

PT3100 Series 24V

**15 WATT 24V TO 5V/12V/15V
ISOLATED DC-DC CONVERTER**

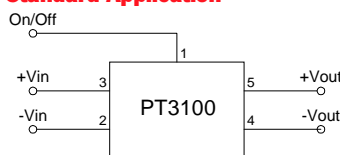
Revised 5/15/98

- Power Density 15 Watts/in³
- Wide Input Voltage Range 18V to 40V
- 81% Efficiency
- 500 VDC Isolation
- Small Footprint
- No External Components Required

Power Trends' PT3104A (5V), PT3105A (12V) and PT3106A (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/in³, and operate at 80% efficiency. They are designed for Telecom, Industrial, Computer, Medical, and other distributed power applications requiring input-to-output isolation.

Standard Application



Specifications

Characteristics (T _a =25°C unless noted)	Symbols	Conditions	PT3100 SERIES			Units
			Min	Typ	Max	
Output Current	I _o	Over V _{in} range, V _o = 5V V _o = 12V V _o = 15V	0 0 0	— — —	3.0 1.25 1.0	A A A
Current Limit	I _{cl}	V _{in} = 18V, V _o = 5V V _o = 12V V _o = 15V	— — —	4.0 1.75 1.4	— — —	A A A
On/Off Standby Current	I _{in standby}	V _{in} = 24V, Pin 1 = -V _{in}	—	7	10	mA
Short Circuit Current	I _{sc}	V _{in} = 24V, V _o = 5V V _o = 12V V _o = 15V	— — —	6.25 2.5 2.0	— — —	A A A
Inrush Current	I _{ir} t _{ir}	V _{in} = 24V @ max I _o On start-up	— —	1.0 1.0	2.0 5.0	A mSec
Input Voltage Range	V _{in}	I _o = 0.1 to max I _o	18.0	24.0	40.0	V
Output Voltage Tolerance	ΔV _o	Over V _{in} Range T _A = -20°C to +70°C	—	±1.0	±2.0	%V _o
Ripple Rejection	RR	Over V _{in} range @ 120 Hz	—	60	—	dB
Line Regulation	Reg _{line}	Over V _{in} range @ max I _o	—	±0.2	±1.0	%V _o
Load Regulation	Reg _{load}	10% to 100% of I _o max	—	±0.4	±1.0	%V _o
V _o Ripple/Noise	V _n	V _{in} =24V, I _o =3.0A, V _o =5V V _{in} =24V, I _o =1.25A, V _o =12V V _{in} =24V, I _o =1.25A, V _o =15V	— — —	75 75 100	100 150 200	mV _{pp} mV _{pp} mV _{pp}
Transient Response	t _{tr}	50% load change V _o over/undershoot	— —	125 3.0	200 5.0	μSec %V _o
Efficiency	η	V _{in} =24V, I _o =3.0A, V _o =5V V _{in} =24V, I _o =1.25A, V _o =12V V _{in} =24V, I _o =1A, V _o =15V	— — —	80 80 81	— — —	% % %
Switching Frequency	f _o	Over V _{in} and I _o , V _o =5V V _o =12V/15V	800 600	850 650	900 700	kHz kHz
Recommended Operating Temperature Range	T _a	V _{in} = 24V @ max I _o Free air convection, (40-60LFM)	-20	—	+70*	°C
Thermal Resistance	θ _{ja}	Free Air Convection, (40-60LFM)	—	14	—	°C/W
Case Temperature	T _c	@ Thermal shutdown	—	—	100	°C
Storage Temperature	T _s		-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	—		500	—	—	V
Capacitance	—		—	1100	—	pF
Resistance	—		10	—	—	MΩ
Flammability	—	Materials meet UL 94V-0	—	—	—	—
Remote On/Off	On Off	Open or 2.5 to 7.0 VDC above -V _{in} Short or 0 to 0.8 VDC above -V _{in}	—	—	—	—

* See Thermal Derating Curves

Pin-Out Information

Pin	Function
1	Remote ON/OFF
2	-V _{in}
3	+V _{in}
4	-V _{out}
5	+V _{out}
6	Do not connect

Ordering Information

Through-Hole

PT3104A = 5 Volts
PT3105A = 12 Volts
PT3106A = 15 Volts

Surface Mount

PT3104C = 5 Volts
PT3105C = 12 Volts
PT3106C = 15 Volts

(For dimensions and PC board layout, see Package Style 700.)

