



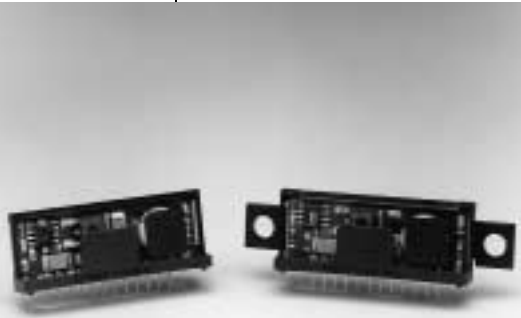
THE DATASHEET OF PT6204N



PT6200 Series

SLTS063

**2 AMP HIGH-PERFORMANCE ADJUSTABLE
ISR WITH ON/OFF CONTROL**

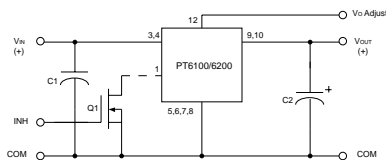


- 90% Efficiency
- Adjustable Output Voltage
- Internal Short Circuit Protection
- Over-Temperature Protection
- On/Off Control (Ground Off)
- Small SIP Footprint
0.36" x 1.64" x 0.60"(H)

The PT6200 Series is a line of High-Performance 2 Amp, 12-Pin SIP (Single In-line Package) Integrated Switching Regulators (ISRs) 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 family offers a unique combination of features combining 90% typical efficiency with open-collector on/off control and adjustable output voltage. Quiescent current in the shutdown mode is less than 100µA.

Standard Application

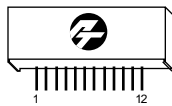


C₁ = Optional ceramic (1µF)
Q₁ = NFET
C₂ = Required 100µF electrolytic

Pin-Out Information

Pin No.	Function
1	Inhibit
2	N/C
3	V _{in}
4	V _{in}
5	GND
6	GND

Pin No.	Function
7	GND
8	GND
9	V _{out}
10	V _{out}
11	N/C
12	V _{out Adj}



Ordering Information

PT6202□ = +5 Volts

PT6203□ = +3.3 Volts

PT6204□ = +12 Volts
(For dimensions, see page 65.)

PT Series Suffix (PT1234X)

Case/Pin Configuration	Heat Tab Configuration	
	None	Side
Vertical Through-Hole	N	R
Horizontal Through-Hole	A	G
Horizontal Surface Mount	C	B

(See Thermal Application Notes on page 44 for heat tab application data.)

