





DC-DC CONVERTERS POLA Non-isolated

- 15 A output current
- 3.3 V input voltage
- Wide-output voltage adjust (0.8 V to 2.5 V)
- Auto-track[™] sequencing^{*}
- Margin up/down controls
- Pre-bias start-up capability
- Efficiencies up to 93%
- Output ON/OFF inhibit
- Output voltage sense
- Point-of-Load-Alliance (POLA) compatible
- Available RoHS compliant

The PTH03010 is a next generation series of non-isolated dc-dc converters offering some of the most advanced POL features available in the industry. The primary new feature provides for sequencing between multiple modules, a function, which is becoming a necessity for powering advanced silicon including DSP's, FPGA's and ASIC's requiring controlled power-up and power-down Other industry leading features include margin up/down controls, pre-bias start-up capability and efficiencies up to 93%. The PTH03010 has an input voltage of 2.95 V to 3.65 V and offers a wide 0.8 V to 2.5 V output voltage range with up to 15 A output current, which allows for maximum design flexibility and a pathway for future upgrades.

All specifications are typical at nominal input, full load at 25 °C unless otherwise stated C_{in} = 470 μ F, C_{out} = 0 μ F

OUTPUT SPECIFICATIONS

Voltage adjustability	(See Note 4)	0.8-2.5 V
Setpoint accuracy		±2.0% Vo
Line regulation		±10 mV typ.
Load regulation		±12 mV typ.
Total regulation		±3.0% Vo
Minimum load		0 A
Ripple and noise	20 MHz bandwidth	20 mV pk-pk
Temperature co-efficient	-40 °C to +85 °C	±0.5% Vo
Transient response (See Note 5)	70 μs recovery time Overshoot/undershoot 100 mV	
Margin adjustment		±5.0% Vo

INPUT SPECIFICATIONS

Input voltage range	(See Note 3)	2.95-3.65 V
Input current	No load	10 mA typ.
Remote ON/OFF	(See Note 1)	Positive logic
Start-up time		1 V/ms
Undervoltage lockout		2.8-2.95 V typ.
Track input voltage	Pin 8 (See Note 6, 7)	±0.3 Vin

International Safety Standard Approvals



UL/cUL CAN/CSA-C22.2 No. 60950-1-03/UL 60950-1, File No. E174104

TÜV Product Service (EN60950) Certificate No. B 04 06 38572 044 CB Report and Certificate to IEC60950, Certificate No. US/8292/UL



Electrostatic discharge Conducted immunity Radiated immunity	EN61000-4- EN61000-4- EN61000-4-

-2, IEC801-2 -6 -3

GENERAL SPECIFICATIONS

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Efficiency	(See Efficiency T	able) 93% max.
Insulation voltage		Non-isolated
Switching frequency		300 kHz typ. ±25 kHz
Approvals and standards		EN60950 UL/cUL60950
Material flammability		UL94V-0
Dimensions	(/ /	4.80 x 15.75 x 9.00 mm 1.370 x 0.620 x 0.354 in
Weight		5 g (0.18 oz)
MTBF	Telcordia SR-332	2 7,092,000 hours
ENVIRONMENTAL SPE	CIFICATIONS	
Thermal performance (See Note 2)	Operating ambie temperature Non-operating	ent, -40 °C to +85 °C -40 °C to +125 °C
MSL ('Z' suffix only)	JEDEC J-STD-0	20C Level 3

PROTECTION		
Short-circuit	Auto reset	27.5 A t

*Auto-track™ is a trade mark of **Texas Instruments**





2 YEAR WARRANT

SPECIFICATIONS









DC-DC CONVERTERS POLA Non-isolated For the most current data and application support visit www.artesyn.com/powergroup/products.htm **NEW Product** OUTPUT OUTPUT OUTPUT REGULATION INPUT OUTPUT EFFICIENCY MODEL CURRENT POWER CURRENT NUMBER^(9,10) VOLTAGE VOLTAGE (MAX.) LINE LOAD (MAX.) (MIN.) (MAX.) 37.5 W 2.95-3.65 V ±10 mV PTH03010 0.8-2.5 V 0 A 15 A 93% ±12 mV Part Number System with Options **PTH03010WAST** Product Family **Packaging Options** Point of Load Alliance No Suffix = Trays T = Tape and Reel ⁽⁸⁾ Compatible Mounting Option ⁽⁹⁾ Input Voltage D = Horizontal Through-Hole (Matte Sn) 03 = 3.3 V H = Horizontal Through-Hole (Sn/Pb) S = Surface-Mount (63/37 Sn/Pb pin solder material) **Output Current** Z = Surface-Mount (96.5/3.0/0.5 Sn/Ag/Cu 01 = 15 A pin solder material) Mechanical Package Pin Option Always 0 A = Through-Hole Std. Pin Length (0.140") A = Surface-Mount Tin/Lead Solder Ball **Output Voltage Code** W = Wide **Output Voltage Adjustment of the PTH03010 Series** The ultra-wide output voltage trim range offers major advantages to users who select the PTH03010. It is no longer necessary to purchase a variety of modules in order to cover different output voltages. The output voltage can be trimmed in a range of 0.8 Vdc to 2.5 Vdc. When the PTH03010 converter leaves the factory the output has been adjusted to the default voltage of 0.8 V.

