

**PT3100 Series****48V****15 WATT 48V TO 5V/12V/15V  
ISOLATED DC-DC CONVERTER****Revised 8/13/98**

- Power Density 15 Watts/in<sup>3</sup>
- Wide Input Voltage Range 36V to 75V
- 80% Efficiency
- 500 VDC Isolation
- Industry's Smallest Footprint
- Fast Transient Response
- No External Components Required

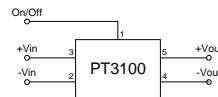
Power Trends' PT3101A (5V),  
PT3102A (12V) and PT3103A (15V)

Isolated DC-DC Converters advance the state-of-the-art for board-mounted converters by employing high switching frequencies greater than 650 KHz and planar magnetics and surface-mount construction. They feature the industry's smallest footprint, a power density of 15 Watts/in<sup>3</sup>, and operate at 80% efficiency. They are designed for Telecom, Industrial, Computer, Medical, and other distributed power applications requiring input-to-output isolation.

**Specifications**

Characteristics (T <sub>0</sub> =25°C unless noted)	Symbols	Conditions	PT3100 SERIES			
			Min	Typ	Max	Units
Output Current	I <sub>o</sub>	Over V <sub>in</sub> range	V <sub>o</sub> = 5V	0	—	3.0 A
			V <sub>o</sub> = 12V	0	—	1.25 A
			V <sub>o</sub> = 15V	0	—	1.0 A
Current Limit	I <sub>cl</sub>	V <sub>in</sub> = 36V	V <sub>o</sub> = 5V	—	4.00	— A
			V <sub>o</sub> = 12V	—	1.75	— A
			V <sub>o</sub> = 15V	—	1.4	— A
On/Off Standby Current	I <sub>in</sub> standby	V <sub>in</sub> = 48V, Pin 1 = -V <sub>in</sub>	—	7	10	mA
Short Circuit Current	I <sub>sc</sub>	V <sub>in</sub> = 48V	V <sub>o</sub> = 5V	—	5.5	— A
			V <sub>o</sub> = 12V	—	3.5	— A
			V <sub>o</sub> = 15V	—	2.0	— 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	A
			—	1.0	5.0	mA Sec
Input Voltage Range	V <sub>in</sub>	I <sub>o</sub> = 0.1 to max I <sub>o</sub>	36.0	48.0	75.0	V
Output Voltage Tolerance	ΔV <sub>o</sub>	Over V <sub>in</sub> Range T <sub>A</sub> = -20°C to 70°C	—	±1.0	±2.0	%V <sub>o</sub>
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>	—	±0.2	±1.0	%V <sub>o</sub>
Load Regulation	Reg <sub>load</sub>	10% to 100% of I <sub>o</sub> max	—	±0.4	±1.0	%V <sub>o</sub>
V <sub>o</sub> Ripple/Noise	V <sub>n</sub>	V <sub>in</sub> =48V, I <sub>o</sub> =3.0A, V <sub>o</sub> =5V V <sub>in</sub> =48V, I <sub>o</sub> =1.25A, V <sub>o</sub> =12V V <sub>in</sub> =48V, I <sub>o</sub> =1.0A, V <sub>o</sub> =15V	—	75 120 100	100 150 200	mV <sub>pp</sub> mV <sub>pp</sub> mV <sub>pp</sub>
Transient Response	t <sub>tr</sub>	50% load change V <sub>o</sub> over/undershoot	—	100 3.0	200 5.0	μSec %V <sub>o</sub>
Efficiency	η	V <sub>in</sub> =48V, I <sub>o</sub> =3.0A, V <sub>o</sub> =5V V <sub>in</sub> =48V, I <sub>o</sub> =1.25A, V <sub>o</sub> =12V V <sub>in</sub> =48V, I <sub>o</sub> =1A, V <sub>o</sub> =15V	—	79 80 80	—	%
Switching Frequency	f <sub>o</sub>	Over V <sub>in</sub> and I <sub>o</sub> , V <sub>o</sub> =5V V <sub>o</sub> =12V/15V	800 600	850 650	900 700	kHz kHz
Recommended Operating Temperature Range	T <sub>a</sub>	V <sub>in</sub> = 48V @ max I <sub>o</sub> Free air convection, (40-60LFM)	-20	—	+70*	°C
Thermal Resistance	θ <sub>ia</sub>	Free Air Convection, (40-60LFM)	—	16	—	°C/W
Case Temperature	T <sub>c</sub>	@ Thermal shutdown	—	—	100	°C
Storage Temperature	T <sub>s</sub>	—	-40	—	110	°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, Soldered in a PCB	—	10	—	G's
Weight	—	—	—	28	—	grams
Isolation Capacitance Resistance	—	—	500 — 10	— 1100 —	— — —	V pF MΩ
Flammability	—	Materials meet UL 94V-0	—	—	—	—
Remote On/Off	On Off	Open or 2.5 to 7.0 VDC above -V <sub>in</sub> Short or 0 to 0.8 VDC above -V <sub>in</sub>	—	—	—	—