Specifications

Characteristics (T _a =25°C unless note d)	Symbols	Conditions	PT6200 SERIES				
			Min	Typ	Max	Units	
Output Current	I _o	Over V _{in} range	0.1**	—	2.0	Amps	
Current Limit	I _{cl}	V _{in} = V _o + 5V	—	3.5	4.5	Amps	
Short Circuit Current	I _{sc}	V _{in} = V _o + 5V	—	5.0	—	Apk	
Input Voltage Range	V _{in}	0.1 ≤ I _o ≤ 2.0 Amp	V _o = 3.3V	7	—	26	VDC
			V _o = 5V	7.25	—	30	VDC
			V _o = 12V	14.5	—	30	VDC
Static Voltage Tolerance	V _o	Over V _{in} Range, I _o = 2.0 Amp T _A = -40° C to shutdown	—	±1.0	±2.0	%V _o	
Line Regulation	Reg _{line}	Over V _{in} range	—	±0.25	±0.5	%V _o	
Load Regulation	Reg _{load}	0.1 ≤ I _o ≤ 2.0 Amp	—	±0.25	±0.5	%V _o	
Ripple/Noise	V _n	V _{in} = V _o + 5V, I _o = 2.0 Amp	—	±2	—	%V _o	
Transient Response with C _o = 100µF	t _{tr}	50% load change	—	100	200	µSec	
	V _{os}	V _o over/undershoot	—	3.0	5.0	%V _o	
Efficiency	η	V _{in} =8V, I _o = 0.5 Amp, V _o = 3.3V V _{in} =8V, I _o = 0.5 Amp, V _o = 5V V _{in} =15V, I _o = 0.5 Amp, V _o = 12V	—	85	—	%	
			—	90	—	%	
			—	93	—	%	
Switching Frequency	f _o	Over V _{in} and I _o ranges, V _o = 3.3V V _o = 5V V _o = 12V	400	500	600	KHz	
			500	650	800	KHz	
			500	650	800	KHz	
Shutdown Current	I _{sc}	V _{in} = 15V	—	100	—	µAmp	
Quiescent Current	I _{nl}	I _o = 0A, V _{in} = 10V	—	10	—	mAmp	
Output Voltage Adjustment Range	V _o	Below V _o Above V _o	See Application Notes on page 40.				
Operating Temperature	T _A	Free Air Convection, (40-60LFM) 5V Over V _{in} and I _o ranges 12V	3.3V	-40	—	+85*	C
			5V	-40	—	+60*	
			12V	-40	—	*	
Thermal Resistance	θ _{JA}	Free Air Convection (40-60LFM) V _o = 3.3V V _o = 5V V _o = 12V	—	25	—	C/W	
			—	30	—		
			—	35	—		
Storage Temperature	T _s	—	-40	—	+125	C	
Mechanical Shock	—	Per Mil-STD-883D, Method 2002.3 Condition A, 1 msec, Half Sine, mounted to a fixture	—	—	500	G's	
Mechanical Vibration	—	Per Mil-STD-883D, Method 2007.2 Condition A, 20-2000 Hz	—	—	15	G's	
Weight	—	—	—	8.5	—	grams	
Relative Humidity	—	Non-condensing	0	—	95	%	

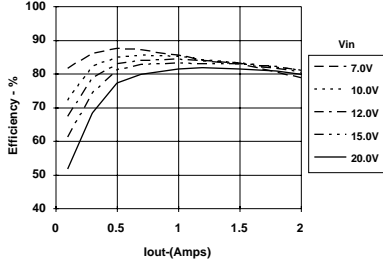
*See Thermal Derating chart. ** ISR will operate down to no load with reduced specifications.
Note: The PT6200 Series requires a 100µF electrolytic or tantalum output capacitor for proper operation in all applications.

CHARACTERISTIC DATA

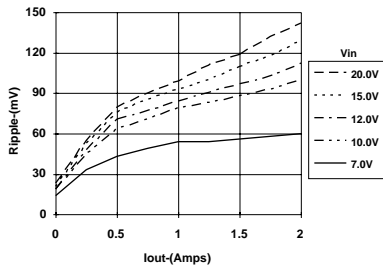
PT6203, 3.3 VDC

(See Note 1)

Efficiency vs Output Current

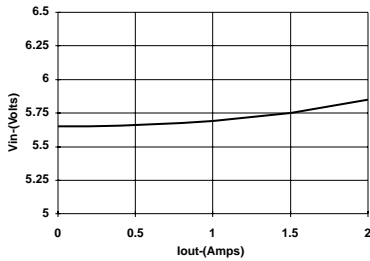


Ripple vs Output Current



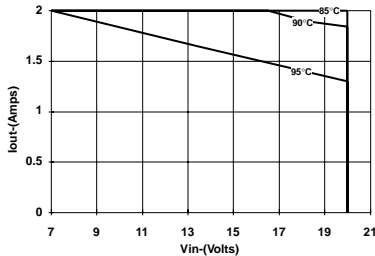
Minimum Input Voltage

(See Note 2)

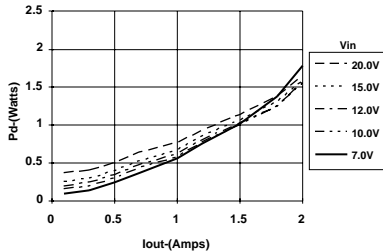


Thermal Derating (Ta)

(See Note 3)



