

LSR7805 Series

Low Cost, Miniature 500 mA Surface Mount POL Switching Regulators



Electrical Specifications

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

Key Features:

- Efficiency to 96%
- 0.5A Output Current
- Compact SMT Case
- LM78xx Replacement
- Wide Input Range
- Adjustable Output Voltage
- Short Circuit Protected
- Thermal Shutdown
- Low Noise
- **Low Low Cost**

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±2.0	±3.0	%
Output Voltage Adjustment Range					
Line Regulation	Contact Factory For Information $V_{IN} = \text{Min to Max}$		±0.2	±0.5	%
Load Regulation	$I_{OUT} = 10\% \text{ to } 100\%$		±0.3	±0.75	%
Ripple & Noise (20 MHz)			10	25	mV P - P
Thermal Shutdown	See Note 2		160		°C
Quiescent Current	See Note 3		15		mA
Temperature Coefficient				0.02	%/°C
Maximum Capacitive Load				1,000	µF
Output Current Limit			1.8		A
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	See Mechanical Diagram (Page 2)
Case Material	Non-Conductive Black Plastic (UL-94V0)
Weight	0.08 Oz (2.3g)

Reliability Specifications

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

RoHS



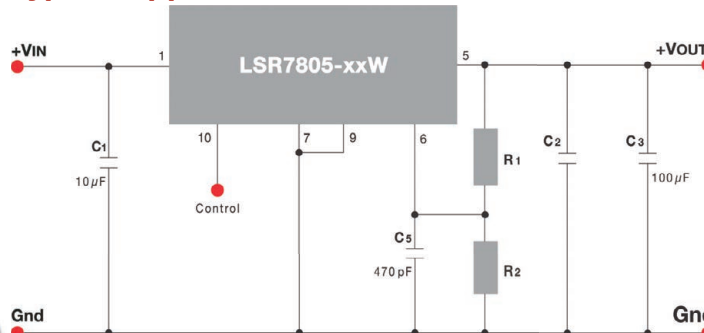
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Typical Application Circuits



Component Values

Model Number	Ceramic Capacitors	
	C1	C2
LSR7805-03W	10 µF/50V	22 µF/ 16V
LSR7805-05W	10 µF/50V	22 µF/ 16V
LSR7805-09W	10 µF/50V	22 µF/ 16V
LSR7805-12W	10 µF/50V	10 µF/ 25V
LSR7805-15W	10 µF/50V	10 µF/ 25V

Notes:

1. C1 & C2 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 are required and should be mounted as close to the regulator pins as possible. C3 is required for optimum performance, use 100 µF OR more.
3. R1 & R2 are used to adjust the regulator output. If this is not required, the V_{ADJ} pin (pin 6) should be connected to ground through 470 pF ceramic capacitor. For suggested values, please contact the factory.

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Model Number	Input Voltage (VDC)		Output			Efficiency (% Typ)	
	Nom.	Range	Voltage (VDC)	Adj Range (VDC)	Current (mA, Max)	Min V _{IN}	Max V _{IN}
LSR7805-03W	12	4.5 - 28.0	3.3	1.8 - 5.5	500.0	90	75
LSR7805-05W	12	6.0 - 28.0	5.0	2.5 - 8.0	500.0	94	81
LSR7805-09W	24	11.0 - 28.0	9.0	3.0 - 11.5	500.0	95	87
LSR7805-12W	24	14.0 - 28.0	12.0	4.5 - 13.5	500.0	95	90
LSR7805-15W	24	17.0 - 28.0	15.0	4.5 - 15.5	500.0	96	92

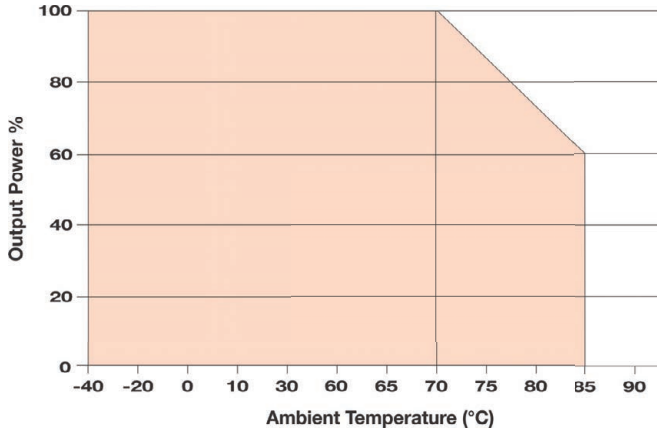
Notes:

1. Load regulation is specified for an output load change of 10% to 100%.
2. Measured at an internal IC junction.
3. Quiescent current is specified at 0% load for V_{IN} = Min to Max.
4. This regulator is not designed to be used in parallel with another unit to increase output power.
5. The remote on/off control current is typically 2 μA. Shutdown input current is 30 μA max. The On/Off shutdown threshold voltage is 1.1V to 1.4V.

