

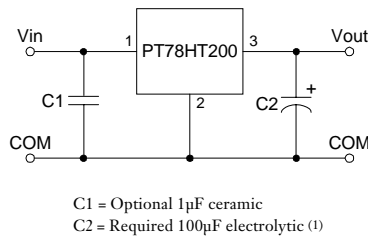
- High Efficiency: Up to 90%
- Wide Input Range
- Self-Contained Inductor
- Short-Circuit Protection
- Over-Temperature Protection
- Fast Transient Response

The PT78HT200 is a series of fixed output, wide-input range, 3-terminal Integrated Switching Regulators (ISRs). These ISRs have a maximum output

current of 2A. The output voltage is also laser trimmed for high accuracy. Features include excellent line and load regulation, internal short-circuit and over-temperature protection.

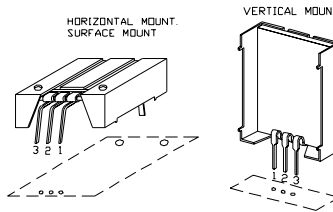
The PT78HT200 series is available in three package outlines, including horizontal SMD. Their small size and output voltage selection makes these regulators ideal for use in a variety of applications.

Standard Application



Pin-Out Information

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



SUGGESTED BOARD LAYOUT COMPONENT SIDE VIEW
Pkg Style 500

Ordering Information

PT78HT2	XX	Y
Output Voltage		Package Suffix
33	= 3.3 Volts	V = Vertical Mount
05	= 5.0 Volts	S = Surface Mount
53	= 5.25 Volts	H = Horizontal Mount
65	= 6.5 Volts	
08	= 8.0 Volts	

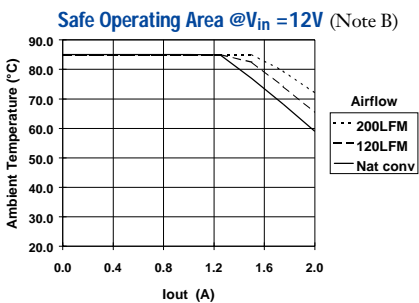
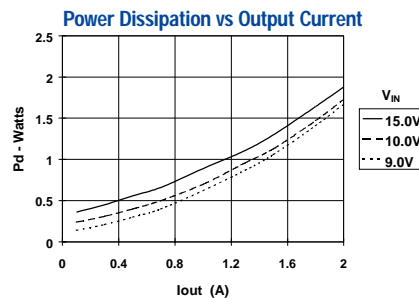
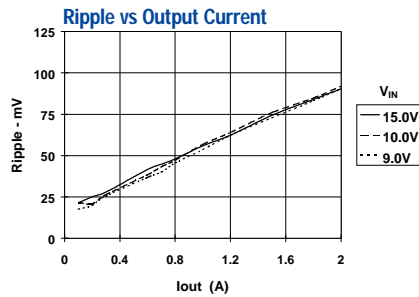
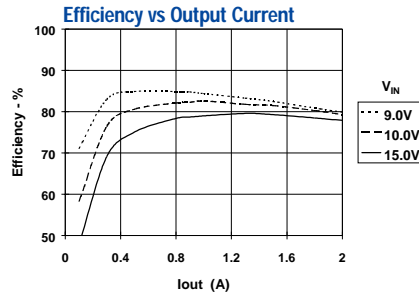
Specifications

Characteristics ($T_a = 25^\circ\text{C}$ unless noted)	Symbols	Conditions	PT78HT200 SERIES			Units
			Min	Typ	Max	
Output Current	I_o	Over V_{in} range	0.1 (2)	—	2.0	A
Short Circuit Current	I_{sc}	$V_{in} = V_{in\ min}$	—	6.0	—	Apk
Input Voltage Range	V_{in}	$0.1 \geq I_o \geq 2.0\text{A}$	$V_o = 3.3\text{V}$ 9 $V_o = 5.0\text{V}$ 9 $V_o = 6.5\text{V}$ 10.5 $V_o = 8.0\text{V}$ 12	—	15 28 28 28	V
Output Voltage Tolerance	ΔV_o	Over V_{in} range, $I_o = 2.0\text{A}$ $T_a = 0^\circ\text{C}$ to $+60^\circ\text{C}$	—	± 1.0	± 2.0	% V_o
Line Regulation	Reg_{line}	Over V_{in} range	—	± 0.4	± 0.8	% V_o
Load Regulation	Reg_{load}	$0.1 \leq I_o \leq 2.0\text{A}$	—	± 0.2	± 0.4	% V_o
V_o Ripple/Noise	V_n	$V_{in} = V_{in\ min}$, $I_o = 2.0\text{A}$	—	± 1	—	% V_o
Transient Response (with 100 μ F output cap)	t_{tr}	50% load change V_o over/undershoot	—	100 5.0	—	μ Sec % V_o
Efficiency	η	$V_{in} = 9\text{V}$, $I_o = 2.0\text{A}$ $V_{in} = 12\text{V}$, $I_o = 2.0\text{A}$ $V_{in} = 15\text{V}$, $I_o = 2.0\text{A}$	$V_o = 3.3\text{V}$ — $V_o = 5.0\text{V}$ — $V_o = 8.0\text{V}$ —	80 85 90	—	%
Switching Frequency	f_o	Over V_{in} and I_o ranges	$V_o \geq 5.0\text{V}$ 700 $V_o = 3.3\text{V}$ 950	750 1,000	800 1,050	kHz
Absolute Maximum Operating Temperature Range	T_a	Over V_{in} range	-40	—	+85 (3)	$^\circ\text{C}$
Thermal Resistance	θ_{ja}	Free Air Convection, (40-60LFM)	—	40	—	$^\circ\text{C}/\text{W}$
Storage Temperature	T_s	—	-40	—	+125	$^\circ\text{C}$
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	—	—	—	6.5	—	Grams

