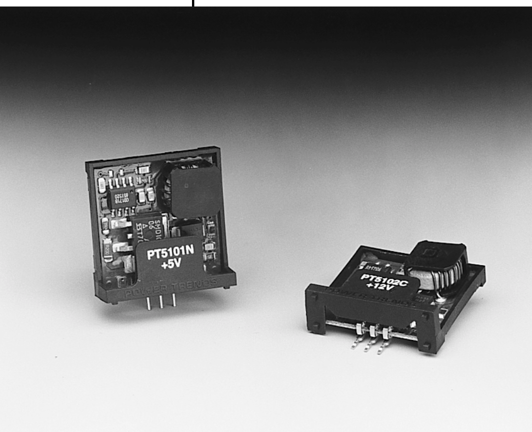
PT5120 Series

1 AMP LOW VOLTAGE INPUT INTEGRATED SWITCHING REGULATOR

SLTS080
(Revised 6/4/98)

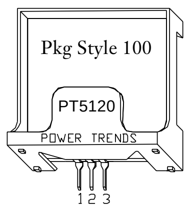


- Low Voltage Input (7V)
- 85% Efficiency
- Internal Short-Circuit Protection
- Over-Temperature Protection
- Laser-Trimmed Output Voltage

The PT5120 series is a low voltage input (typically 7V) version of Power Trends' easy-to-use, 1A positive step-down, 3-terminal Integrated Switching Regulators (ISRs). These ISRs are designed with premium low-threshold FETs for those power regulation applications requiring very low input/output voltage differentials such as battery powered equipment.

Pin-Out Information

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



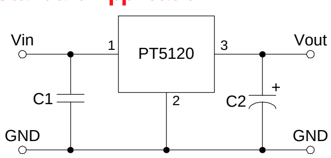
Ordering Information

PT5121☐ = + 5 Volts
PT5123☐ = + 3.3 Volts

PT Series Suffix (PT1234X)

Case/Pin Configuration	
Vertical Through-Hole	N
Horizontal Through-Hole	A
Horizontal Surface Mount	C

Standard Application



C_1 = Optional 1µF ceramic
C_2 = Required 100µF electrolytic

Specifications

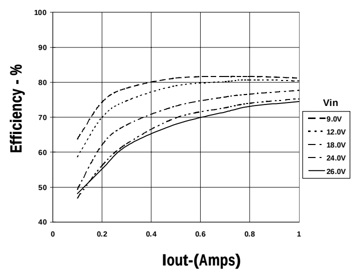
Characteristics (T_a =25°C unless noted)	Symbols	Conditions		PT5120 SERIES Min	Typ	Max	Units
Output Current	I_o	Over V_{in} range		0.1*	—	1.0	A
Short Circuit Current	I_{sc}	V_{in} = V_{in} min		—	3.5	—	Apk
Input Voltage Range	V_{in}	$0.1 \le I_o \le 1.0$ A	V_o = 3.3V V_o = 5V	7 7	—	26 38	V V
Output Voltage Tolerance	ΔV_o	Over V_{in} Range, I_o = 1.0 A T_a = 0°C to +60°C		—	±1.5	±3.0	$\%V_o$
Line Regulation	Reg_{line}	Over V_{in} range		—	±0.5	±1.0	$\%V_o$
Load Regulation	Reg_{load}	$0.1 \le I_o \le 1.0$ A		—	±0.5	±1.0	$\%V_o$
V_o Ripple/Noise	V_n	V_{in}=V_{in} min, I_o=1.0 A		—	±2	—	$\%V_o$
Transient Response with C_o = 100µF	t_{tr} V_{os}	25% load change V_o over/undershoot		— —	100 5.0	200 —	µSec $\%V_o$
Efficiency	η	V_{in}=9V, I_o=0.5A, V_o=3.3V V_{in}=9V, I_o=0.5A, V_o=5V		— —	82 85	— —	% %
Switching Frequency	f_o	Over V_{in} and I_o ranges,	V_o= 3.3V V_o = >5V	575 500	725 650	875 800	kHz
Absolute Maximum Operating Temperature Range	T_a			-20	—	+85	°C
Recommended Operating Temperature Range	T_a	Free Air Convection, (40-60LFM)	V_o= 3.3V V_o= 5V	-20 -20	— —	+80** +80**	°C
Thermal Resistance	θ_{ja}	Free Air Convection (40-60LFM)	V_o = 3.3V V_o = 5V	— —	45 50	— —	°C/W
Storage Temperature	T_s			-40	—	+125	°C
Mechanical Shock		Per Mil-STD-883D, Method 2002.3 1 msec, Half Sine, mounted to a fixture		—	500	—	G's
Mechanical Vibration		Per Mil-STD-883D, Method 2007.2 20-2000 Hz, Soldered in a PC board		—	5	—	G's
Weight				—	4.5	—	grams

