PT78NR200 Series

10-12W Plus to Minus Voltage Integrated Switching Regulator

Power Trends Products
from Texas Instruments
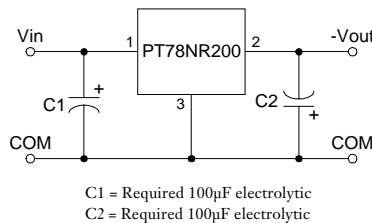
SLTS074A

(Revised 6/30/2000)

- Negative output from positive input
- Wide Input Range
- Self-Contained Inductor
- Short Circuit Protection
- Over-Temperature Protection
- Fast Transient Response

The PT78NR200 series creates negative output voltage from a positive input voltage greater than 9V. These easy-to-use, 3-terminal, Integrated Switching Regulators (ISRs) have maximum output power of 10 to 12 watts and a negative output voltage that is laser trimmed. They also have excellent line and load regulation.
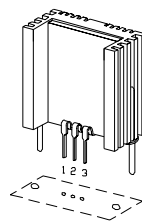
The PT78NR200 requires 100 LFM of airflow at its maximum output current.

Standard Application

Vin → 1 PT78NR200 2 → -Vout

C1 + C2 +

COM → 3 → COM

C1 = Required 100μF electrolytic
C2 = Required 100μF electrolytic

Pin-Out Information

Pin	Function
1	$+V_{in}$
2	$-V_{out}$
3	GND

SUGGESTED BOARD LAYOUT
COMPONENT SIDE VIEW
Pkg Style 600

Ordering Information

PT78NR2 **XX** **Y**

Output Voltage

52 = -5.2 Volts
06 = -6.0 Volts
12 = -12.0 Volts
15 = -15.0 Volts

Package Suffix

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

(For dimensions and PC board layout, see Package Styles 600 and 610.)

Specifications

Characteristics (T$_a$= 25°C unless noted)	Symbols	Conditions		Min	Typ	Max	Units
Output Current	I_o	Over V_{in} range	V_o= -5.2V	0.1*	—	2.0	A
			V_o= -12.0V	0.1*	—	1.0	A
Short Circuit Current	I_{sc}	V_{in}=10V		—	$4×I_{max}$	—	Apk
Inrush Current	I_{ir}	V_{in}=10V		—	4	—	A
	t_{ir}	On start-up		—	0.5	—	mSec
Input Voltage Range	V_{in}	$0.1 ≤ I_o ≤ I_{max}$		9	—	15	V
Output Voltage Tolerance	$ΔV_o$	Over V_{in} range T$_a$= 0°C to +70°C		—	±1.0	±3.0	%V$_o$
Line Regulation	Reg$_{line}$	Over V_{in} range		—	±0.5	±1.0	%V$_o$
Load Regulation	Reg$_{load}$	$0.3 ≤ I_o ≤ I_{max}$		—	±0.5	±1.0	%V$_o$
V$_o$ Ripple/Noise	V_n	V_{in}=10V, I_o=I_{max}		—	±2	—	%V$_o$
Transient Response (with 100μF output cap)	t_{tr}	50% load change V$_o$ over/undershoot		—	100	250	μSec
				—	5.0	—	%V$_o$
Efficiency	η	V_{in}=9V, I_o=0.5×I_{max}, V_o=-12V		—	78	—	%
Switching Frequency	f_o	Over V_{in} and I_o ranges		600	650	700	kHz
Absolute Maximum Operating Temperature Range	T_a	100 LFM airflow Over V_{in} and I_o Ranges		0	—	+85	°C
Recommended Operating Temperature Range	T_a	100 LFM airflow Over V_{in} and I_o Ranges		0	—	+60**	°C
Thermal Resistance	$θ_{ja}$	100 LFM airflow		—	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 PT78NR200 series requires a 100μF electrolytic or tantalum output capacitor for proper operation in all applications.*

For technical support and more information, see inside back cover or visit www.ti.com/powertrends

TEXAS INSTRUMENTS

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