# SR7805 Series

# Low Cost, Non-isolated Positive/Negative Output POL Switching Regulators


## Key Features:

- Efficiency to 96%
- 1A Output Current
- Compact SIP Case
- LM78xx Replacement
- Wide Input Range
- Positive or Negative Output
- Short Circuit Protected
- Thermal Shutdown
- Low Noise
- ***Low Low Cost***

RoHS

## Electrical Specifications

Specifications typical @ +25°C, nominal input voltage & rated output current, unless otherwise noted. Specifications subject to change without notice.

### Output

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| Output Voltage Accuracy | | | ±2.0 | ±3.0 | % |
| Line Regulation, 3.3V Output Model | Vin = Min to Max | | | ±1.0 | % |
| Line Regulation, All Other Models | | | ±0.3 | ±0.5 | |
| Load Regulation | Iout = 10% to 100% | | ±0.5 | ±0.75 | % |
| Ripple & Noise (20 MHz) | | | 20 | 35 | mV P - P |
| Output Power Protection | | 120 | | | % |
| Thermal Shutdown | See Note 1 | | 160 | | °C |
| Quiescent Current, Note 2 | Positive Output | | 5 | 13 | mA |
| | Negative Output | | 7 | 15 | |
| Temperature Coefficient | | | | 0.02 | %/°C |
| Maximum Capacitive Load | | | | 1,000 | µF |
| Output Current Limit | | | 2,000 | | mA |
| Short Circuit Input Power | | | 0.5 | 1.8 | W |
| Output Short Circuit | Continuous (Autorecovery) | | | | |

### General

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| Isolation Voltage | Not Isolated | | | | |
| Switching Frequency | | | 410 | | kHz |

### Environmental

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| Operating Temperature Range | Ambient | -40 | +25 | +85 | °C |
| Operating Temperature Range | Case | | | +100 | °C |
| Storage Temperature Range | | -55 | | +125 | °C |
| Lead Temperature | 1.5 mm From Case For 10 Sec | | | 300 | °C |
| Cooling | Free Air Convection | | | | |
| Humidity | RH, Non-condensing | | | 95 | % |

### Physical

| | |
|---|---|
| Case Size | 0.45 x 0.30 x 0.40 Inches (11.5 x 7.55 x 10.2 mm) |
| Case Material | Non-Conductive Black Plastic (UL-94V0) |
| Weight | 0.07 Oz (2.0g) |

### Reliability Specifications

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| MTBF | MIL HDBK 217F, 25°C, Gnd Benign | 2.0 | | | MHours |


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## Model Selection Guide



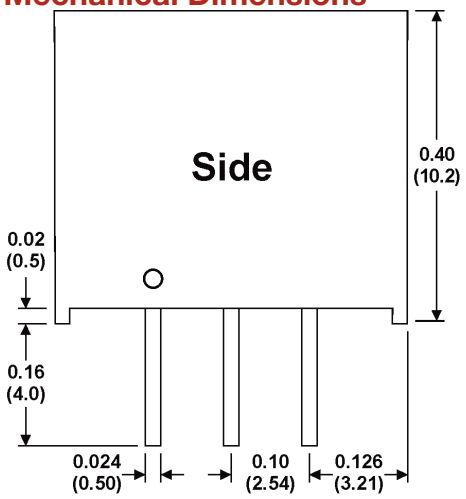
| Model Number | Input Voltage (VDC) | | Output | | Efficiency (%, Typ) | |
|---|---|---|---|---|---|---|
| | Nom. | Range | Voltage (VDC) | Current (mA, Max) | Min Vin | Max Vin |
| SR7805-03W | 12 | 4.5 - 30.0 | 3.3 | 500.0 | 90 | 77 |
| | 12 | 4.5 - 27.0 | -3.3 | -400.0 | 75 | 73 |
| SR7805-05W | 12 | 6.5 - 30.0 | 5.0 | 500.0 | 94 | 81 |
| | 12 | 6.0 - 25.0 | -5.0 | -400.0 | 80 | 79 |
| SR7805-06W | 24 | 8.0 - 30.0 | 6.5 | 500.0 | 95 | 85 |
| | 12 | 6.0 - 23.0 | -6.5 | -300.0 | 82 | 81 |
| SR7805-09W | 24 | 11.0 - 30.0 | 9.0 | 500.0 | 95 | 89 |
| | 12 | 6.0 - 21.0 | -9.0 | -300.0 | 82 | 84 |
| SR7805-12W | 24 | 15.0 - 30.0 | 12.0 | 500.0 | 96 | 92 |
| | 12 | 6.0 - 18.0 | -12.0 | -200.0 | 83 | 85 |
| SR7805-15W | 24 | 18.0 - 30.0 | 9.0 | 500.0 | 96 | 93 |
| | 12 | 6.0 - 15.0 | -9.0 | -200.0 | 80 | 86 |

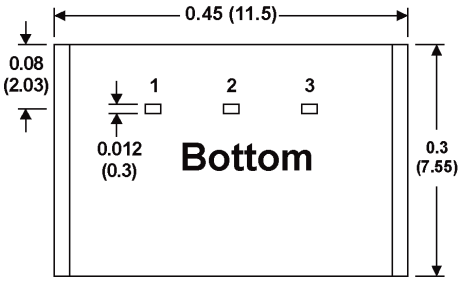
**Notes:**
1. Dynamic load stability is specified for output loads from 10% to 100%.
2. Measured at an internal IC junction.
3. Quiescent current is specified at 0% load for Vin = min to max.
4. This regulator is not designed to be used in parallel with another unit to increase output power.
5. The input should not exceed the range given in the model selection chart. Exceeding this limit could damage the unit.

