | 4<br>10    | mV<br>mV         |
|                                           |                            |                                                              | •      |            |                  |
| Load Regulation<br>(Note 1)               | $V_{RLOAD}$                | $I_O = 5mA$ to 1.5 Amp                                       | •      | 12         | mV               |
|                                           |                            | $I_O = 5mA$ to 1.0 Amp                                       | •      | 25         | mV               |
|                                           |                            | $I_O = 250mA$ to 750 mA                                      | •      | 6<br>15    | mV<br>mV         |
| Standby Current Drain                     | $I_{SCD}$                  |                                                              | •      | 6<br>6.5   | mA<br>mA         |
|                                           |                            |                                                              | •      |            |                  |
| Standby Current Drain<br>Change With Line | $DI_{SCD}$<br>(Line)       | $V_{IN} = 7.5V$ to 20V                                       | •      | 0.8        | mA               |
| Standby Current Drain<br>Change With Load | $DI_{SCD}$<br>(Load)       | $I_O = 5mA$ to 1000mA                                        | •      | 0.5        | mA               |
| Dropout Voltage                           | $V_{DO}$                   | $T_A = 25^\circ C, DV_{OUT} = 100mV, I_O = 1.0A$             |        | 2.5        | V                |
| Peak Output Current                       | $I_{O(pk)}$                | $T_A = 25^\circ C$                                           | 1.5    | 3.3        | A                |
| Short Circuit Current<br>(Note 2)         | $I_{DS}$                   | $V_{IN} = 35V$                                               | •      | 1.2<br>2.8 | A<br>A           |
|                                           |                            |                                                              | •      |            |                  |
| Ripple Rejection                          | $\frac{DV_{IN}}{DV_{OUT}}$ | $f = 120 \text{ Hz}, DV_{IN} = 10V$                          | 68     |            | dB               |
|                                           |                            | (Note 3)                                                     | • 60   |            | dB               |
| Output Noise Voltage<br>(Note 3)          | $N_O$                      | $T_A = 25^\circ C, f = 10 \text{ Hz to } 100KHz$             |        | 40         | $\mu V/V$<br>RMS |
| Long Term Stability<br>(Note 3)           | $\frac{DV_{OUT}}{Dt}$      | $T_A = 25^\circ C, t = 1000 \text{ hrs.}$                    |        | 75         | 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.

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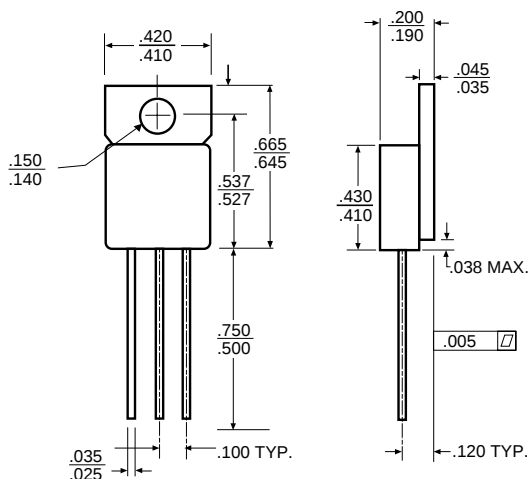
### ELECTRICAL CHARACTERISTICS 12 Volt $V_{IN} = 19V$ , $I_O = 500mA$ , $-55^{\circ}C$ $T_A$ $125^{\circ}C$ (unless otherwise specified)

| Parameter                                 | Symbol                     | Test Conditions                                                   | Min.    | Max.  | Unit             |
|-------------------------------------------|----------------------------|-------------------------------------------------------------------|---------|-------|------------------|
| Output Voltage                            | $V_{OUT}$                  | $T_A = 25^{\circ}C$                                               | 11.88   | 12.12 | V                |
|                                           |                            | $V_{IN} = 14.5V$ to $27V$<br>$I_O = 5mA$ to $1.0A$ , $P \leq 15W$ | • 11.64 | 12.36 | V                |
| Line Regulation<br>(Note 1)<br>(Note 4)   | $V_{RLINE}$                | $V_{IN} = 14.5V$ to $27V$                                         | •       | 18    | mV               |
|                                           |                            | $V_{IN} = 16V$ to $22V$                                           | •       | 50    | mV               |
| Load Regulation<br>(Note 1)               | $V_{RLOAD}$                | $I_O = 5mA$ to $1.5A$ Amp                                         | •       | 9     | mV               |
|                                           |                            | $I_O = 5mA$ to $1.0A$ Amp                                         | •       | 30    | mV               |
| Standby Current Drain                     | $I_{SCD}$                  | $I_O = 5mA$ to $1.5A$ Amp                                         | •       | 32    | mV               |
|                                           |                            | $I_O = 5mA$ to $1.0A$ Amp                                         | •       | 60    | mV               |
| Standby Current Drain<br>Change With Line | $DI_{SCD}$<br>(Line)       | $I_O = 250mA$ to $750mA$                                          | •       | 20    | mV               |
|                                           |                            |                                                                   | •       | 40    | mV               |
| Standby Current Drain<br>Change With Load | $DI_{SCD}$<br>(Load)       |                                                                   | •       | 6.0   | mA               |
|                                           |                            |                                                                   | •       | 6.5   | mA               |
| Dropout Voltage                           | $V_{DO}$                   | $DV_{OUT} = 100mV$ , $I_O = 1.0A$                                 | •       | 0.8   | mA               |
| Peak Output Current                       | $I_{O(pk)}$                | $T_A = 25^{\circ}C$                                               | 1.5     | 3.3   | A                |
| Short Circuit Current<br>(Note 2)         | $I_{DS}$                   | $V_{IN} = 35V$                                                    | •       | 1.2   | A                |
|                                           |                            |                                                                   | •       | 2.8   | A                |
| Ripple Rejection                          | $\frac{DV_{IN}}{DV_{OUT}}$ | $f = 120Hz$ , $DV_{IN} = 10V$                                     | 61      |       | dB               |
|                                           | $\frac{DV_{IN}}{DV_{OUT}}$ | (Note 3)                                                          | • 54    |       | dB               |
| Output Noise Voltage<br>(Note 3)          | $N_O$                      | $T_A = 25^{\circ}C$ , $f = 10Hz$ to $100KHz$                      |         | 40    | $\mu V/V$<br>RMS |
| Long Term Stability<br>(Note 3)           | $\frac{DV_{OUT}}{Dt}$      | $T_A = 25^{\circ}C$ , $t = 1000hrs.$                              |         | 120   | mV               |