* ISR will operate down to no load with reduced specifications.
**See Thermal Derating chart.
Note: *The PT5120 Series requires a 100µF electrolytic or tantalum output capacitor for proper operation in all applications.*

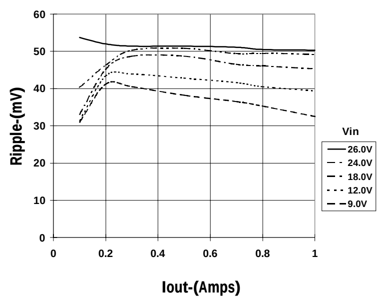
Power Trends, Inc. 27715 Diehl Road, Warrenville, IL 60555 **(800) 531-5782** Fax: (630) 393-6902 **http://www.ti.com/powertrends**

PT5123, 3.3 VDC (See Note 1)

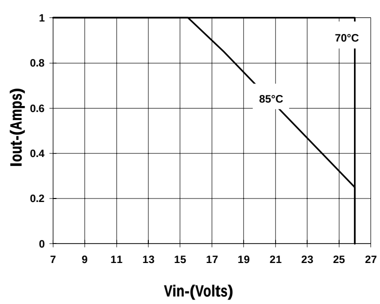
Efficiency vs Output Current



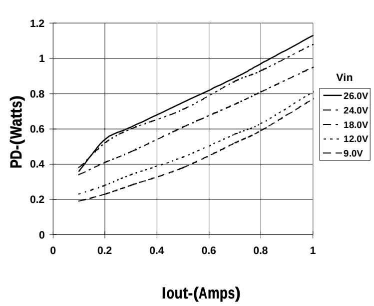
Ripple vs Output Current



Thermal Derating (T_a) (See Note 2)

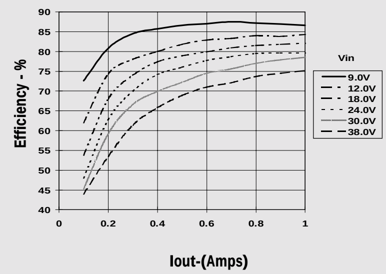


Power Dissipation vs Output Current

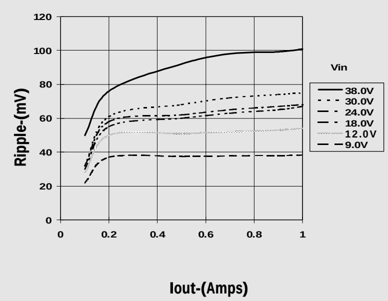


PT5121, 5.0 VDC (See Note 1)

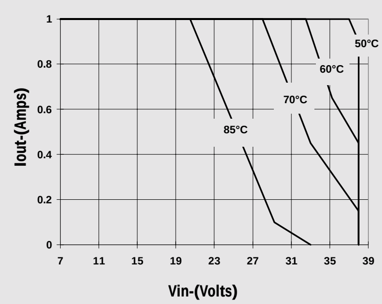
Efficiency vs Output Current



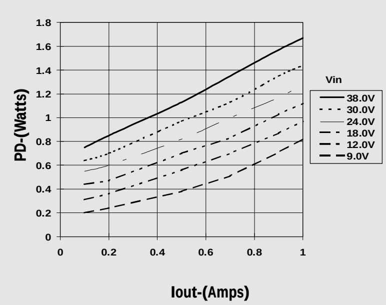
Ripple vs Output Current



Thermal Derating (T_a) (See Note 2)



Power Dissipation vs Output Current



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. (See Thermal Application Notes.)*