## Pin Connection

| Pin | Function |
|---|---|
| 1 | +Vin |
| 2 | Gnd |
| 3 | +Vout |

## Mechanical Dimensions

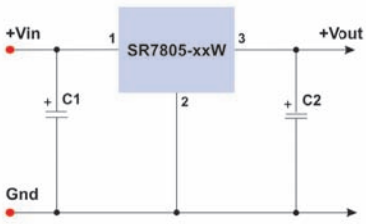


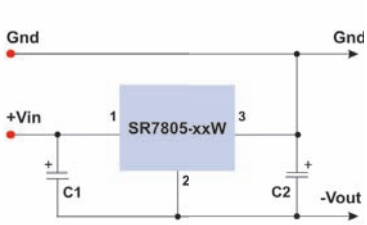

**Notes:**
- All dimensions are typical in inches (mm)
- Tolerance x.xx = ±0.01 (±0.25)
- Pin 1 is marked by a "dot" or indentation on the side of the unit

## Typical Application Circuits

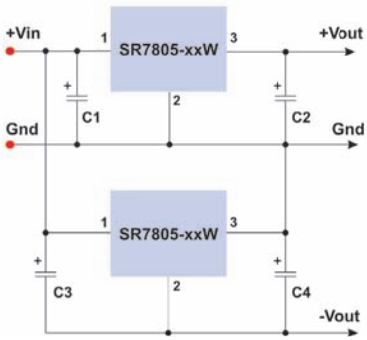
Positive Output




Negative Output




Positive & Negative Outputs

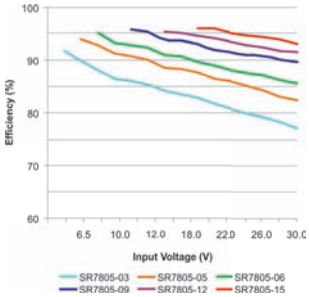



## Component Values

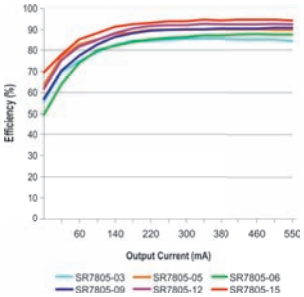
| Model Number | Ceramic Capacitors | |
|---|---|---|
| | $C_1$, $C_3$ | $C_2$, $C_4$ |
| SR7805-03W | 10 µF/50V | 22 µF/ 16V |
| SR7805-05W | 10 µF/50V | 22 µF/ 16V |
| SR7805-06W | 10 µF/50V | 10 µF/ 16V |
| SR7805-09W | 10 µF/50V | 10 µF/ 16V |
| SR7805-12W | 10 µF/50V | 10 µF/ 25V |
| SR7805-15W | 10 µF/50V | 10 µF/ 25V |

**Notes:**
1. C1 & C3 are low ESR ceramic capacitors used to minimize noise at the regulator.
   A tantalum or low ESR electrolytic capacitor may also be used.
2. C1 & C2 (and if used C3 & C4) are required and should be mounted as close to the regulator pins as possible.

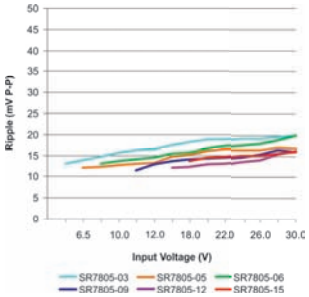
## Characteristic Curves (Efficiency & Ripple)



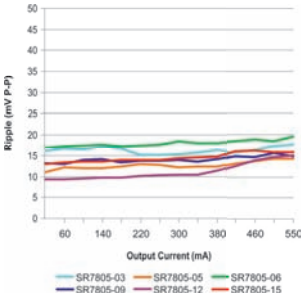

Efficiency vs Input Voltage (Full Load)




Efficiency vs Load (Vin = Nom)

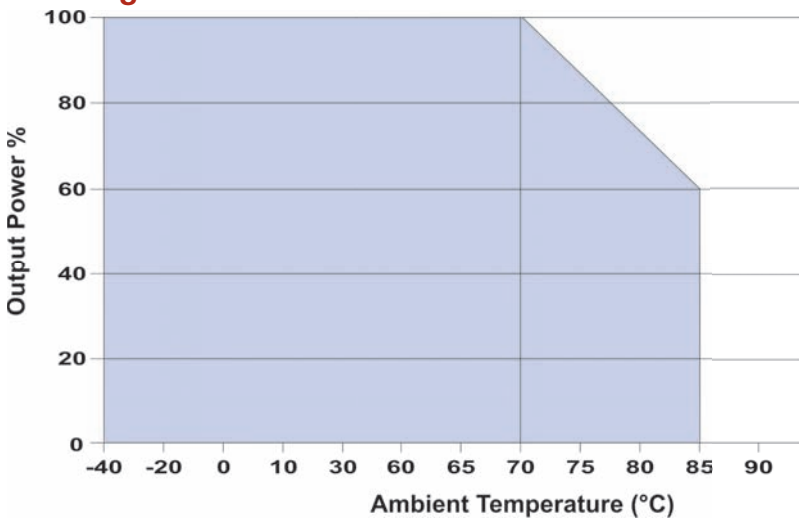



Ripple vs Input Voltage (Full Load)




Ripple vs Load (Vin = Nom)

## Derating Curve

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