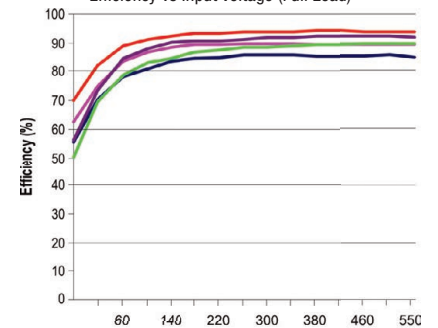
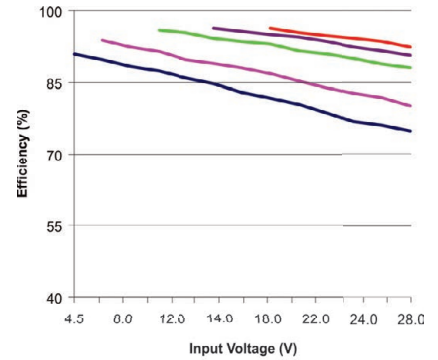
	Min	Max
On	Open or 1.5V < V _c ≤ 6.0 VDC	
Off	Ground or 0.0V < V _c < 1.0 VDC	

6. The input should not exceed the range given in the model selection chart. Exceeding this limit could damage the unit.

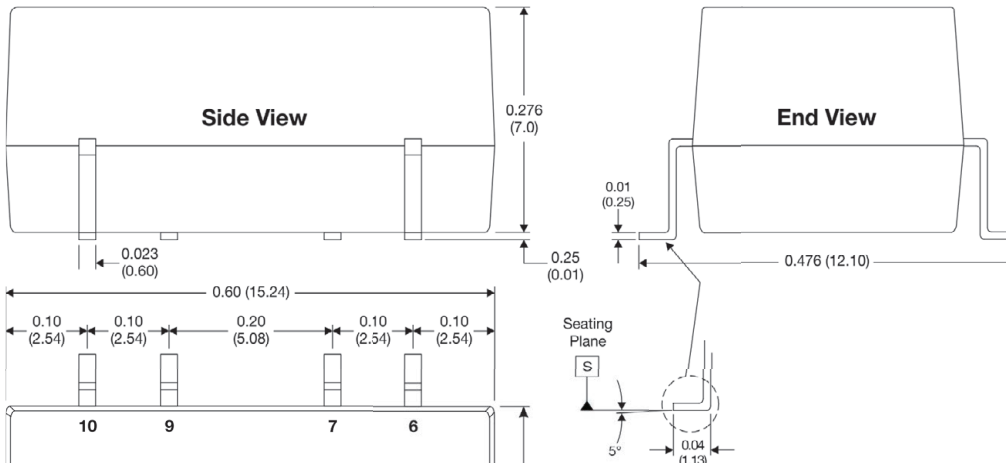
Derating Curve



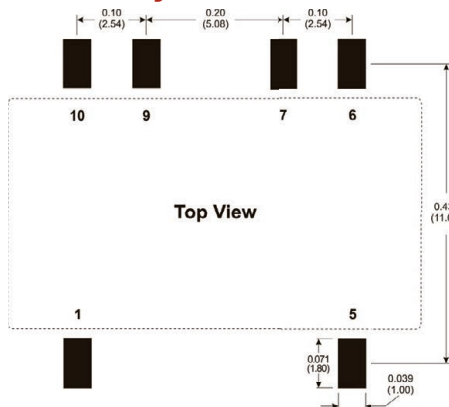
Characteristic Curves



Mechanical Dimensions

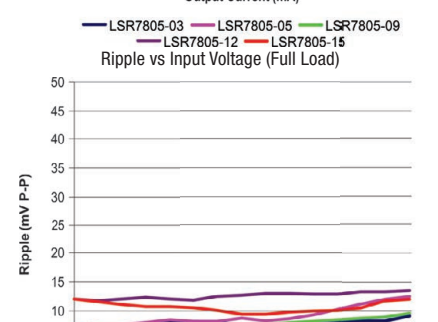
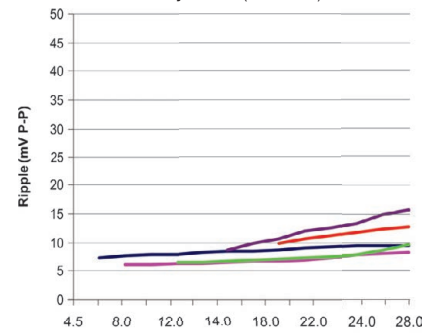


Solder Layout



Pin Connection

Pin	Function	Pin	Function
1	+V _{IN}	7	Gnd
5	+V _{OUT}	9	Gnd
6	V _{ADJ}	10	Control



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



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