PT79SR100 Series

-1.5 Amp Negative Step-Down Integrated Switching Regulator

Power Trends Products from Texas Instruments

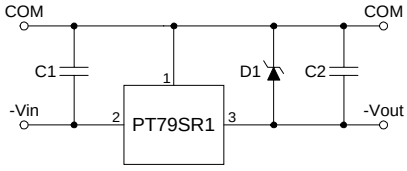
SLTS061A

(Revised 6/30/2000)

- High Efficiency > 85%
- Self-Contained Inductor
- Short Circuit Protection
- Over-Temperature Protection

The PT79SR100 is a line of Negative Input/Negative Output 3-terminal Integrated Switching Regulators (ISRs). These ISRs have a maximum output current of -1.5 Amps and an output voltage that is laser trimmed to most industry standard voltages. They have excellent line and load regulation, and are ideal for applications, such as RS232 and Ethernet communications, ECL logic, and op-amp circuitry.

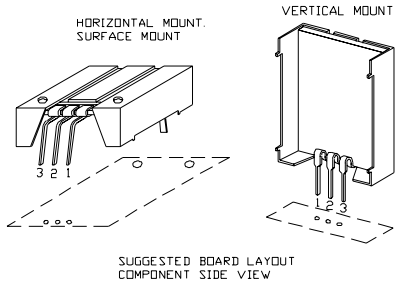
Standard Application



C1 = Optional ceramic (1µF)
C2 = Optional ceramic (1-5µF)
D1 = Zener diode required to clamp turn-on overshoot (See Application Note)

Pin-Out Information

Pin	Function
1	GND
2	$-V_{in}$
3	$-V_{out}$



Pkg Style 500

Ordering Information

PT79SR1 **XX** **Y**

Output Voltage

05 = -5.0 Volts
52 = -5.2 Volts
06 = -6.0 Volts
08 = -8.0 Volts
09 = -9.0 Volts
12 = -12.0 Volts
15 = -15.0 Volts

Package Suffix

V = Vertical Mount
S = Surface Mount
H = Horizontal Mount

Specifications

Characteristics (T_a = 25°C unless noted)	Symbols	Conditions	PT79SR100 SERIES Min	Typ	Max	Units
Output Current	I_o	Over V_{in} range	-0.1*	—	-1.5	A
Short Circuit Current	I_{sc}	$V_{in}=V_o-4V$	—	-3.5	—	Apk
Input Voltage Range	V_{in}	I_o=-0.1 to -1.5 A V_o=-5V -0.1 ≥ I_o ≥ -1.5 A V_o=-15V	-9 -19	— —	-30 -30	V V
Output Voltage Tolerance	ΔV_o	Over Vin range, I_o=-1.5 A T_a=-20°C to shutdown	—	±1.0	±3.0	%V_o
Line Regulation	Reg_{line}	Over V_{in} range	—	±1.0	±2.0	%V_o
Load Regulation	Reg_{load}	-0.1 ≤ I_o ≤ -1.5 A	—	±0.5	±1.0	%V_o
V_o Ripple/Noise	V_n	V_{in}=-15V, I_o=-1.0 A,V_o=-5V	—	35	—	mV_{pp}
Transient Response	t_{tr}	50% load change V_o=overshoot/undershoot	— —	100 30	— —	µSec %V_o
Efficiency	η	V_{in}=-10V, I_o=-1.0A, V_o=-5V	—	85	—	%
Switching Frequency	f_o	Over V_{in} and I_o ranges	0.95	1.0	1.05	MHz
Absolute Maximum Operating Temperature Range	T_a		-40	—	+85	°C
Recommended Operating Temperature Range	T_a	Free Air Convection, (40-60LFM) Over V_{in} and I_o ranges	-40	—	+60**	°C
Thermal Resistance	θ_{ja}	Free Air Convection, (40-60LFM)	—	45	—	°C/W
Temperature Coefficient	T_c	Over V_{in} and I_o ranges	—	±0.5	±1.5	mV/°C
Storage Temperature	T_s	—	-40	—	+125	°C
Mechanical Shock	—	Per Mil-STD-883D, Method 2002.3	—	500	—	G's
Mechanical Vibration	—	Per Mil-STD-883D, Method 2007.2, 20-2000 Hz, soldered in a PC board	—	5	—	G's
Weight	—	—	—	7.0	—	Grams

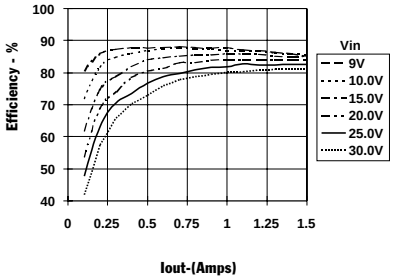
* ISR will operate down to no load with reduced specifications.

