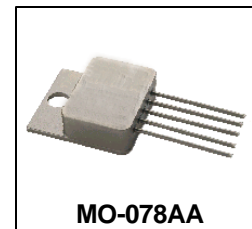


**Ultra Low Dropout  
 Linear Regulator  
 Hermetic Package**

**OM8501SC  
 OM8501SF  
 +3.3Vin to +2.5Vout at 3.0A**

**Product Summary**

| Part Number | Dropout | Io   | Vin  | Vout | Package         |
|-------------|---------|------|------|------|-----------------|
| OM8501SC    | 0.4 V   | 3.0A | 3.3V | 2.5V | MO-078AA        |
| OM8501SF    | 0.4 V   | 3.0A | 3.3V | 2.5V | 8-lead Flatpack |



The OM8501 is an ultra low dropout linear regulator designed specifically for hi-rel applications. Housed in either a 5 pin through hole or 8 lead surface mount package, these regulators provide high reliability in military/defense applications. The ultra low dropout voltage of 0.4V @ 3A makes the part particularly useful for applications requiring low noise and higher efficiency.

**Features:**

- Ultra low dropout voltage of 0.4V@ 3A out significantly reduces power consumption
- Low noise, higher efficiency
- Remote shutdown permits power sequencing to be easily implemented
- Hermetic MO-078AA (TO-258AA) and 8-lead flat pack ensure higher reliability
- Available H-level screened

**Absolute Maximum Ratings**

| Symbol            | Parameter  | Value       | Units |
|-------------------|--|-------------|-------|
| Io                | Output Current   | 3.5         | A     |
| Vin               | Input Voltage  | +7.0        | V     |
| P <sub>TOT</sub>  | Power Dissipation TC=25 °C                             | 19          | W     |
| R <sub>THJC</sub> | Thermal Resistance, Junction to Case (MO-078AA)        | 6.5         | °C/W  |
| R <sub>THJC</sub> | Thermal Resistance, Junction to Case (8 lead flatpack) | 6.5         | °C/W  |
| T <sub>J</sub>    | Operating Junction                                     | -55 to +125 | °C    |
| T <sub>STG</sub>  | Storage Temperature Range                              | -65 to +150 | °C    |
| T <sub>L</sub>    | Lead Temperature                                       | 300         | °C    |

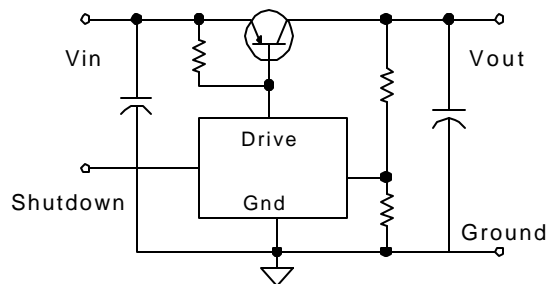
**Electrical Characteristics @ TA= 25°C (Unless Otherwise Specified)**

