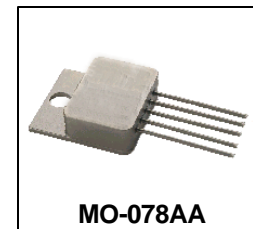


**200 Krad(Si) Low Dropout  
 Linear Regulator  
 Hermetic Package**

**OMR9800SC  
 OMR9800SF  
 + 3.3V<sub>in</sub> to +1.8V<sub>out</sub> at 3.0A**

**Product Summary**

Part Number	I <sub>o</sub>	V <sub>in</sub>	V <sub>out</sub>	Package
OMR9800SC	3.0A	3.3V	1.8V	MO-078AA
OMR9800SF	3.0A	3.3V	1.8V	8-pin Flatpack



The OMR9800 is a radiation hardened, low dropout linear regulator designed specifically for space applications. This product has been characterized to a total ionizing dose of 200 Krad (Si) per MIL-STD-883, Method 1019, Condition A at both high and low dose rates under biased and unbiased conditions to account for ELDRS effects in bipolar devices. The ultra low dropout voltage of 1.1V @ 3A makes the part particularly useful for applications requiring low noise and higher efficiency.

**Features:**

- Total dose and low dose capability to 200 Krad(Si) allows use in space applications
- Low dropout of 1.1 volts 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
- K-level screened

**Absolute Maximum Ratings**

Symbol	Parameter	Value	Units
I <sub>o</sub>	Output Current	3.5	A
V <sub>in</sub>	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

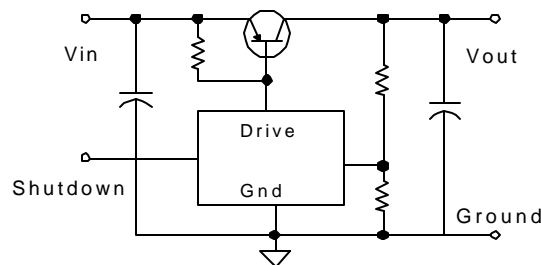
**Electrical Characteristics @ TA= 25°C (Unless Otherwise Specified)**

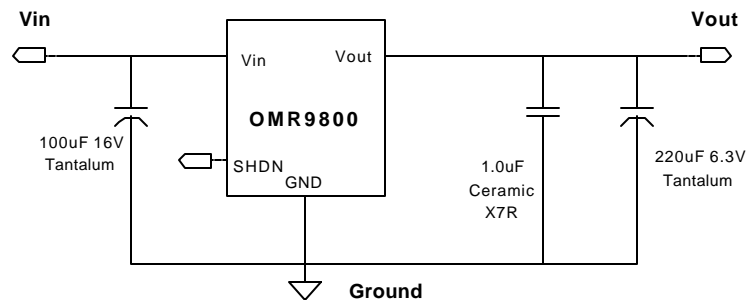
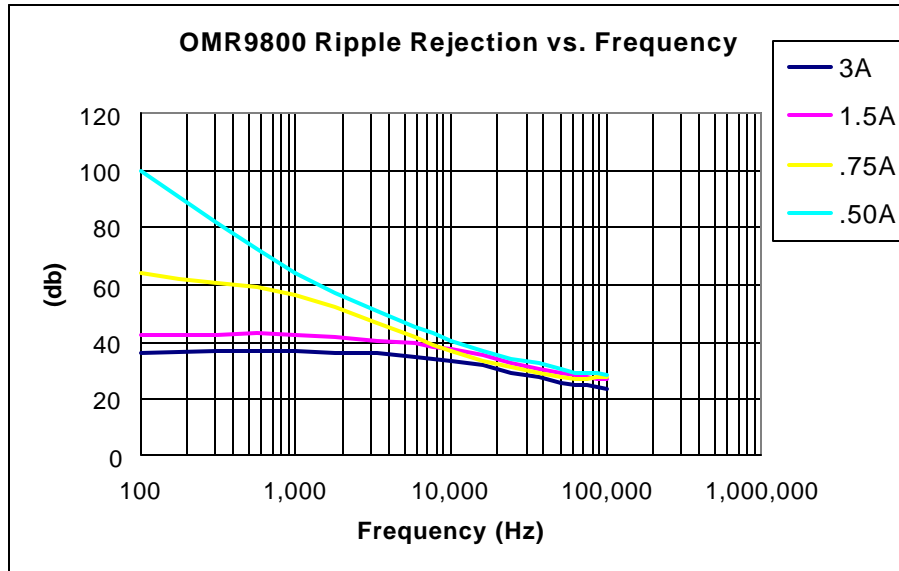
Parameter	Conditions	Symbol	Min.	Typ.	Max	Unit
Output Voltage	Vin= 3.3V, Io= 3.0A	Vout	1.782	1.8	1.818	V
Input Voltage Range- Operating	Io= 3.0A		2.9		6.5	V
Line Regulation	3.13 ≤ Vin ≤ 3.46, Io= 3.0A	Vline	-100		+100	mV
	2.9 ≤ Vin ≤ 3.8, Io= 50mA		-5		+5	mV
Load Regulation	Vin= 3.3V 10ma ≤ Iout ≤ 3.0A	Vload	-20		+20	mV
Dropout Voltage	Io= 3.0A, Vout= 1.8V	Vdrop			1.1	V
Current Limit	Vin= 3.3V, Overcurrent Latchup	I latch	3			A
Ripple Rejection	F= 120 Hz., Vout= Vref		65			dB
Shutdown Source Current	Vshdn= 5V	Ishdn		200		uA
Shutdown Pin Threshold	Isource= 200uA	Vshdn	1		1.6	V
Output Voltage at Shutdown	Vin= 3.3V, Io= 50mA, Shdn= +5.0V	Vout (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	1.71	1.8	1.89	V
Input Voltage Range- 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 10ma ≤ Iout ≤ 3.0A	Vload	-150		+150	mV
Dropout Voltage	Io= 3.0A, Vout= 1.8V	Vdrop			1.1	V
Current Limit	Vin= 3.3V, Overcurrent Latchup	I latch	3			A
Ripple Rejection	F= 120 Hz., Vout= Vref		65			dB
Shutdown Source Current	Vshdn= 5V	Ishdn		200		uA
Shutdown Pin Threshold	Isource= 200uA	Vshdn	1		1.6	V
Output Voltage at Shutdown	Vin= 3.3V, Io= 50mA, Shdn= +5.0V	Vout (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 4.7µF input capacitor and a 4.7µF output capacitor in parallel with a 0.33µF 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

