

# PT42/4300 Series

3-7 Watt 48V-Input  
Isolated DC/DC Converter

SLTS023B

(Revised 1/3/2002)

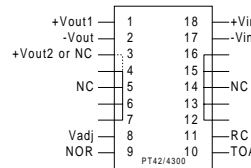
- Wide Input Voltage Range: 38V to 72V
- 83% Efficiency
- 1,500 VDC Isolation
- 18 Pin DIP Package
- 3.5 Million Hour MTBF
- Meets FCC/EN55022 Class A
- UL and CSA approved
- No External Components Required
- Adjustable Output Voltage

The PT4200 series of isolated DC/DC converters advance the state-of-the-art for board-mounted converters by employing

high switching frequencies, thick-film technology and a high degree of silicon integration. The high reliability and very low package height makes these converters ideal for Telecom and Datacom applications requiring input-to-output isolation with board spacing down to 0.6".

The PT4200 series is offered in a unique molded through-hole or SMD-DIP package with single output voltages of 2V, 3.3V, 5V, and 12V, dual outputs of  $\pm 5V$ ,  $+5V/+3.3V$ , and  $\pm 12V$ .

## Package (Top View)



## Specifications

Characteristics (T <sub>a</sub> = 25°C unless noted)	Symbols	Conditions	PT42/4300 SERIES			
			Min	Typ	Max	Units
Output Current	I <sub>o</sub>	Over V <sub>in</sub> range V <sub>o</sub> = 2V, 3.3V V <sub>o</sub> = 5V V <sub>o</sub> = 12V	0 0 0	— — —	1.5 1.2 0.6	A A A
Current Limit	I <sub>cl</sub>	V <sub>in</sub> = 48V V <sub>o</sub> = 2V V <sub>o</sub> = 3.3V V <sub>o</sub> = 5V V <sub>o</sub> = 12V	2.0 1.7 1.4 0.7	— — — —	3.3 3.3 2.4 1.2	A A A A
On/Off Standby Current	I <sub>in standby</sub>	V <sub>in</sub> = 48V, Pin 11 = -V <sub>in</sub>	—	0.5	—	mA
Short Circuit Current	I <sub>sc</sub>	V <sub>in</sub> = 48V V <sub>o</sub> = 2V V <sub>o</sub> = 3.3V V <sub>o</sub> = 5V V <sub>o</sub> = 12V	— — — —	2.8 2.4 1.9 1.2	— — — —	A A A A
Inrush Current	I <sub>ir</sub> t <sub>ir</sub>	V <sub>in</sub> = 48V @ max I <sub>o</sub> On start-up	— —	0.6 1.0	1.0 5.0	A mSec
Input Voltage Range	V <sub>in</sub>	Over I <sub>o</sub> Range	38 (1)	48	72	V
Output Voltage Tolerance	ΔV <sub>o</sub>	Over I <sub>o</sub> Range	—	±4	—	%V <sub>o</sub>
Idling Voltage	V <sub>o</sub>	I <sub>o</sub> = 0A V <sub>o</sub> = 2V V <sub>o</sub> = 3.3V V <sub>o</sub> = 5V V <sub>o</sub> = 12V	— — — —	2.7 3.65 5.6 14.3	3.0 4.0 6.0 17	V V V V
Ripple Rejection	RR	Over V <sub>in</sub> range @ 120 Hz	—	60	—	dB
Line Regulation	Reg <sub>line</sub>	Over V <sub>in</sub> range @ max I <sub>o</sub>	—	±0.5	—	%V <sub>o</sub>
Load Regulation	Reg <sub>load</sub>	10% to 100% of I <sub>o</sub> max	—	±3	—	%V <sub>o</sub>
V <sub>o</sub> Ripple/Noise	V <sub>n</sub>	V <sub>in</sub> = 48V, I <sub>o</sub> =I <sub>o</sub> max	—	30	70	mV <sub>pp</sub>
Transient Response	t <sub>tr</sub>	50% load change V <sub>o</sub> over/undershoot	— —	100 3.0	300 5.0	μSec %V <sub>o</sub>
Efficiency	η	V <sub>in</sub> =48V, I <sub>o</sub> =1.5A, V <sub>o</sub> =2V V <sub>in</sub> =48V, I <sub>o</sub> =1.5A, V <sub>o</sub> =3.3V V <sub>in</sub> =48V, I <sub>o</sub> =1.2A, V <sub>o</sub> =5V V <sub>in</sub> =48V, I <sub>o</sub> =0.6A, V <sub>o</sub> =12V	— — — —	73 79 80 83	— — — —	% % % %
Switching Frequency	f <sub>o</sub>	Over V <sub>in</sub> and I <sub>o</sub>	—	485	—	kHz
Operating Temperature	T <sub>a</sub>	V <sub>in</sub> = 48V @ max I <sub>o</sub> Free air convection, (40-60LFM)	-40	—	+85	°C
Pin Temperature	T <sub>p</sub>	@ Pin1	—	—	95	°C
Storage Temperature	T <sub>s</sub>	—	-55	—	+125	°C
Mechanical Shock	—	Per Mil-STD-202F, Method 213B, 6mS half-sine, mounted to a PCB	—	50	—	G's
Mechanical Vibration	—	Per Mil-STD-202F, Method 204D, 10-500Hz, mounted to a PCB	—	10	—	G's
Weight	—	—	—	20	—	grams
Isolation	—	—	1500	—	—	VDC
Flammability	—	Materials meet UL 94V-0				

