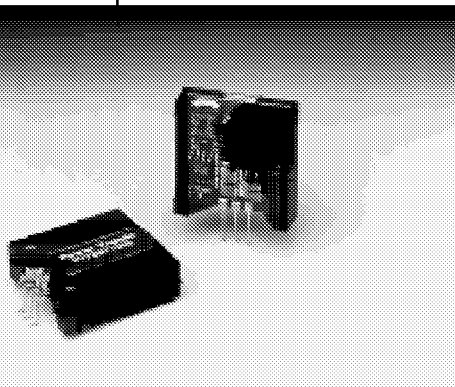


PT78ST100 Series

**1.5 AMP POSITIVE STEP-DOWN
 INTEGRATED SWITCHING REGULATOR**

Revised 7/15/98



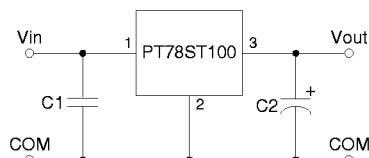
- * Very Small Footprint
- * High Efficiency > 85%
- * Self-Contained Inductor
- * Internal Short-Circuit Protection
- * Over-Temperature Protection
- * Fast Transient Response
- * Wide Input Range

3 terminal regulators. These ISRs have a maximum output current of 1.5 Amps and an output voltage that is laser trimmed to a variety of industry standard voltages.

These 78 series regulators have excellent line and load regulation with internal short-circuit and over-temperature protection, and are offered in a variety of standard output voltages. These ISRs are very flexible and may be used in a wide variety of applications.

This is the new generation of PT78ST100 Series wide input range

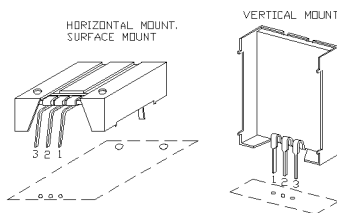
Standard Application



C1 = Optional 1 μ F ceramic
 C2 = Required 100 μ F electrolytic

Pin-Out Information

Pin	Function
1	V _{in}
2	GND
3	V _{out}



SUGGESTED BOARD LAYOUT
 COMPONENT SIDE VIEW

Pkg Style 500

Ordering Information

PT78ST1 **XX** **Y**

Output Voltage

- 33** = 3.3 Volts
- 36** = 3.6 Volts
- 05** = 5.0 Volts
- 51** = 5.1 Volts
- 53** = 5.25 Volts
- 06** = 6.0 Volts
- 65** = 6.5 Volts
- 07** = 7.0 Volts
- 08** = 8.0 Volts
- 09** = 9.0 Volts
- 10** = 10.0 Volts
- 12** = 12.0 Volts
- 14** = 13.9 Volts
- 15** = 15.0 Volts

Package Suffix

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

Specifications

Characteristics (T _a = 25°C unless noted)	Symbols	Conditions	PT78ST100 SERIES			Units
			Min	Typ	Max	
Output Current	I _o	Over V _{in} range	0.1*	—	1.5	A
Short Circuit Current	I _{sc}	V _{in} = V _{in min}	—	3.5	—	Apk
Input Voltage Range	V _{in}	0.1 ≤ I _o ≤ 1.5A V _o = 3.3V V _o = 5V V _o = 12V	9 9 16	— — —	26 38 38	V V V
Output Voltage Tolerance	ΔV _o	Over V _{in} range, I _o = 1.5A T _a = 0°C to +60°C	—	±1.0	±2.0	%V _o
Line Regulation	Reg _{line}	Over V _{in} range	—	±0.2	±0.4	%V _o
Load Regulation	Reg _{load}	0.1 ≤ I _o ≤ 1.5A	—	±0.1	±0.2	%V _o
V _o Ripple/Noise	V _n	V _{in} = 9V, I _o = 1.5A V _{in} = 16V, I _o = 1.5A V _o = 5V V _o = 12V	— —	65 90	— —	mV _{pp} mV _{pp}
Transient Response (with 100 μ F output cap)	t _{tr}	50% load change V _o over/undershoot	— —	100 5	— —	μ Sec %V _o
Efficiency	η	V _{in} = 10V, I _o = 1A V _{in} = 10V, I _o = 1A V _{in} = 17V, I _o = 1A V _o = 3.3V V _o = 5V V _o = 12V	— — —	80 85 90	— — —	% % %
Switching Frequency	f _o	Over V _{in} range, I _o = 1.5A	600	650	700	kHz
Absolute Maximum Operating Temperature Range	T _a	—	-40	—	+85	°C
Recommended Operating Temperature Range	T _a	Free Air Convection, (40-60LFM) At V _{in} = 24V, I _o = 1.0A	-40	—	+80**	°C
Thermal Resistance	θ_{ja}	Free Air Convection, (40-60LFM)	—	45	—	°C/W
Storage Temperature	T _s	—	-40	—	+125	°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

