

PTH03020 ART



3.3 Vin single output

DC-DC CONVERTERS

POLA Non-isolated

NEW Product





- 22 A output current
- 3.3 V input voltage
- Wide-output voltage adjust (0.8 Vdc to 2.5 Vdc)
- Auto-track[™] sequencing*
- Margin up/down controls
- Pre-bias start-up capability
- Efficiencies up to 95%
- Output ON/OFF inhibit
- Output voltage sense
- Point-of-Load-Alliance (POLA) compatible
- Available RoHS compliant

The PTH03020 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 95%. The PTH03020 has an input voltage of 2.95 Vdc to 3.65 Vdc and offers a wide 0.8 Vdc to 2.5 Vdc output voltage range with up to 22 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} = 1000 μ F, C_{out} = 0 μ F

SPECIFICATIONS

OUTPUT SPECIFICATIONS

Voltage adjustability	(See Note 4)	0.8-2.5 Vdc
Setpoint accuracy		±2.0% Vo
Line regulation		±5 mV typ.
Load regulation		±5 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)	Overshoot	50 µs recovery time /undershoot 100 mV
Margin adjustment		±5.0% Vo

EMC CHARACTERISTICS

Electrostatic discharge	EN61000-4-2, IEC801-2
Conducted immunity	EN61000-4-6
Radiated immunity	EN61000-4-3

GENERAL SPECIFICATIONS

Insulation voltage Non-isolated Switching frequency 250 kHz to 340 kHz
Switching frequency 250 kHz to 340 kHz
Approvals and EN60950 standards UL/cUL60950
Material flammability UL94V-0
Dimensions (L x W x H) 37.97 x 22.10 x 9.00 mm 1.495 x 0.870 x 0.354 in
Weight 5 g (0.18 oz)
MTBF Telcordia SR-332 5,236,000 hours

INPUT SPECIFICATIONS

Input voltage range	(See Note 3)	2.95-3.65 Vdc
Input current	No load	10 mA typ.
Remote ON/OFF	(See Note 1)	Positive logic
Start-up time		1 V/ms
Undervoltage lockout		2.7-2.8 Vdc typ.
Track input voltage	Pin 8 (See Note 6, 7)	±0.3 Vin

Thermal performance			
(See Note 2)	temperature Non-operating	-40 °C to +125 °C	
MSL ('Z' suffix only)	JEDEC J-STD-020C	Level 3	

Auto reset

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. LIS/8/292/LII

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

PROTECTION
Short-circuit

Thermal

ENVIRONMENTAL SPECIFICATIONS

41 A typ.

Auto recovery



PTH03020 ARTI



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DC-DC CONVERTERS POLA Non-isolated 2

For the most current data and application support visit www.artesyn.com/powergroup/products.htm

NEW Product

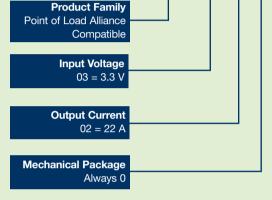
OUTPUT POWER	INPUT	OUTPUT	OUTPUT	OUTPUT CURRENT	EFFICIENCY	REGU	LATION	MODEL
(MAX.)	VOLTAGE	VOLTAGE	(MIN.)	(MAX.)	(MAX.)	LINE	LOAD	NUMBER ⁽⁹⁾
55 W	2.95-3.65 Vdc	0.8-2.5 Vdc	0 A	22 A	95%	±5 mV	±5 mV	PTH03020

Part Number System with Options

P T H 0 3 0 2 0 W A S T

Product Family

Packaging Options



Mounting Option (9)

- D = Horizontal Through-Hole (Matte Sn) H = Horizontal Through-Hole (Sn/Pb)
- S = Surface-Mount (63/37 Sn/Pb pin solder material)
- Z = Surface-Mount (96.5/3.0/0.5 Sn/Ag/Cu pin solder material)

Pin Option

No Suffix = Trays

T = Tape and Reel (8)

- A = Through-Hole Std. Pin Length (0.140")
- A = Surface-Mount Tin/Lead Solder Balll

Output Voltage Code W = Wide

Output Voltage Adjustment of the PTH03020 Series

The ultra-wide output voltage trim range offers major advantages to users who select the PTH03020. 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 PTH03020 converter leaves the factory the output has been adjusted to the default voltage of 0.8 V.