**Notes:** (1) The minimum input voltage is adjustable. See the specific application note on the PT4200/4205/4300 Series.

## Pin-Out Information

Pin	Function
1	V <sub>out1</sub>
2	V <sub>out</sub> return
3	V <sub>out2</sub> or N/C
4	Do not connect
5	Do not connect
6	Do not connect
7	Do not connect
8*	V <sub>adj</sub>
9*	Nominal output voltage resistor
10	Turn-on/off input voltage adjust
11	Remote on/off
12	Do not connect
13	Do not connect
14	Do not connect
15	Do not connect
16	Do not connect
17	-V <sub>in</sub>
18	+V <sub>in</sub>

\* Please note that when the V<sub>out</sub> adjust is not used, pin 8 must be connected to pin 9.

## Ordering Information

### Through-Hole

PT4201A = 2V/1.5A  
PT4202A = 3.3V/1.5A  
PT4203A = 5V/1.2A  
PT4204A = 12V/0.6A  
PT4301A =  $\pm 5V/1A$   
PT4302A =  $\pm 5.2V/1A$ ,  
 $+3.3V/1A$   
PT4303A =  $\pm 12V/0.25A$

### Surface Mount

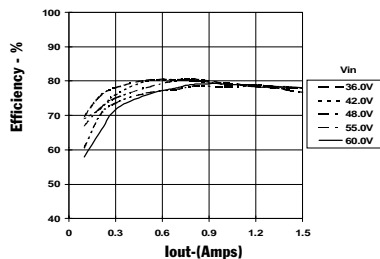
PT4201C = 2V/1.5A  
PT4202C = 3.3V/1.5A  
PT4203C = 5V/1.2A  
PT4204C = 12V/0.6A  
PT4301C =  $\pm 5V/1A$   
PT4302C =  $\pm 5.2V/1A$ ,  
 $+3.3V/1A$   
PT4303C =  $\pm 12V/0.25A$

(For dimensions and PC board layout, see Package Style 900.)