#### Notes:

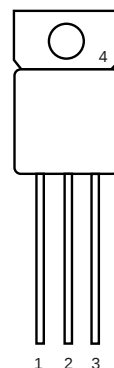
- Load and Line Regulation are specified at a constant junction temperature. Pulse testing with low duty cycle is used. Changes in output voltage due to heating effects must be taken into account separately.
- Short Circuit protection is only assured up to  $V_{IN} = 35V$ .
- If not tested, shall be guaranteed to the specified limits. 4. Minimum load current for full line regulation = 5.0 mA.  
The • denotes the specifications which apply over the full operating temperature range.
- Minimum load current for full line regulation = 5.0 mA.

### MECHANICAL OUTLINE



### CONNECTION DIAGRAM

**Case T**  
1 Input  
2 Ground  
3 Output  
4 Ground



**Case U**  
1 Input  
2 Ground  
3 Output  
4 No Connection

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## OM1805STM/NTM - OM1815STM/NTM

### ELECTRICAL CHARACTERISTICS 15 Volt $V_{IN} = 23V$ , $I_O = 500mA$ , $-55^{\circ}C$ $T_A$ $125^{\circ}C$ (unless otherwise specified)

| Parameter                                 | Symbol                     | Test Conditions                                                   | Min. | Max. | Unit             |
|-------------------------------------------|----------------------------|-------------------------------------------------------------------|------|------|------------------|
| Output Voltage                            | $V_{OUT}$                  | $T_A = 25^{\circ}C$                                               | 14.8 | 15.2 | V                |
|                                           |                            | $V_{IN} = 18.5V$ to $30V$<br>$I_O = 5mA$ to $1.0A$ , $P \leq 15W$ | 14.6 | 15.4 | V                |
| Line Regulation<br>(Note 1)<br>(Note 4)   | $V_{RLINE}$                | $V_{IN} = 17.5V$ to $30V$                                         |      | 20   | mV               |
|                                           |                            |                                                                   |      | 50   | mV               |
|                                           |                            | $V_{IN} = 20V$ to $26V$                                           |      | 15   | mV               |
| Load Regulation<br>(Note 1)               | $V_{RLOAD}$                | $I_O = 5mA$ to $1.5A$ Amp                                         |      | 35   | mV               |
|                                           |                            | $I_O = 5mA$ to $1.0A$ Amp                                         |      | 75   | mV               |
|                                           |                            | $I_O = 250mA$ to $750mA$                                          |      | 21   | mV               |
| Standby Current Drain                     | $I_{SCD}$                  |                                                                   |      | 6.0  | mA               |
|                                           |                            |                                                                   |      | 6.5  | mA               |
| Standby Current Drain<br>Change With Line | $DI_{SCD}$<br>(Line)       | $V_{IN} = 18.5V$ to $30V$                                         |      | 0.8  | mA               |
| Standby Current Drain<br>Change With Load | $DI_{SCD}$<br>(Load)       | $I_O = 5mA$ to $1000mA$                                           |      | 0.5  | mA               |
| Dropout Voltage                           | $V_{DO}$                   | $T_A = 25^{\circ}C$ , $DV_{OUT} = 100mV$ , $I_O = 1.0A$           |      | 2.5  | V                |
| Peak Output Current                       | $I_{O(pk)}$                | $T_A = 25^{\circ}C$                                               | 1.5  | 3.3  | A                |
| Short Circuit Current<br>(Note 2)         | $I_{DS}$                   | $V_{IN} = 35V$                                                    |      | 1.2  | A                |
|                                           |                            |                                                                   |      | 2.8  | A                |
| Ripple Rejection                          | $\frac{DV_{IN}}{DV_{OUT}}$ | $f = 120Hz$ , $DV_{IN} = 10V$                                     | 54   |      | dB               |
|                                           |                            | (Note 3)                                                          | 52   |      | dB               |
| Output Noise Voltage<br>(Note 3)          | $N_O$                      | $T_A = 25^{\circ}C$ , $f = 10Hz$ to $100KHz$                      |      | 40   | $\mu V/V$<br>RMS |
| Long Term Stability<br>(Note 3)           | $\frac{DV_{OUT}}{Dt}$      | $T_A = 25^{\circ}C$ , $t = 1000hrs.$                              |      | 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.

### TYPICAL PERFORMANCE CHARACTERISTICS

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