PT3100 Series

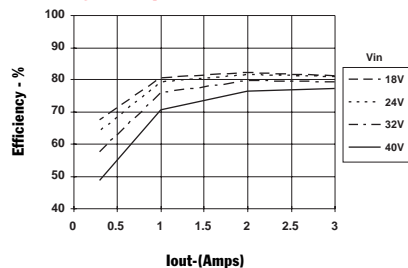
24V

CHARACTERISTIC DATA

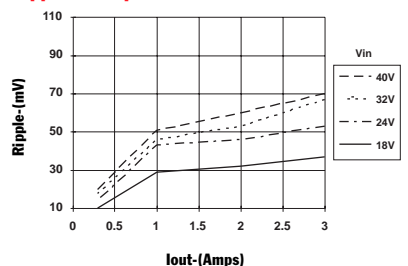
PT3104, 5.0 VDC

(See Note 1)

Efficiency vs Output Current

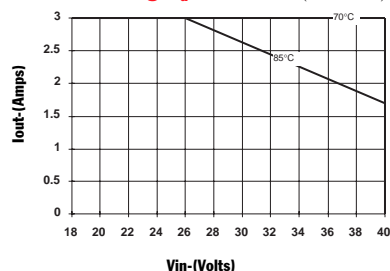


Ripple vs Output Current

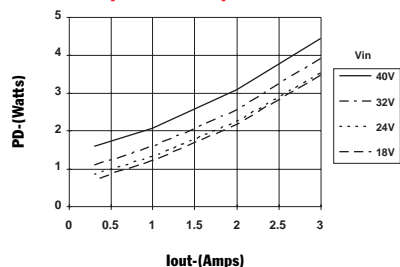


Thermal Derating (T_a)

(See Note 2)



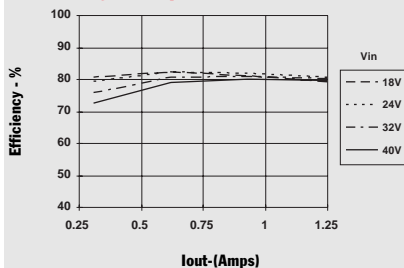
Power Dissipation vs Output Current



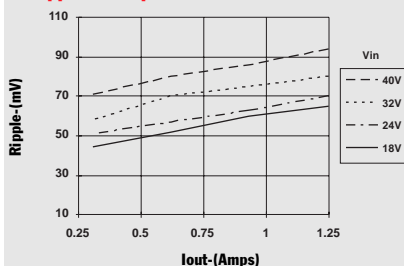
PT3105, 12.0 VDC

(See Note 1)

Efficiency vs Output Current

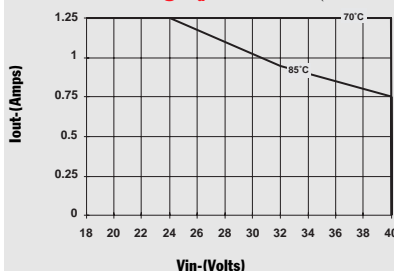


Ripple vs Output Current

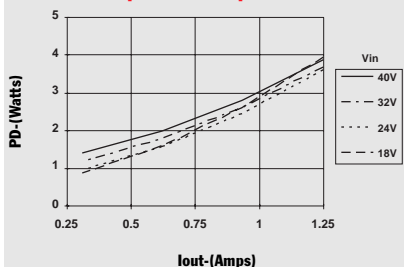


Thermal Derating (T_a)

(See Note 2)



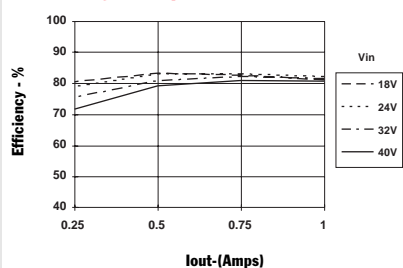
Power Dissipation vs Output Current



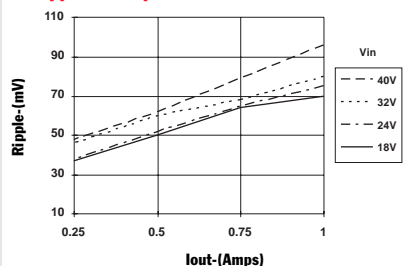
PT3106, 15.0 VDC

(See Note 1)

Efficiency vs Output Current

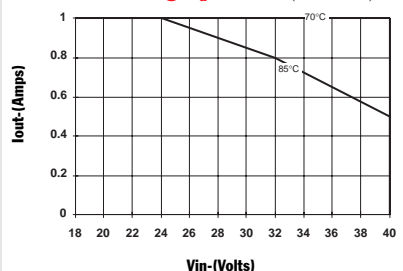


Ripple vs Output Current

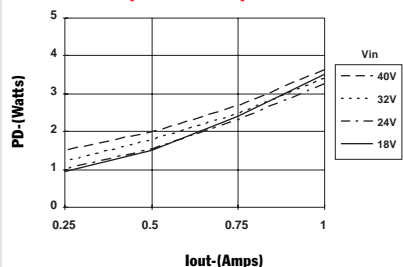


Thermal Derating (T_a)

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

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