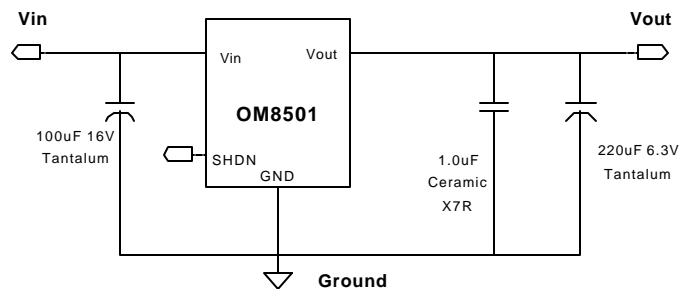
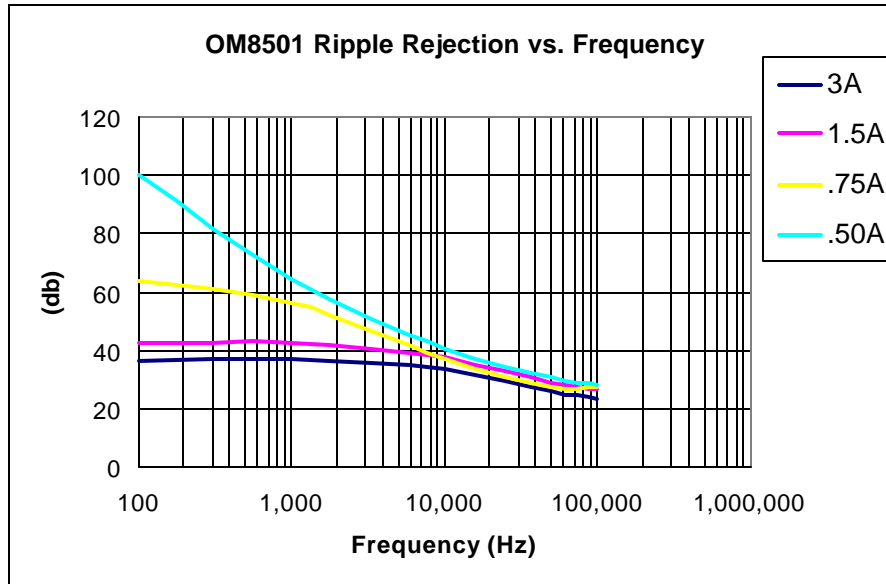
| Parameter                  | Conditions                          | Symbol             | Min.  | Typ. | Max   | Unit |
|----------------------------|-------------------------------------|--------------------|-------|------|-------|------|
| Output Voltage             | Vin= 3.3V, Io= 3.0A                 | Vout               | 2.475 | 2.5  | 2.525 | V    |
| Input Voltage Range-       | Io= 3.0A                            |                    | 2.9   |      | 6.5   | V    |
| Line Regulation            | 3.13 ≤ Vin ≤ 3.46, Io= 3.0A         | Vline              | -100  |      | +100  | mV   |
|                            | 2.9 ≤ Vin ≤ 3.8, Io= 50mA           |                    | -5    |      | +5    | mV   |
| Load Regulation            | Vin= 3.3V<br>50ma ≤ Iout ≤ 3.0A     | Vload              | -20   |      | +20   | mV   |
| Dropout Voltage            | Io= 3.0A, Vout= 2.5V                | Vdrop              |       |      | 0.4   | V    |
| Current Limit              | Vin= 3.3V, Overcurrent<br>Latch Up  | I <sub>latch</sub> | 3.0   |      |       | A    |
| Ripple Rejection           | F= 120 Hz., Iout = 50mA             |                    | 65    |      |       | dB   |
| Shutdown Source Current    | Vshdn= 5V                           | Ishdn              |       | 200  |       | uA   |
| Shutdown Pin Threshold     | Isource= 200uA                      | Vshdn              | 1.0   |      | 1.6   | V    |
| Output Voltage at Shutdown | Vin= 3.3V, Io= 50mA,<br>Shdn= +5.0V | Vout<br>(shdn)     | -0.1  |      | +0.1  | V    |

**Electrical Characteristics TA= -55 to +125°C**

| Parameter                         | Conditions                          | Symbol             | Min.  | Typ. | Max   | Unit |
|-----------------------------------|-------------------------------------|--------------------|-------|------|-------|------|
| Output Voltage                    | Vin= 3.3V, Io= 3.0A                 | Vout               | 2.375 | 2.5  | 2.625 | V    |
| Input Voltage Range-<br>Operating | Io= 3.0A                            |                    | 2.9   |      | 6.5   | V    |
| Line Regulation                   | 3.13 ≤ Vin ≤ 3.46, Io= 3.0A         | Vline              | -150  |      | +150  | mV   |
|                                   | 2.9 ≤ Vin ≤ 3.8, Io= 50mA           |                    | -150  |      | +150  | mV   |
| Load Regulation                   | Vin= 3.3V<br>50ma ≤ Iout ≤ 3.0A     | Vload              | -150  |      | +150  | mV   |
| Dropout Voltage                   | Io= 3.0A, Vout= 2.5V                | Vdrop              |       |      | 0.4   | V    |
| Current Limit                     | Vin= 3.3V, Overcurrent<br>Latch Up  | I <sub>latch</sub> | 3.0   |      |       | A    |
| Ripple Rejection                  | F= 120 Hz., Iout = 50mA             |                    | 65    |      |       | dB   |
| Shutdown Source Current           | Vshdn= 5V                           | Ishdn              |       | 200  |       | uA   |
| Shutdown Pin Threshold            | Isource= 200uA                      | Vshdn              | 1.0   |      | 1.6   | V    |
| Output Voltage at Shutdown        | Vin= 3.3V, Io= 50mA,<br>Shdn= +5.0V | Vout<br>(shdn)     | -0.1  |      | +0.1  | V    |

**Simplified Schematic**





In order to maintain regulation and stability specified additional input and output bulk capacitors are recommended. Capacitors recommended above should be low ESR tantalums with tolerances of +/- 20% max. Internal to the product are a 4.7uF input capacitor and a 4.7uF output capacitor in parallel with a 0.33uF ceramic capacitor.

