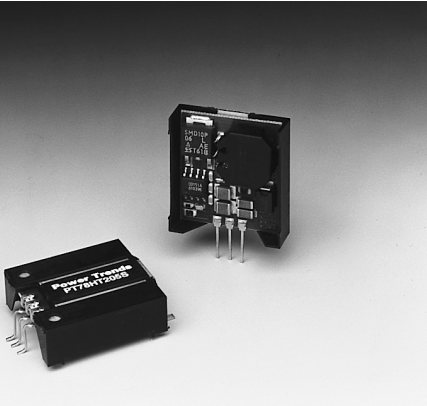




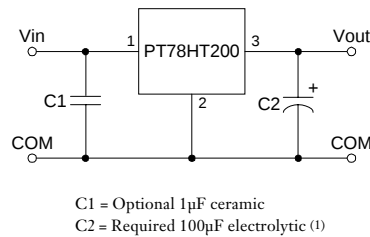
- High Efficiency: Up to 90%
- Wide Input Range
- Self-Contained Inductor
- Short-Circuit Protection
- Over-Temperature Protection
- Fast Transient Response

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.

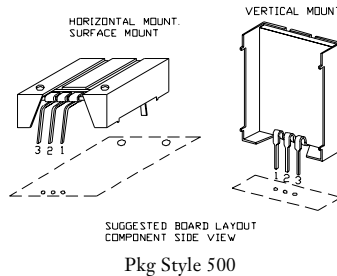
The PT78HT200 series is available in three package outlines, including horizontal SMD. Their small size and output voltage selection makes these regulators ideal for use in a variety of applications.

Standard Application



Pin-Out Information

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



Ordering Information

PT78HT2	XX	Y
Output Voltage		
33		
05		
53		
65		
08		
Package Suffix		
V		
S		
H		

33 = 3.3 Volts
05 = 5.0 Volts
53 = 5.25 Volts
65 = 6.5 Volts
08 = 8.0 Volts

V = Vertical Mount
S = Surface Mount
H = Horizontal Mount

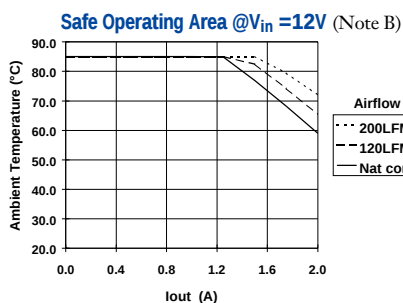
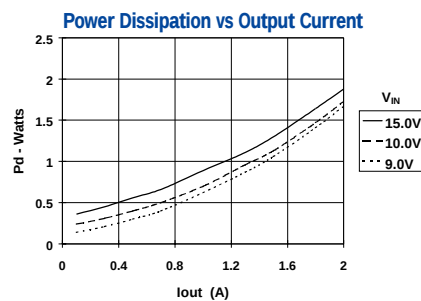
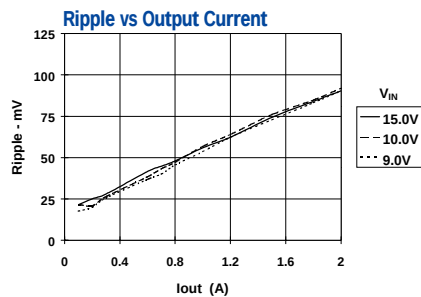
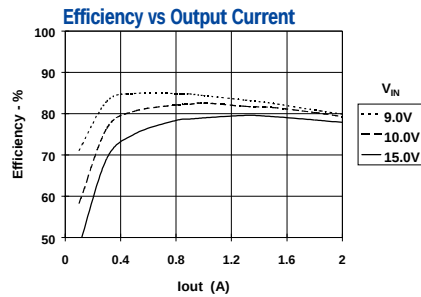
Specifications