Notes

- Remote ON/OFF. Positive Logic 1
- Pin 3 open; or V > Vin 0.5 V Pin 3 GND; or V < 0.8 V (min 0.2 V). ON: OFE
- See Figures 1 and 2 for safe operating curves.
- A 470 μF electrolytic input capacitor is required for proper operation. The 3
- capacitor must be rated for a minimum of 700 mA rms of ripple current. An external output capacitor is not required for basic operation. Adding 4
- 330 μ F of distributed capacitance at the load will improve the transient response.
- 5
- 1 A/µs load step, 50 to 100% I_{omax} , $C_{out} = 330 \,\mu\text{F}$. If utilized Vout will track applied voltage by ±0.3 V (up to Vo set point). 6 The pre-bias start-up feature is not compatible with Auto-TrackTM. This is because when the module is under Auto-TrackTM control, it is fully active . This is and will sink current if the output voltage is below that of a back-feeding source. Therefore to ensure a pre-bias hold-off, one of the following two techniques must be followed when input power is first applied to the module. The Auto-Track[™] function must either be disabled, or the module's output held off using the Inhibit pin. Refer to Application Note 150 for more details.
- Tape and reel packaging only available on the surface-mount versions.
- To order Pb-free (RoHS compatible) surface-mount parts replace the mounting option 'S' with 'Z', e.g. PTH03010WAZ. To order Pb-free (RoHS compatible) through-hole parts replace the mounting option 'H' with 'D', e.g. PTH03010WAD.
- 10 NOTICE: Some models do not support all options. Please contact your local Artesyn representative or use the on-line model number search tool at http://www.artesyn.com/powergroup/products.htm to find a suitable alternative.

EFFICIENCY TABLE (I _O = 10 A)			
OUTPUT VOLTAGE	EFFICIENCY		
Vo = 1.0 V	85%		
Vo = 1.2 V	87%		
Vo = 1.5 V	89%		
Vo = 1.8 V	91%		
Vo = 2.0 V	92%		
Vo = 2.5 V	93%		







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NEW Product

3

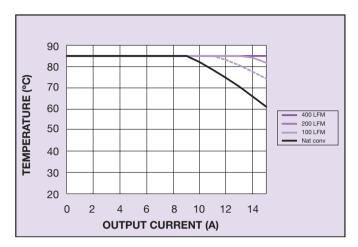


Figure 1 - Safe Operating Area Vin = 3.3 V, Output Voltage = 2.5 V (See Note A)

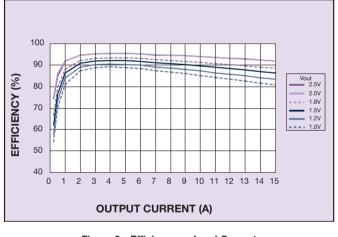


Figure 3 - Efficiency vs Load Current Vin = 3.3 V (See Note B)

Notes

- A SOA curves represent the conditions at which internal components are within the Artesyn derating guidelines.
- B Characteristic data has been developed from actual products tested at 25 °C. This data is considered typical data for the converter.

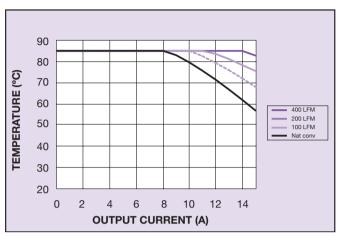


Figure 2 - Safe Operating Area Vin = 3.3 V, Output Voltage = 1.0 V (See Note A)

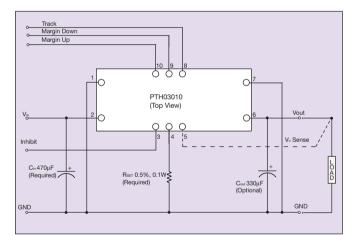


Figure 4 - Standard Application







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NEW Product

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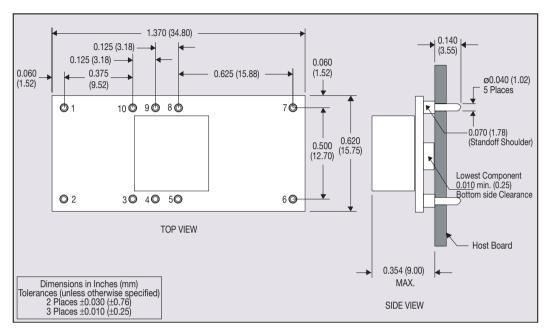
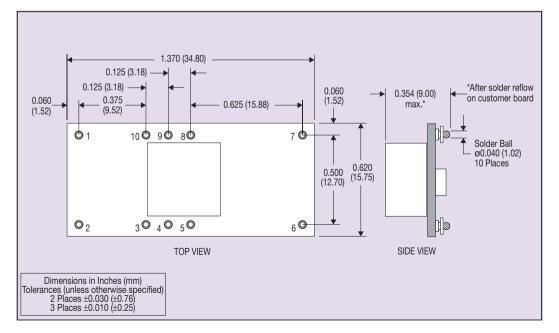


Figure 5 - Plated Through-Hole Mechanical Drawing



PIN CONNECTIONS PIN NO. FUNCTION 1 Ground 2 Vin 3 Inhibit* 4 Vo adjust 5 Vo sense 6 Vout 7 Ground 8 Track 9 Margin down* 10 Margin up*

*Denotes negative logic: Open = Normal operation Ground = Function active



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Mouser Electronics

Authorized Distributor

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Artesyn Embedded Technologies: PTH03010WAD PTH03010WAZ PTH03010WAZT PTH03010WAH