

78ST212 Series

**12V 2 AMP POSITIVE STEP-DOWN
INTEGRATED SWITCHING REGULATOR**

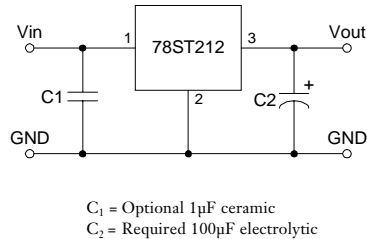
Revised 6/30/98



- High Efficiency > 87%
- Wide Input Range
- Aluminum Heatsink for Applications with Airflow
- Self-Contained Inductor
- Short Circuit Protection
- Over-Temperature Protection

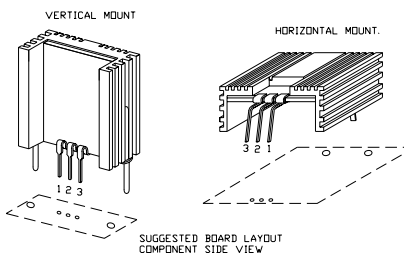
The 78ST212 is a series of wide input voltage, 3-terminal Integrated Switching Regulators (ISRs). With a surge capability of 3A and an output voltage that is laser trimmed, it is ideal for inductive load applications such as disk drive motors.

Standard Application

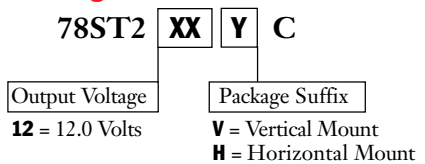


Pin-Out Information

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



Ordering Information



(For dimensions and PC board layout see Package Style 600.)

Specifications

Characteristics (T _a = 25°C unless noted)	Symbols	Conditions	78ST212 SERIES			Units
			Min	Typ	Max	
Output Current	I _o	Over V _{in} range With forced air cooling	0.1*	—	2.0	A
Input Voltage Range	V _{in}	0.1 ≤ I _o ≤ 2.0A	14.5	—	28	V
Output Voltage Tolerance	ΔV _o	Over V _{in} range, I _o = 2.0A T _a = 0°C to +55°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 ≤ I _o ≤ 2.0A	—	±0.2	±0.4	%V _o
V _o Ripple/Noise	V _n	V _{in} = 17V, I _o = 2.0A, V _o = 12V	—	1.0	—	%V _o
Transient Response (with 100 μ F output cap)	t _{tr}	50% load change V _o over/undershoot	—	100 3.0	—	μ Sec %V _o
Efficiency	η	V _{in} = 17V, I _o = 2.0A	—	87	—	%
Switching Frequency	f _o	Over V _{in} and I _o ranges	0.95	1.0	1.05	MHz
Absolute Maximum Operating Temperature Range	T _a	—	-40	—	+65	°C
Recommended Operating Temperature Range	T _a	Free Air Convection, (40-60LFM) at V _{in} = 24V, I _o = 2A	-40	—	+55**	°C
Thermal Resistance	θ_{ja}	Free Air Convection, (40-60LFM)	—	35	—	°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	—	10	—	G's
Weight	—	—	—	11	—	Grams

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

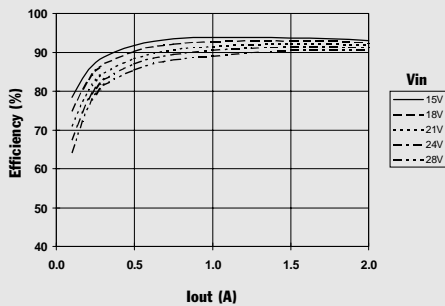
**See Thermal Derating chart.

Note: The 78ST212 Series requires a 100 μ F electrolytic or tantalum output capacitor for proper operation in all applications.

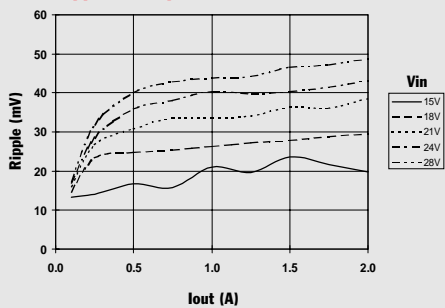
CHARACTERISTIC DATA

78ST212_ 12.0 VDC (See Note 1)

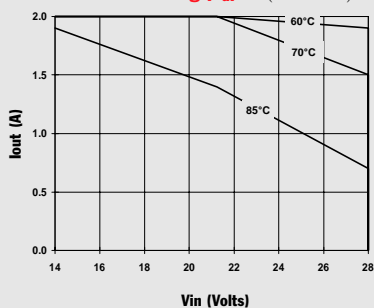
Efficiency vs Output Current



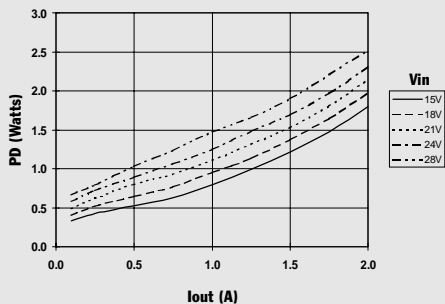
Ripple vs Output Current



Thermal Derating (T_a) (See Note 2)



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

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