**OMR9800SC, OMR9800SF**

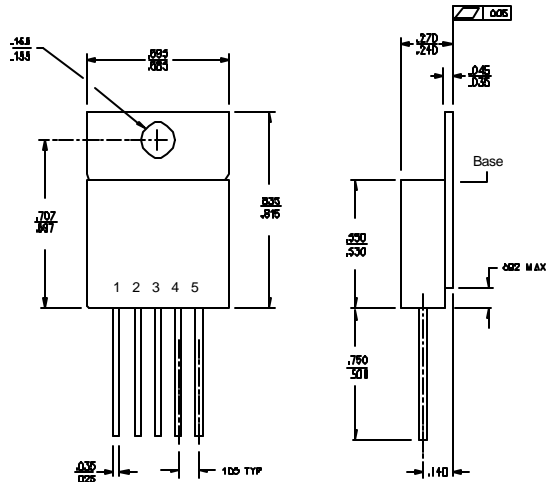


**Mechanical Outline MO-078AA**

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

Pin Connections

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

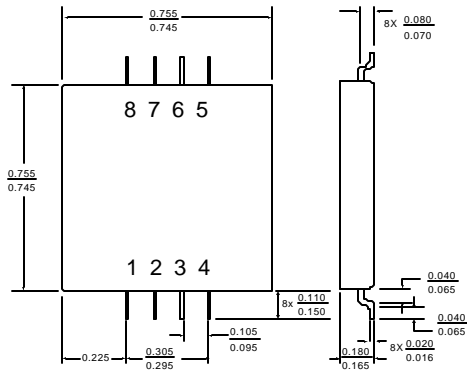


**Mechanical Outline 8-Lead Flat Pack**

**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><u>Part Number Nomenclature</u></b>					
<b><u>OM</u></b>	<b><u>R</u></b>	<b><u>9800</u></b>	<b><u>X</u></b>	<b><u>X</u></b>	<b><u>X</u></b>
Omnirel	Radiation Hardened/Tolerant	Device	S=Isolated N=Non-Isolated	Package	Screening

<b>Part Number</b>	<b>Package Description</b>	<b>Screening</b>
OMR9800SCP	MO-078AA 5 - Lead	100% Final Electrical
OMR9800SCH	MO-078AA 5 - Lead	Class H per MIL-PRF-38534
OMR9800SCK	MO-078AA 5 - Lead	Class K per MIL-PRF-38534
OMR9800SFP	8 -Lead Flat Pack	100% Final Electrical
OMR9800SFH	8 -Lead Flat Pack	Class H per MIL-PRF-38534
OMR9800SFK	8 -Lead Flat Pack	Class K per MIL-PRF-38534

**MIL-PRF-38534 Screening Requirements**

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