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

**See Thermal Derating chart.

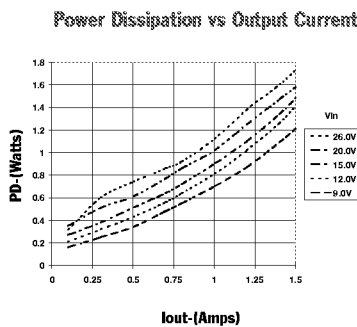
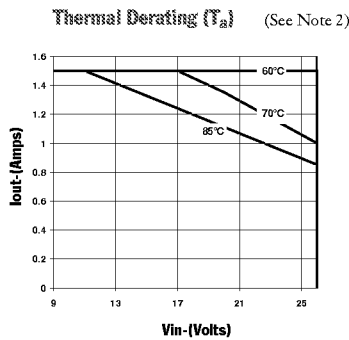
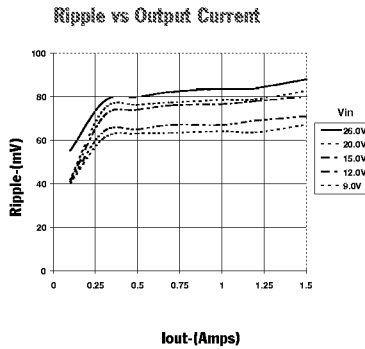
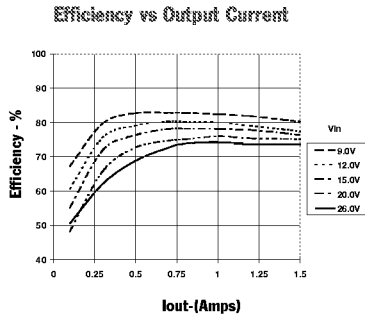
Note: The PT78ST100 Series requires a 100 μ F electrolytic or tantalum output capacitor for proper operation in all applications.

CHARACTERISTIC DATA

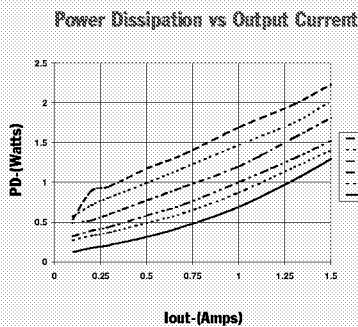
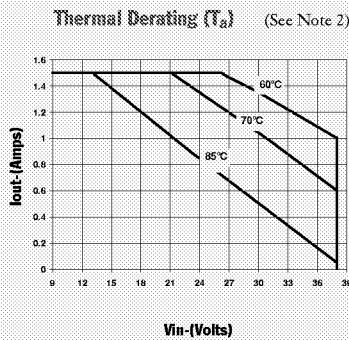
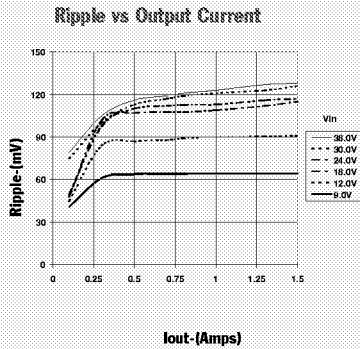
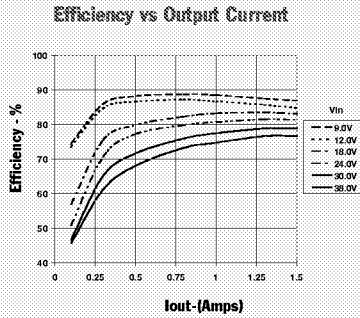
PT78ST100 Series

Wide Input Range Products
DATA SHEETS

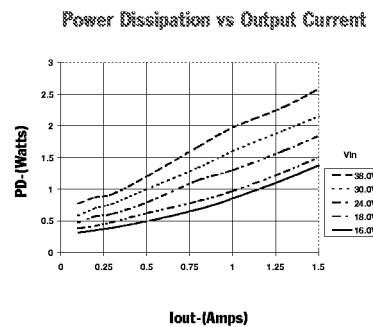
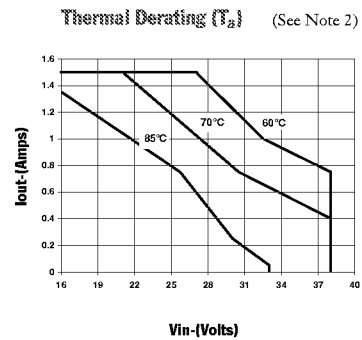
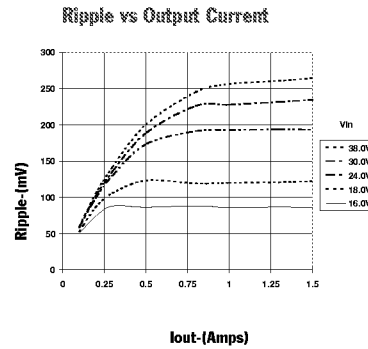
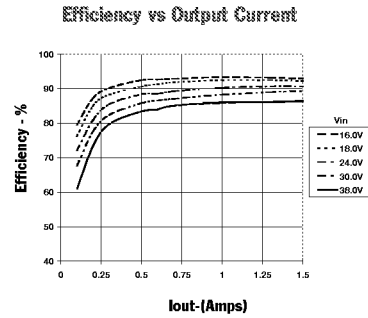
PT78ST133, 3.3 VDC (See Note 1)



PT78ST105, 5.0 VDC (See Note 1)



PT78ST112, 12.0 VDC (See Note 1)



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: Thermal derating graphs are developed in free air convection cooling of 40-60 LFM. (See Thermal Application Notes.)