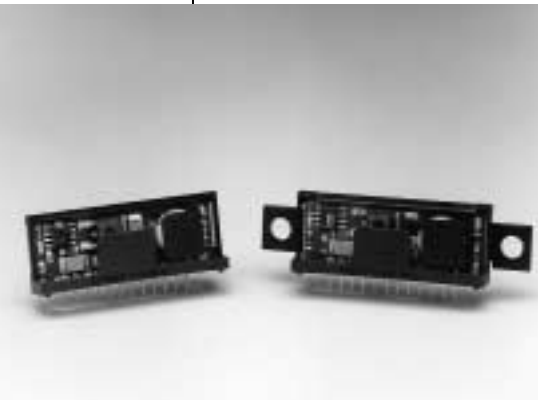
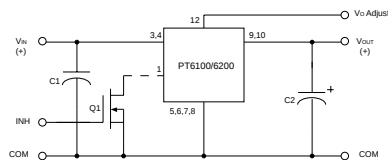


PT6200 Series**SLTS063****2 AMP HIGH-PERFORMANCE ADJUSTABLE
ISR WITH ON/OFF CONTROL**

- 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

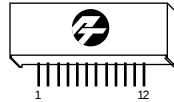
to meet the on-board power conversion needs of battery powered or other equipment requiring high efficiency and small size. This high performance ISR family offers a unique combination of features combining 90% typical efficiency with open-collector on/off control and adjustable output voltage. Quiescent current in the shutdown mode is less than 100µA.

Standard Application

C_1 = Optional ceramic (1µF)
 Q_1 = NFET
 C_2 = Required 100µF electrolytic

Specifications**Pin-Out Information**

Pin No.	Function	Pin No.	Function
1	Inhibit	7	GND
2	N/C	8	GND
3	V_{in}	9	V_{out}
4	V_{in}	10	V_{out}
5	GND	11	N/C
6	GND	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.)

Characteristics ($T_A = 25^\circ\text{C}$ 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}	$0.1 \leq I_o \leq 2.0$ Amp $V_o = 3.3V$ $V_o = 5V$ $V_o = 12V$	7 7.25 14.5	— — —	26 30 30	VDC VDC VDC
Static Voltage Tolerance	V_o	Over V_{in} Range, $I_o = 2.0$ Amp $T_A = -40^\circ\text{C}$ 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}	$0.1 \leq I_o \leq 2.0$ 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 $C_o = 100\mu\text{F}$	t_{tr} V_{os}	50% load change V_o over/undershoot	— —	100 3.0	200 5.0	µSec % 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, $V_o = 3.3V$ $V_o = 5V$ $V_o = 12V$	400 500 500	500 650 650	600 800 800	KHz KHz 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, 3.3V (40-60LFM) 5V Over V_{in} and I_o ranges 12V	-40 -40 -40	— — —	+85* +60* *	C
Thermal Resistance	θ_{JA}	Free Air Convection (40-60LFM) $V_o = 3.3V$ $V_o = 5V$ $V_o = 12V$	— — —	25 30 35	— — —	C/W
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	%

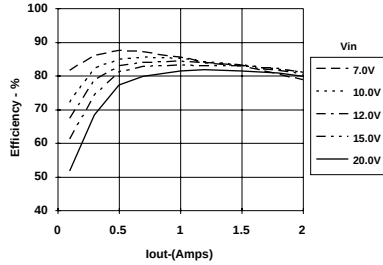
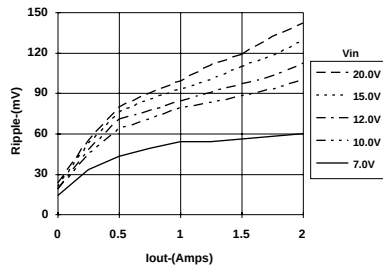
*See Thermal Derating chart.

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

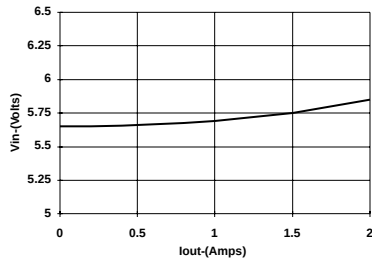
Note: The PT6200 Series requires a 100µF electrolytic or tantalum output capacitor for proper operation in all applications.

C H A R A C T E R I S T I C D A T A**PT6203, 3.3 VDC**

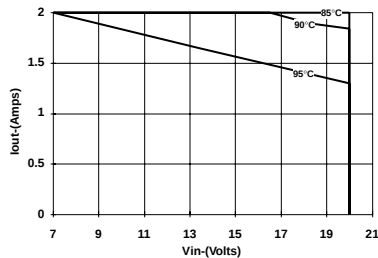
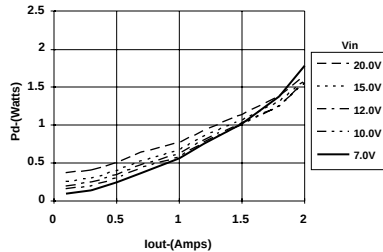
(See Note 1)

Efficiency vs Output Current**Ripple vs Output Current****Minimum Input Voltage**