\* See Thermal Derating Curves

**Standard Application****Pin-Out Information**

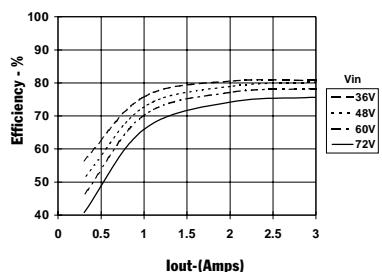
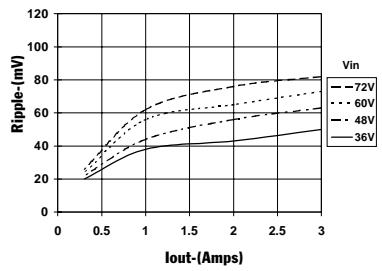
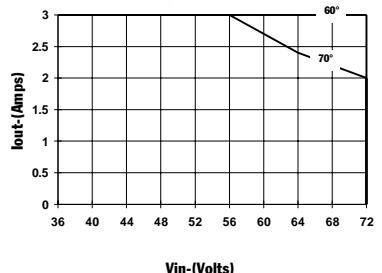
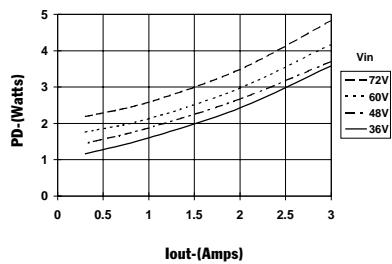
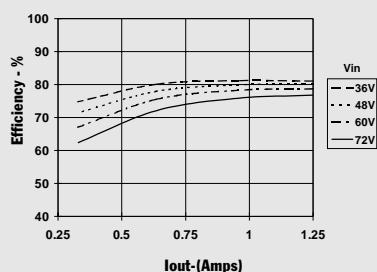
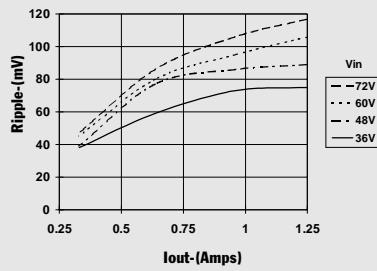
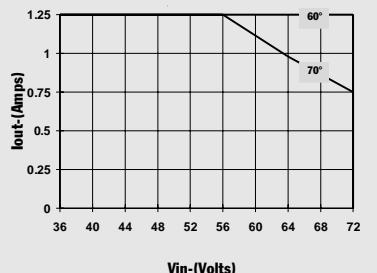
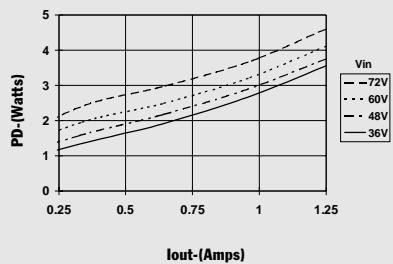
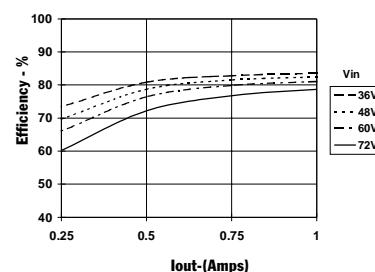
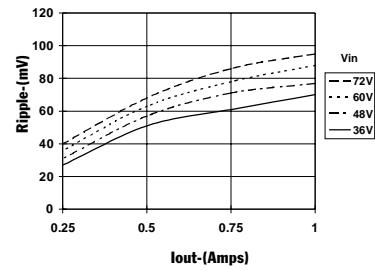
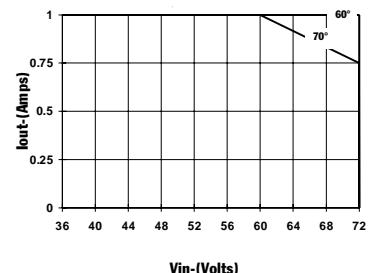
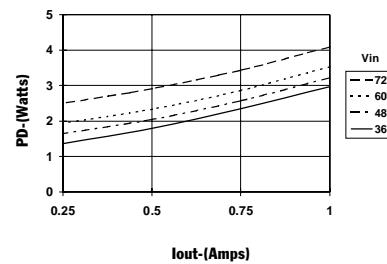
Pin	Function
1	Remote ON/OFF
2	-V <sub>in</sub>
3	+V <sub>in</sub>
4	-V <sub>out</sub>
5	+V <sub>out</sub>
6	Do not connect

**Ordering Information***Through-Hole*

**PT3101A** = 5 Volts  
**PT3102A** = 12 Volts  
**PT3103A** = 15 Volts

*Surface Mount*

**PT3101C** = 5 Volts  
**PT3102C** = 12 Volts  
**PT3103C** = 15 Volts  
*(For dimensions and PC board layout, see Package Style 700.)*

**PT3100 Series 48V****CHARACTERISTIC DATA****PT3101, 5.0 VDC** (See Note 1)**Efficiency vs Output Current****Ripple vs Output Current****Thermal Derating ( $T_a$ )** (See Note 2)**Power Dissipation vs Output Current****PT3102, 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****PT3103, 15.0 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 DC-DC Converter.

**Note 2:** Thermal derating graphs are developed in free air convection cooling of 40-60 LFM.

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