Characteristics ($T_a = 25^\circ\text{C}$ unless noted)	Symbols	Conditions	PT78HT200 SERIES			
			Min	Typ	Max	Units
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}	$0.1 \geq I_o \geq 2.0\text{A}$ $V_o = 3.3\text{V}$ $V_o = 5.0\text{V}$ $V_o = 6.5\text{V}$ $V_o = 8.0\text{V}$	9 9 10.5 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 100µF output cap)	t_{tr}	50% load change V_o over/undershoot	—	100 5.0	—	µSec % 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 $V_o \geq 5.0\text{V}$ $V_o = 3.3\text{V}$	700 950	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

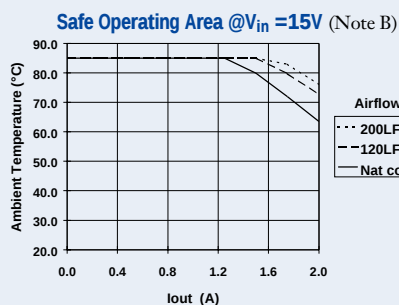
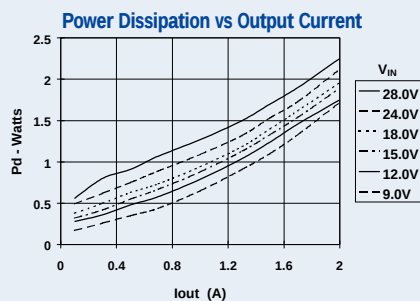
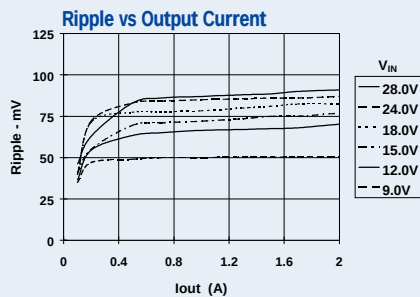
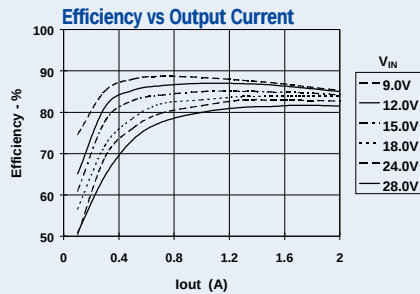
- Notes:** (1) The PT78HT200 Series requires a 100µF electrolytic or tantalum output capacitor for proper operation in all applications.
(2) ISR will operate down to no load with reduced specifications.
(3) See Safe Operating Area curves for derating

2 Amp Positive Step-Down
Integrated Switching Regulator

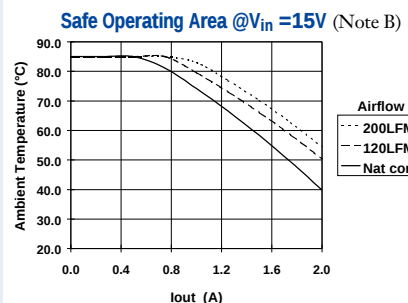
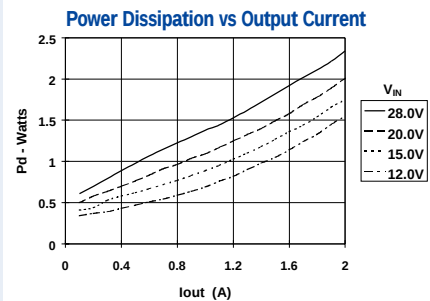
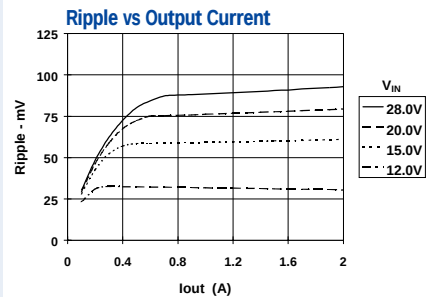
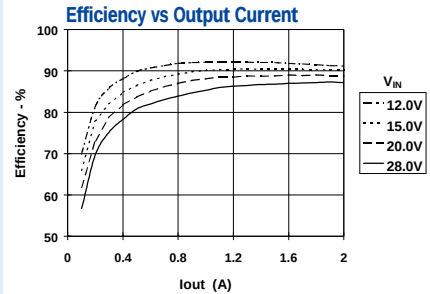
PT78HT233 3.3 VDC (See Note A)



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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