**Shutdown:** The regulator can be shutdown by applying a voltage >1.6V to pin 4. The regulator will restart when the SHDN pin is pulled below the shutdown threshold of 1.0V. If remote shutdown is not required, pin 4 should be connected to GND to insure a safe "off" state.

**OM8501SC, OM8501SF**

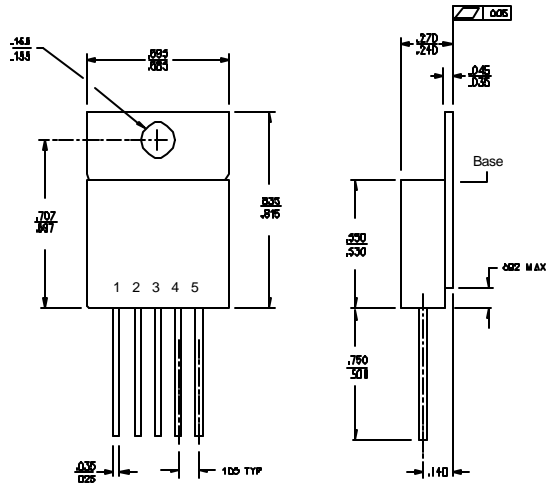


**Mechanical Outline MO-078AA**

**Base:** GLIDCOP  
**Pins:** Copper core, Alloy 52  
**Seals:** Glass

Pin Connections

| Terminal | Description   |
|----------|---------------|
| 1        | Vin           |
| 2        | GND           |
| 3        | Vout          |
| 4        | Shutdown      |
| 5        | No Connection |

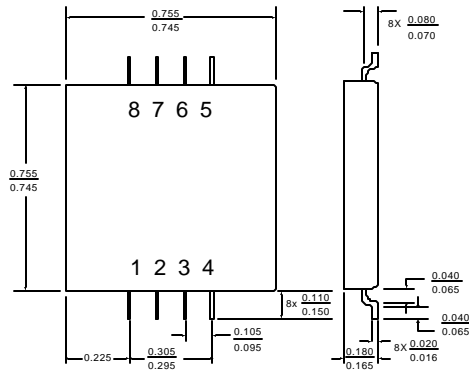


**Mechanical Outline 8-Lead Flat Pack**

**Base:** 1010-1018 C.R.S.  
**Pins:** #52 Alloy, Copper Cored  
**Seals:** Glass – 9013 or Equiv.  
**Finish:** 100-250 Microinches Electroless Nickel Over 50-250 Microinches Electrolytic Nickel.

Pin Connections

| Terminal | Description   |
|----------|---------------|
| 1,2      | GND           |
| 3        | Shutdown      |
| 4        | No Connection |
| 5,6      | Vout          |
| 7,8      | Vin           |



| <b>Part Number Nomenclature</b> |                    |                              |                 |                 |
|---------------------------------|--------------------|------------------------------|-----------------|-----------------|
| <b><u>OM</u></b>                | <b><u>8501</u></b> | <b><u>X</u></b>              | <b><u>X</u></b> | <b><u>X</u></b> |
| Omnirel                         | Device             | S=Isolated<br>N=Non-Isolated | Package         | Screening       |

| <b>Part Number</b> | <b>Package Description</b> | <b>Screening</b>          |
|--------------------|----------------------------|---------------------------|
| OM8501SCP          | MO-078AA 5 - Lead          | 100% Final Electrical     |
| OM8501SCH          | MO-078AA 5 - Lead          | Class H per MIL-PRF-38534 |
| OM8501SFP          | 8 -Lead Flat Pack          | 100% Final Electrical     |
| OM8501SFH          | 8 -Lead Flat Pack          | Class H per MIL-PRF-38534 |

**MIL-PRF-38534 Screening Requirements**

| <b>TEST/INSPECTION</b>   | <b>SCREENING LEVEL</b> | <b>MIL-STD-883</b> |
|--------------------------|------------------------|--------------------|
|                          | <b>Class H</b>         | <b>Method</b>      |
| Pre Seal Burn-In         | Optional               | 1030               |
| Nondestructive Bond Pull | N/A                    | 2023               |
| Internal Visual          | 100%                   | 2017               |
| Temperature Cycle        | 100%                   | 1010               |
| Constant Acceleration    | 100%                   | 2001               |
| Mechanical Shock         | 100%                   | 2002               |
| PIND                     | N/A                    | 2020               |
| Pre Burn-In Electrical   | Optional               |                    |
| Burn-In                  | 100%                   | 1015               |
| Final Electrical         | 100%                   |                    |
| Seal                     | 100%                   | 1014               |
| Radiographic             | N/A                    | 2012               |
| External Visual          | 100%                   | 2009               |