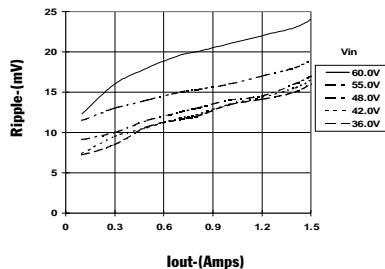
3-7 Watt 48V-Input  
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### PT4202 3.3V (See Note A)

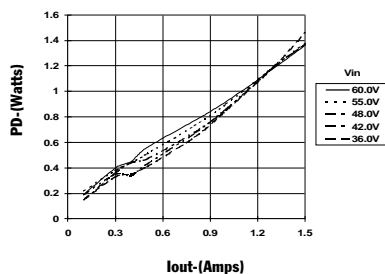
#### Efficiency vs Output Current



#### Ripple vs Output Current

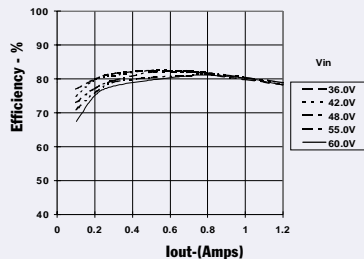


#### Power Dissipation vs Output Current

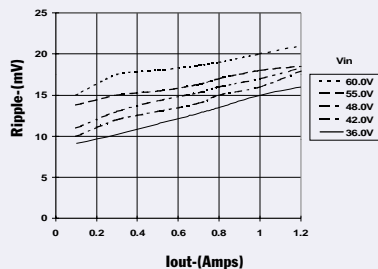


### PT4203 5.0V (See Note A)

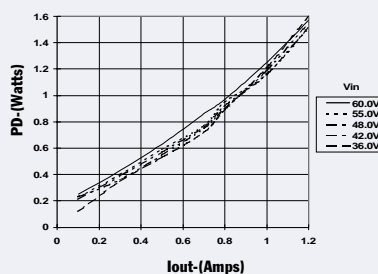
#### Efficiency vs Output Current



#### Ripple vs Output Current

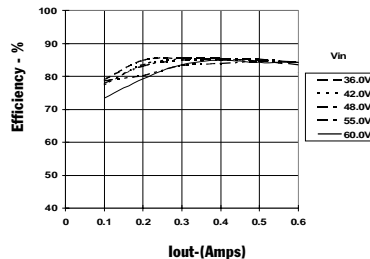


#### Power Dissipation vs Output Current

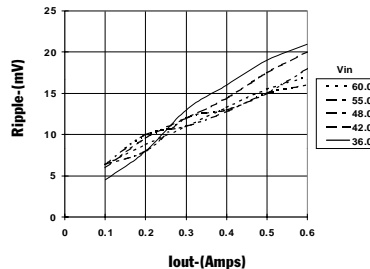


### PT4204 12.0V (See Note A)

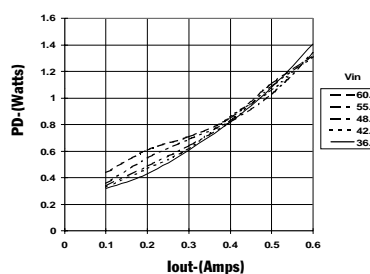
#### Efficiency vs Output Current



#### Ripple vs Output Current



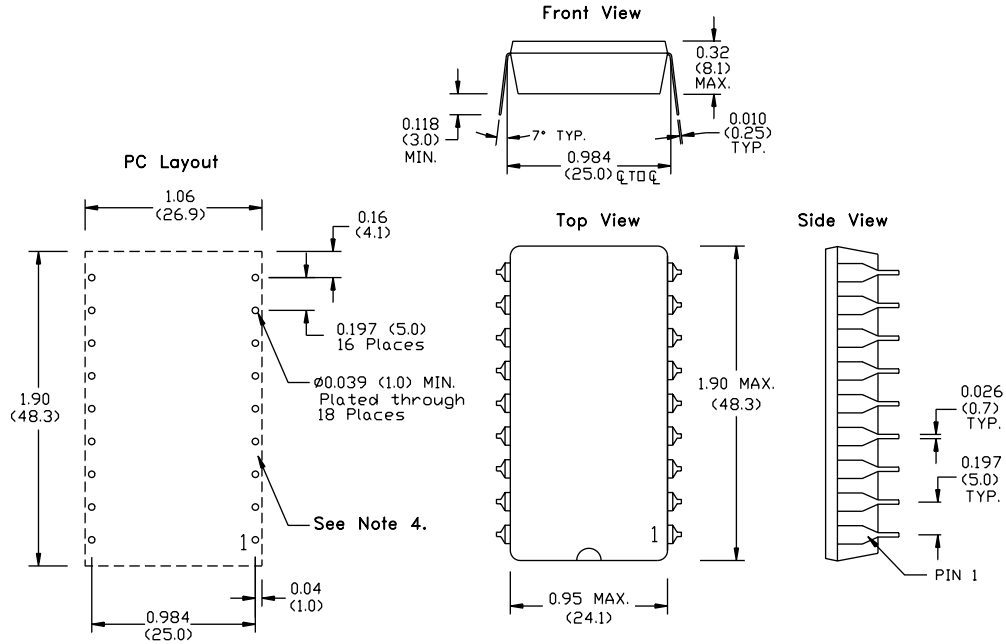
#### Power Dissipation vs Output Current



