



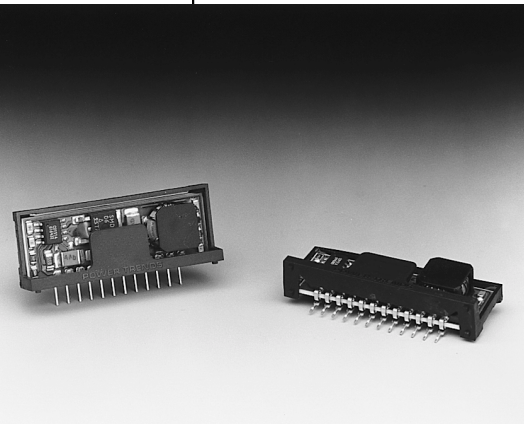
**THE DATASHEET OF  
PT6313A**



# PT6310 Series

## 2 AMP ADJUSTABLE POSITIVE STEP-DOWN INTEGRATED SWITCHING REGULATOR

SLTS076  
(Revised 8/17/99)



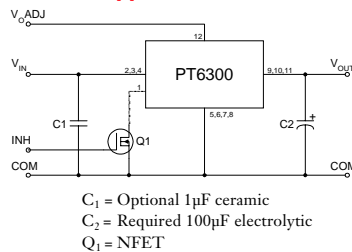
- 87% Efficiency
- Adjustable Output Voltage
- Internal Short Circuit Protection
- Over-Temperature Protection
- On/Off Control (Ground Off)
- Small SIP Footprint
- Wide Input Range

Switching Regulator (ISR) designed to meet the on-board power conversion needs of battery powered or other equipment requiring high efficiency and small size. This high performance ISR offers a unique combination of features combining 87% typical efficiency with open-collector on/off control and adjustable output voltage.

The PT6310 series is a High-Performance 2 Amp, 12-Pin SIP (Single In-line Package) Integrated

Quiescent current in the shutdown mode is typically less than 100µA.

### Standard Application



### Pin-Out Information

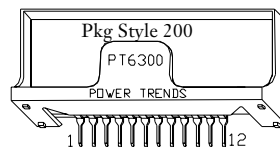
Pin	Function
1	Inhibit (30V max)
2	$V_{in}$
3	$V_{in}$
4	$V_{in}$
5	GND
6	GND
7	GND
8	GND
9	$V_{out}$
10	$V_{out}$
11	$V_{out}$
12	$V_{out}$ Adj

### Ordering Information

- PT6310□ = +14.6 Volts  
 PT6311□ = +15.5 Volts  
 PT6312□ = +15.0 Volts  
 PT6313□ = +8.0 Volts

### PT Series Suffix (PT1234X)

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



### Specifications

Characteristics ( $T_a = 25^\circ\text{C}$ unless noted)	Symbols	Conditions	PT6310 Series			
			Min	Typ	Max	Units
Output Current	$I_o$	Over $V_{in}$ range	0.1*	—	2.0	A
Short Circuit Current	$I_{sc}$	$V_{in} = V_o + 5V$	—	5.0	—	Apk
Input Voltage Range	$V_{in}$	$0.1 \leq I_o \leq 2.0 \text{ A}$	$V_o + 4$	—	38**	V
Output Voltage Tolerance	$\Delta V_o$	Over $V_{in}$ Range, $I_o = 2.0 \text{ A}$ $T_a = 0^\circ\text{C}$ to $+60^\circ\text{C}$	—	$\pm 1.0$	$\pm 2.0$	% $V_o$
Line Regulation	$Reg_{line}$	Over $V_{in}$ range	—	$\pm 0.25$	$\pm 0.5$	% $V_o$
Load Regulation	$Reg_{load}$	$0.1 \leq I_o \leq 2.0 \text{ A}$	—	$\pm 0.25$	$\pm 0.5$	% $V_o$
$V_o$ Ripple/Noise	$V_n$	$V_{in} = V_{in \text{ min}}, I_o = 2.0 \text{ A}$	—	$\pm 2$	—	% $V_o$
Transient Response with $C_o = 100\mu\text{F}$	$t_{tr}$ $V_{os}$	50% load change $V_o$ over/undershoot	—	100 5.0	200 —	$\mu\text{Sec}$ % $V_o$
Efficiency	$\eta$	$V_{in} = 24V, I_o = 2.0 \text{ A}$	—	87	—	%
Switching Frequency	$f_o$	Over $V_{in}$ and $I_o$ ranges	600 500	700 550	800 600	kHz kHz
Shutdown Current	$I_{sc}$	$V_{in} = 15V$	—	100	—	$\mu\text{A}$
Quiescent Current	$I_{nl}$	$I_o = 0A, V_{in} = 10V$	—	10	—	mA
Output Voltage Adjustment Range	$V_o$	Below $V_o$ Above $V_o$	See Application Notes.			
Absolute Maximum Operating Temperature Range	$T_a$		-40	—	+85	$^\circ\text{C}$
Recommended Operating Temperature Range	$T_a$	Free Air Convection, (40-60LFM) At $V_{in} = 18V, I_o = 2.0 \text{ A}$	-40	—	+70	$^\circ\text{C}$
Thermal Resistance	$\theta_{ja}$	Free Air Convection (40-60LFM)	—	30	—	$^\circ\text{C}/\text{W}$
Storage Temperature	$T_s$	—	-40	—	+125	$^\circ\text{C}$
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	—	10	—	G's
Weight	—	—	—	6.5	—	grams

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

\*\* Input voltage cannot exceed 30V when the inhibit function is used.

Note: The PT6310 requires a 100µF electrolytic or tantalum output capacitor for proper operation in all applications.

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