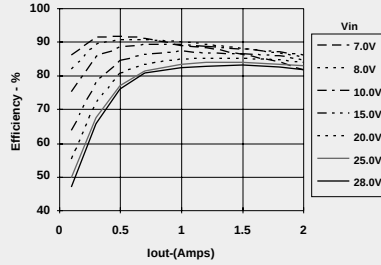
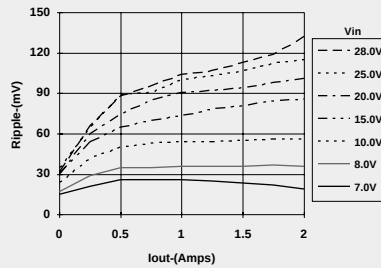
(See Note 2)

**Thermal Derating (T_a)**

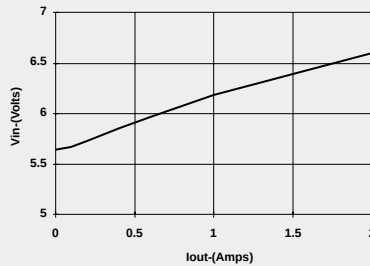
(See Note 3)

**Power Dissipation vs Output Current****PT6202, 5.0 VDC**

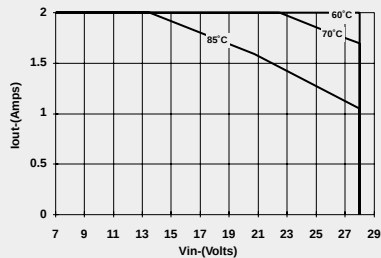
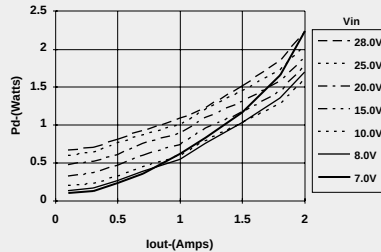
(See Note 1)

Efficiency vs Output Current**Ripple vs Output Current****Minimum Input Voltage**

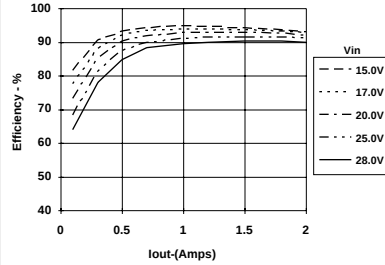
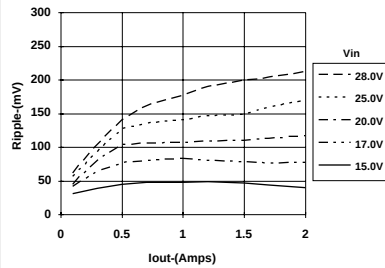
(See Note 2)

**Thermal Derating (T_a)**

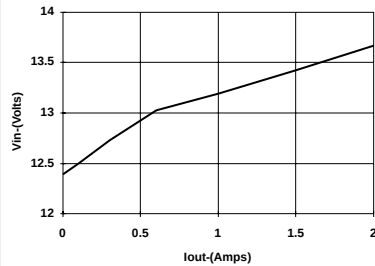
(See Note 3)

**Power Dissipation vs Output Current****PT6204, 12.0 VDC**

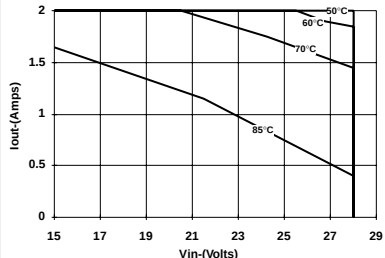
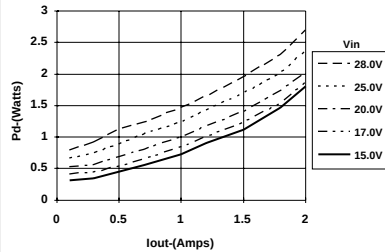
(See Note 1)

Efficiency vs Output Current**Ripple vs Output Current****Minimum Input Voltage**

(See Note 2)

**Thermal Derating (T_a)**

(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 V_{in} 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).

IMPORTANT NOTICE

Texas Instruments and its subsidiaries (TI) reserve the right to make changes to their products or to discontinue any product or service without notice, and advise customers to obtain the latest version of relevant information to verify, before placing orders, that information being relied on is current and complete. All products are sold subject to the terms and conditions of sale supplied at the time of order acknowledgment, including those pertaining to warranty, patent infringement, and limitation of liability.

TI warrants performance of its products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are utilized to the extent TI deems necessary to support this warranty. Specific testing of all parameters of each device is not necessarily performed, except those mandated by government requirements.

Customers are responsible for their applications using TI components.

In order to minimize risks associated with the customer's applications, adequate design and operating safeguards must be provided by the customer to minimize inherent or procedural hazards.

TI assumes no liability for applications assistance or customer product design. TI does not warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right of TI covering or relating to any combination, machine, or process in which such products or services might be or are used. TI's publication of information regarding any third party's products or services does not constitute TI's approval, license, warranty or endorsement thereof.

Reproduction of information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations and notices. Representation or reproduction of this information with alteration voids all warranties provided for an associated TI product or service, is an unfair and deceptive business practice, and TI is not responsible nor liable for any such use.

Resale of TI's products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service, is an unfair and deceptive business practice, and TI is not responsible nor liable for any such use.

Also see: Standard Terms and Conditions of Sale for Semiconductor Products. www.ti.com/sc/docs/stdterms.htm

Mailing Address:

Texas Instruments
Post Office Box 655303
Dallas, Texas 75265