** See Thermal Derating chart.

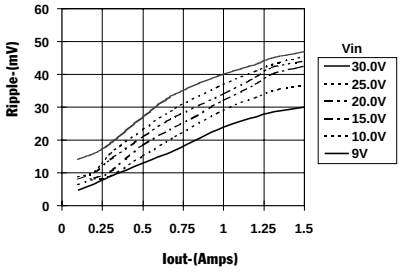
Typical Characteristics

PT79SR105, -5.0 VDC (See Note 1)

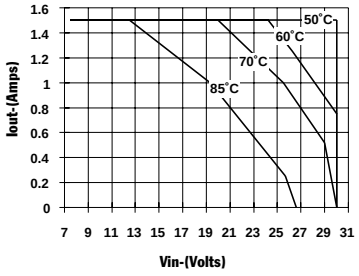
Efficiency vs Output Current



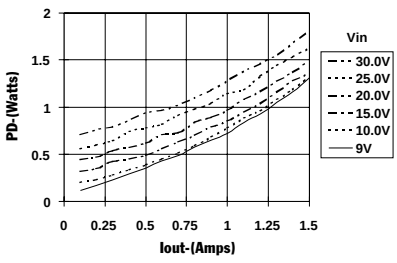
Ripple vs Output Current



Thermal Derating (T_a) (See Note 2)

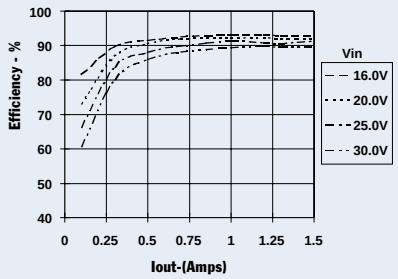


Power Dissipation vs Output Current

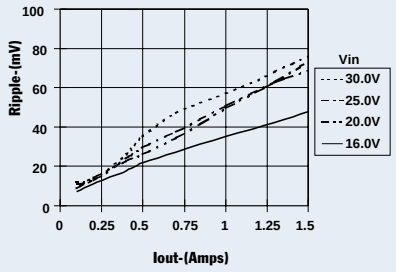


PT79SR112, -12.0 VDC (See Note 1)

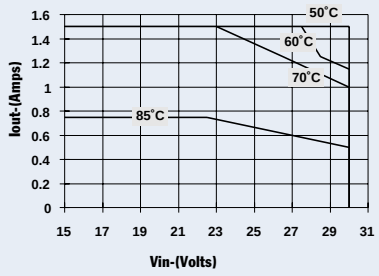
Efficiency vs Output Current



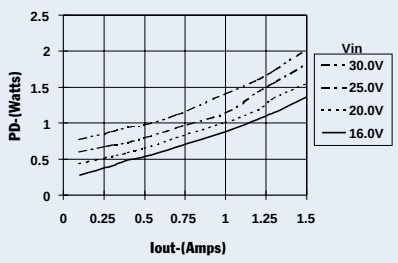
Ripple vs Output Current



Thermal Derating (T_a) (See Note 2)

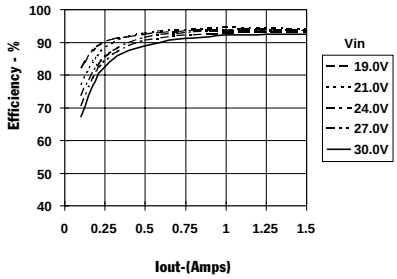


Power Dissipation vs Output Current

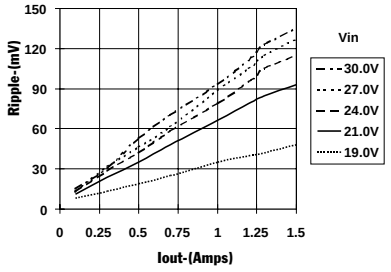


PT79SR115, -15.0 VDC (See Note 1)

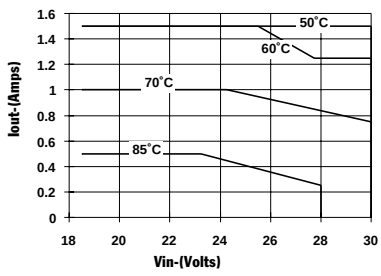
Efficiency vs Output Current



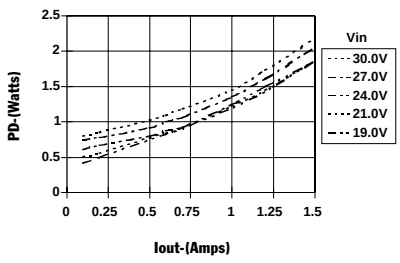
Ripple vs Output Current



Thermal Derating (T_a) (See Note 2)



Power Dissipation vs Output Current



Note 1: *All data listed in the above graphs, except for derating data, has been developed from actual products tested at 25°C. This data is considered typical data for the ISR.*
Note 2: *Thermal derating graphs are developed in free air convection cooling of 40-60 LFM soldered in a printed circuit board. (See Thermal Application Notes.)*

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