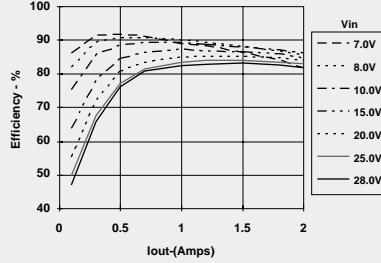
Power Dissipation vs Output Current



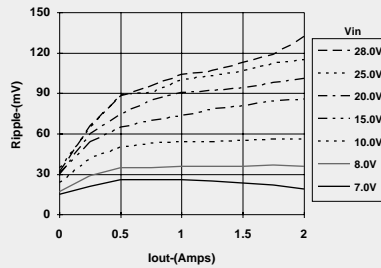
PT6202, 5.0 VDC

(See Note 1)

Efficiency vs Output Current

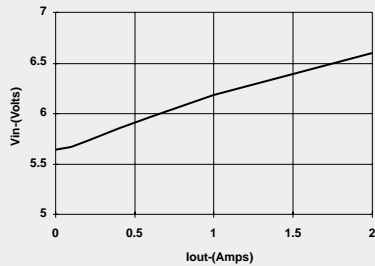


Ripple vs Output Current



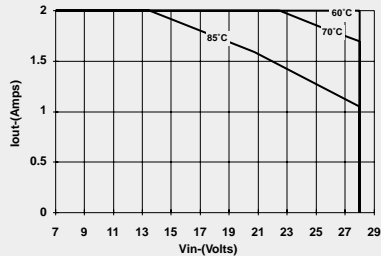
Minimum Input Voltage

(See Note 2)

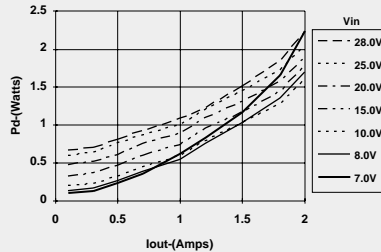


Thermal Derating (Ta)

(See Note 3)



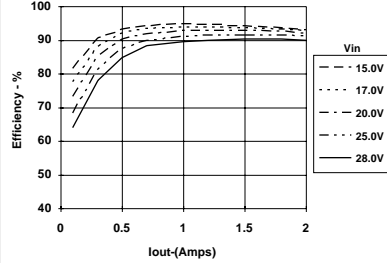
Power Dissipation vs Output Current



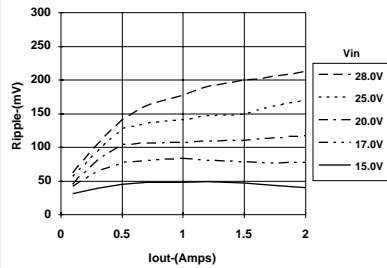
PT6204, 12.0 VDC

(See Note 1)

Efficiency vs Output Current

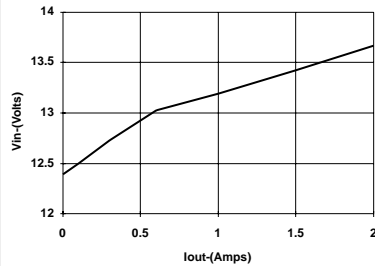


Ripple vs Output Current



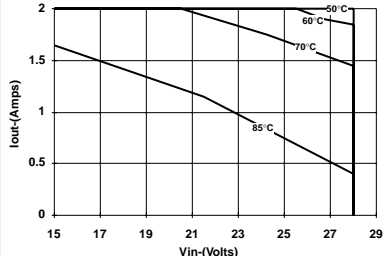
Minimum Input Voltage

(See Note 2)

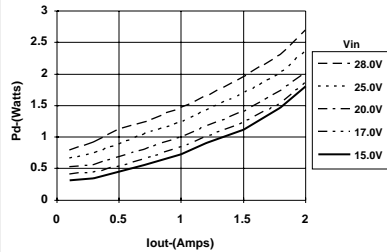


Thermal Derating (Ta)

(See Note 3)



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: Minimum Vin data is typical and is not guaranteed. The data corresponds to a 2% output voltage drop.

Note 3: Thermal derating graphs are developed in free air convection cooling of 40-60 LFM with no optional heat tab. (See Thermal Application Notes).

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