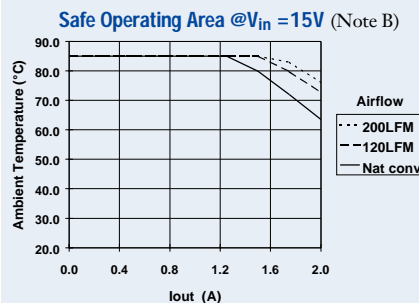
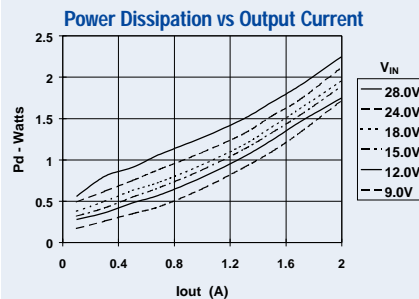
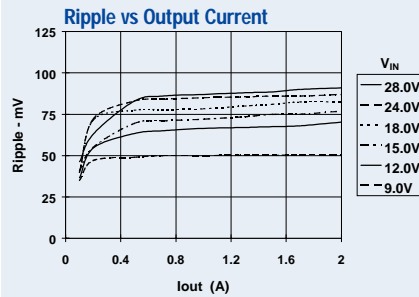
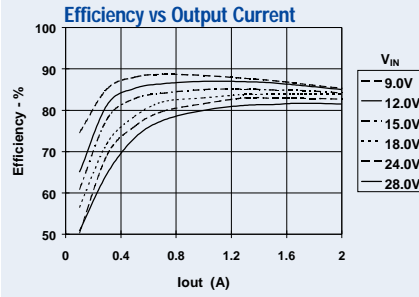
Notes: (1) The PT78HT200 Series requires a 100 μ F electrolytic or tantalum output capacitor for proper operation in all applications.
(2) ISR will operate down to no load with reduced specifications.
(3) See Safe Operating Area curves for derating

2 Amp Positive Step-Down
Integrated Switching Regulator

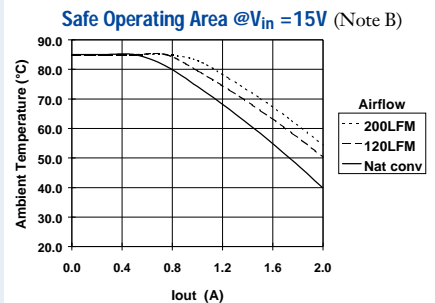
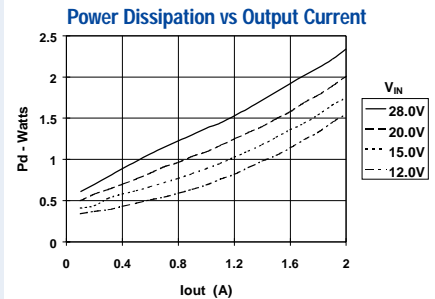
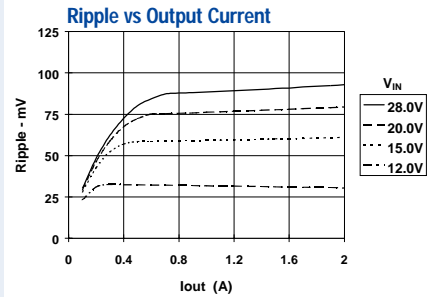
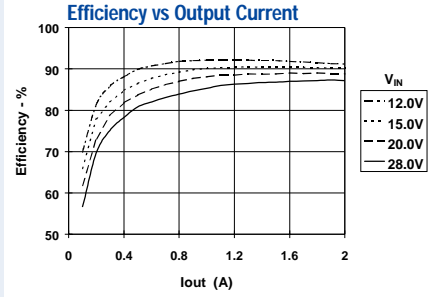
PT78HT233 3.3 VDC (See Note A)



PT78HT205 5.0 VDC (See Note A)



PT78HT208 8.0 VDC (See Note A)



Note A: All characteristic data has been developed from actual products tested at 25°C. This data is considered typical data for the ISR.

Note B: SOA curves represent operating conditions at which internal components are at or below manufacturer's maximum rated operating temperatures.

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