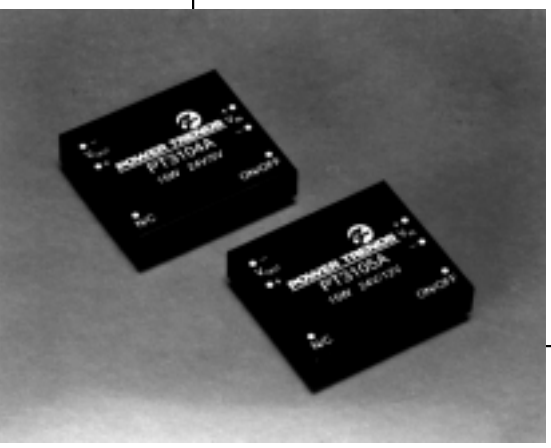
PT3100 Series 24V

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

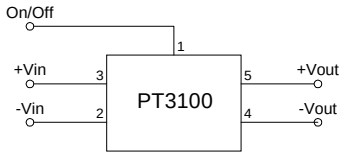
Revised 5/15/98



- 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 Min	Typ	Max	Units
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_{in}=24V, I_o=1.25A, V_{in}=24V, I_o=1.25A,	V_o=5V V_o=12V 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 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_{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

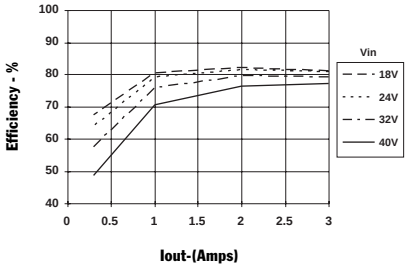
PT3104C = 5 Volts
PT3105C = 12 Volts
PT3106C = 15 Volts

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

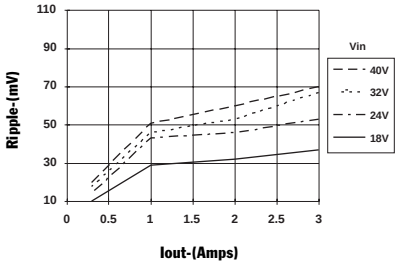
PT3104, 5.0 VDC

(See Note 1)

Efficiency vs Output Current

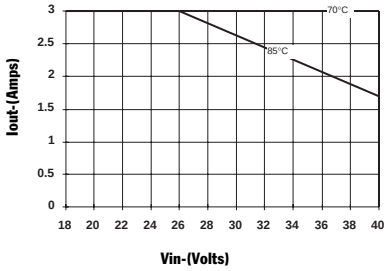


Ripple vs Output Current

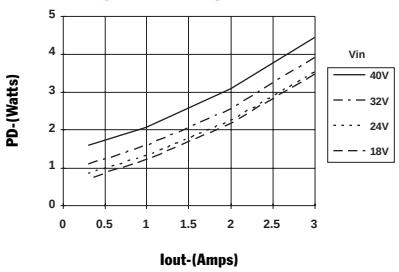


Thermal Derating (T_a)

(See Note 2)



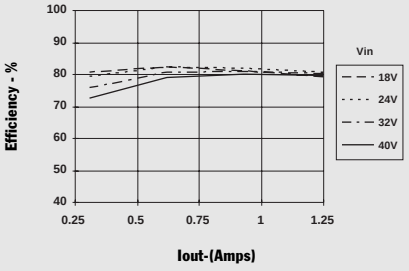
Power Dissipation vs Output Current



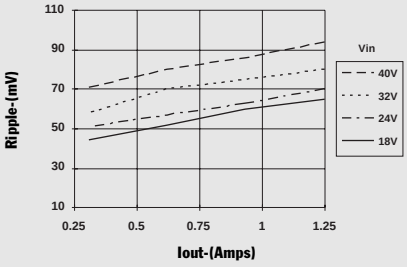
PT3105, 12.0 VDC

(See Note 1)

Efficiency vs Output Current

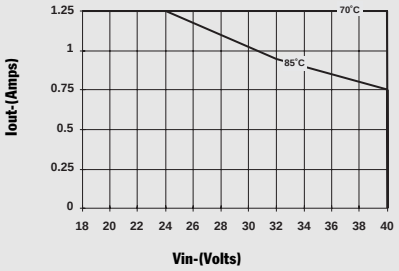


Ripple vs Output Current

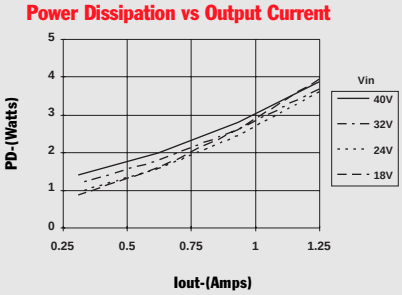


Thermal Derating (T_a)

(See Note 2)



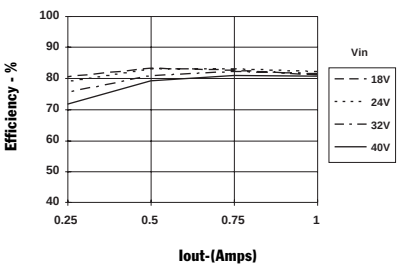
Power Dissipation vs Output Current



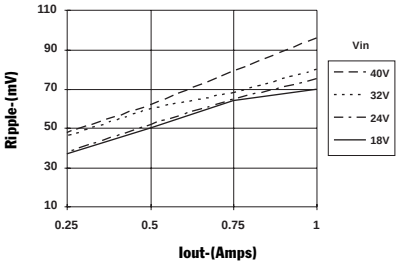
PT3106, 15.0 VDC

(See Note 1)

Efficiency vs Output Current

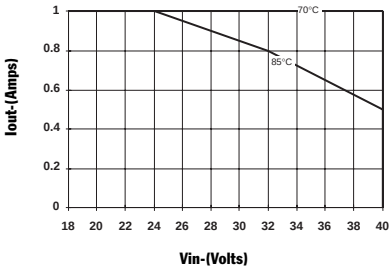


Ripple vs Output Current

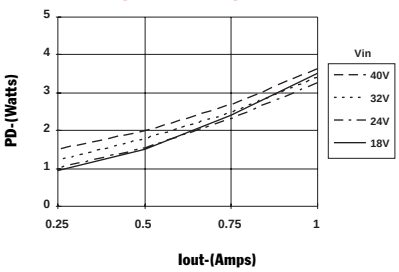


Thermal Derating (T_a)

(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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