Notes

1 Remote ON/OFF. Positive Logic

ON: Pin 3 open; or V > Vin - 0.5 V OFF: Pin 3 GND; or V < 0.8 V (min - 0.2 V)

2 See Figure 1 for safe operating curve.

- 3 A 1,000 µF electrolytic input capacitor is required for proper operation. The capacitor must be rated for a minimum of 700 mA rms of ripple current.
- 4 An external output capacitor is not required for basic operation. Adding 330 μF 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 μF.
- If utilized Vout will track applied voltage by ±0.3 V (up to Vo set point).
- The pre-bias start-up feature is not compatible with Auto-Track™. This is because when the module is under Auto-Track™ control, it is fully active 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 151 for more details.
- 8 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. PTH03020WAZ. To order Pb-free (RoHS compatible) through-hole parts replace the mounting option 'H' with 'D', e.g. PTH03020WAD.
- 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	88%				
Vo = 1.2 V	90%				
Vo = 1.5 V	91%				
Vo = 1.8 V	93%				
Vo = 2.0 V	95%				
Vo = 2.5 V	95%				



PTH03020



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DC-DC CONVERTERS POLA Non-isolated 3

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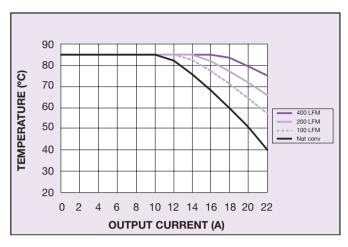


Figure 1 - Safe Operating Area Vin = 3.3 V, Output Voltage = 2.5 V (See Note A)

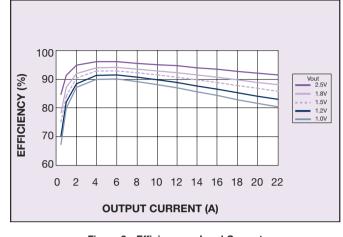


Figure 2 - Efficiency vs Load Current Vin = 3.3 V (See Note B)

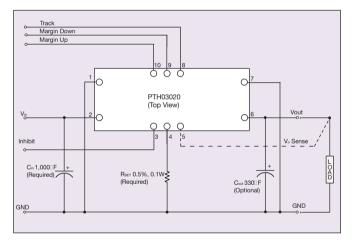


Figure 3 - Standard Application

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
- B Characteristic data has been developed from actual products tested at 25 °C. This data is considered typical data for the converter.



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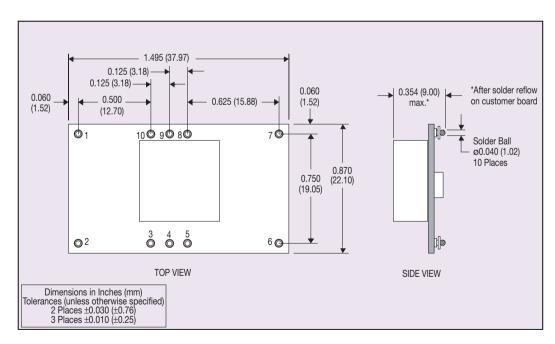
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NEW Product

1.495 (37.97) 0.125 (3.18) 0.140 (3.55)0.125 (3.18) 0.060 0.060 0.500 (1.52)0.625 (15.88) Ø0.040 (1.02) (1.52)(12.70)10 Places **©** 1 10 9 9 8 8 7 **(** (0.070 (1.78) (Standoff Shoulder) 0.750 0.870 (19.05) (22.10) Lowest Component 0.010 min. (0.25) Bottom side Clearance 2 0 0 0 6 **(** Host Board TOP VIEW 0.354 (9.00)max. Side View Dimensions in Inches (mm) Tolerances (unless otherwise specified)
2 Places ±0.030 (±0.76)
3 Places ±0.010 (±0.25)

Figure 4 - 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

Figure 5 - Surface-Mount Mechanical Drawing

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Application Note

www.artesyn.com