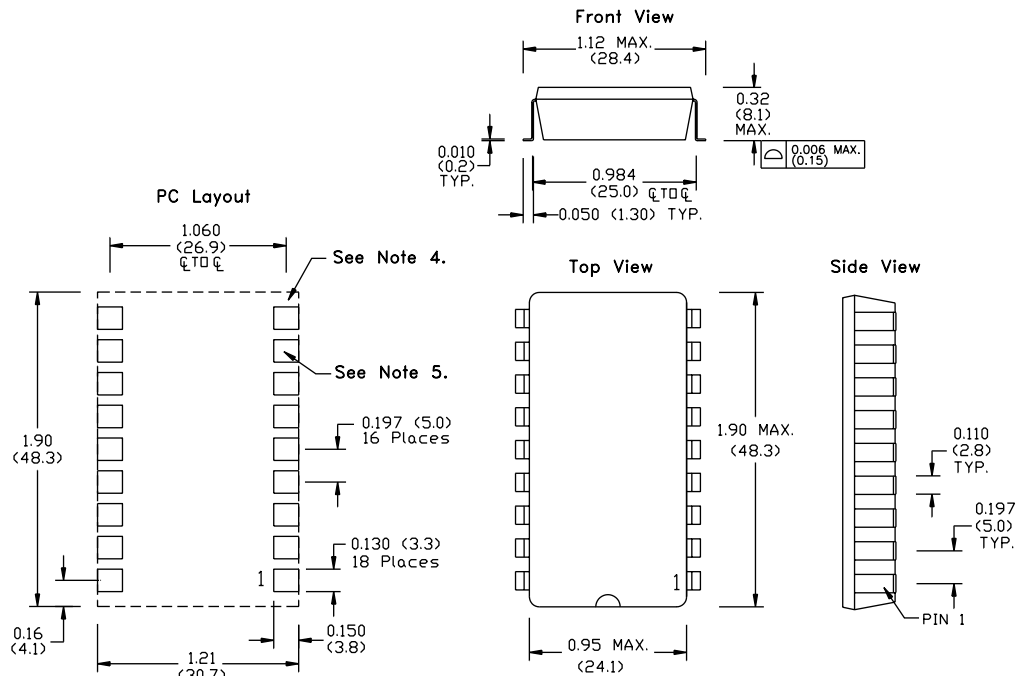
Note A: All data listed in the above graphs, except for derating data, has been developed from actual products tested at 25°C. This data is considered typical data for the DC-DC Converter.

## PACKAGE INFORMATION AND DIMENSIONS

### Horizontal Through-Hole Mount (Suffix A)



### Surface Mount (Suffix C)



#### Notes: (Rev. A)

- 1: All dimensions are in inches (mm).
- 2: 2 place decimals are  $\pm 0.030$  ( $\pm 0.8$ mm).
- 3: 3 place decimals are  $\pm 0.010$  ( $\pm 0.3$ mm).
- 4: Recommended mechanical keep out area.
- 5: Power pin connections should utilize two or more vias per input, ground and output pin.

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