

**NEW Product**

- 6A output current
- 5V input voltage
- Wide-output voltage adjust (0.8V to 3.6V)
- Auto-track™ sequencing\*
- Pre-bias start-up capability
- Efficiencies up to 95%
- Output ON/OFF inhibit
- Output voltage sense
- Point-of-Load-Alliance (POLA) compatible



The PTH05050 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 pre-bias start-up capability and efficiencies up to 95%. The PTH05050 has an input voltage of 4.5V -5.5V and offers a wide 0.8V to 3.6V output voltage range with up to 6A output current, which allows for maximum design flexibility and a pathway for future upgrades.



**2 YEAR WARRANTY**

All specifications are typical at nominal input, full load at 25°C unless otherwise stated  
C<sub>in</sub> = 100µF, C<sub>out</sub> = 0µF

## SPECIFICATIONS

### OUTPUT SPECIFICATIONS

Voltage adjustability	(See Note 4)	0.8V to 3.6V
Setpoint accuracy		±2.0% Vo
Line regulation		±10mV typ.
Load regulation		±12mV typ.
Total regulation		±3.0% Vo
Minimum load		0A
Ripple and noise	20MHz bandwidth	20mV pk-pk
Temperature co-efficient	-40°C to +85°C	±0.5% Vo
Transient response (See Note 5)		70µs recovery time Overshoot/undershoot 100mV

### INPUT SPECIFICATIONS

Input voltage range	(See Note 3)	4.5V to 5.5V
Input current	No load	10mA typ.
Remote ON/OFF	(See Note 1)	Positive logic
Start-up time		1V/ms
Undervoltage lockout		3.7V to 4.3V typ.
Track input voltage	Pin 2 (See Note 6, 7)	±0.3Vin

### EMC CHARACTERISTICS

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

### GENERAL SPECIFICATIONS

Efficiency	(See Efficiency Table)	95% max.
Insulation voltage		Non-isolated
Switching frequency		550kHz to 650kHz
Approvals and standards		EN60950 UL/cUL60950
Material flammability		UL94V-0
Dimensions	(L x W x H)	22.10 x 12.57 x 8.50mm 0.870 x 0.495 x 0.335in
Weight		2.9g (0.10oz)
MTBF	Telcordia SR-332	7,092,000 hours

### ENVIRONMENTAL SPECIFICATIONS

Thermal performance (See Note 2)	Operating ambient, temperature	-40°C to +85°C
	Non-operating	-40°C to +125°C

### PROTECTION

Short-circuit protection	Auto reset	12A typ.
--------------------------	------------	----------

### International Safety Standard Approvals



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



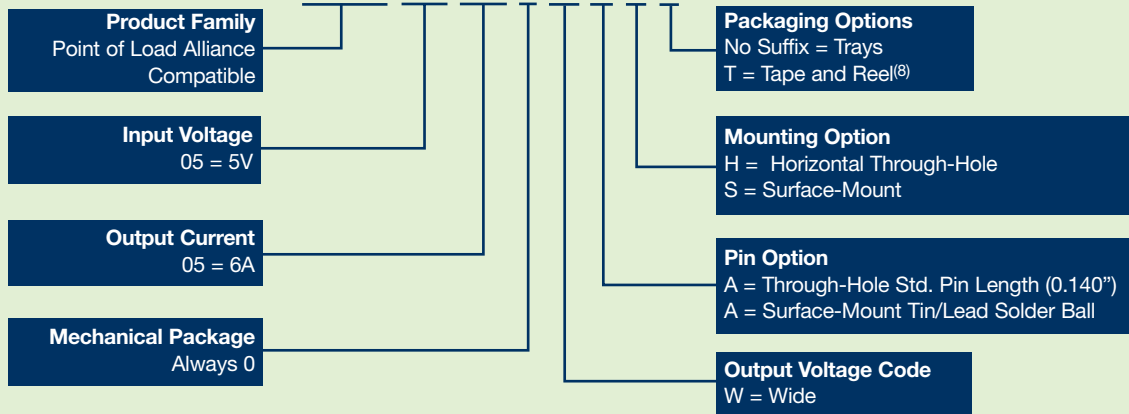
TÜV Product Service (EN60950) Certificate No. B 04 06 38572 044  
CB Report and Certificate to IEC60950, Certificate No.  
US/8292/UL

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

OUTPUT POWER (MAX.)	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT (MIN.)	OUTPUT CURRENT (MAX.)	EFFICIENCY (MAX.)	REGULATION		MODEL NUMBER
						LINE	LOAD	
21.6W	4.5V - 5.5V	0.8V - 3.6V	0A	6A	95%	±10mV	±12mV	PTH05050

Part Number System with Options

**PTH05050WAST**



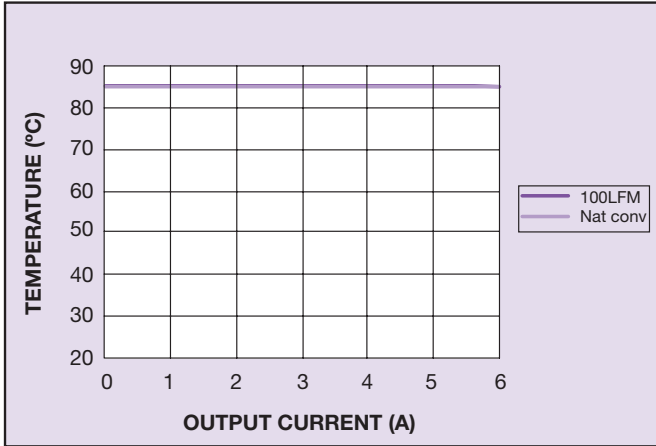
**Output Voltage Adjustment of the PTH05050 Series**

The ultra-wide output voltage trim range offers major advantages to users who select the PTH05050. 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 0.8V to 3.6V. When the PTH05050 converter leaves the factory the output has been adjusted to the default voltage of 0.8V

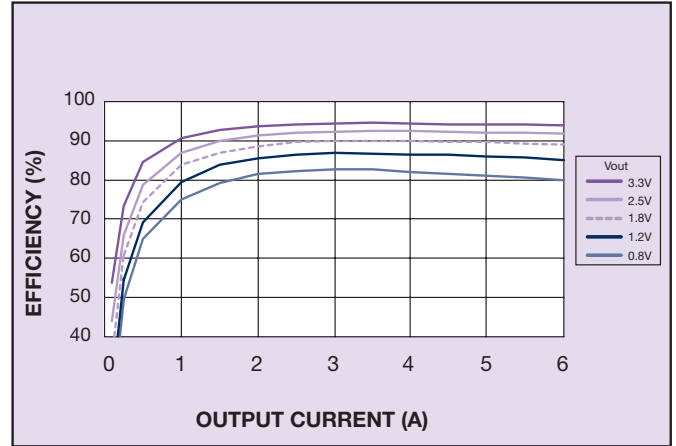
EFFICIENCY TABLE (I <sub>O</sub> = 4A)	
OUTPUT VOLTAGE	EFFICIENCY
V <sub>o</sub> = 1.0V	85%
V <sub>o</sub> = 1.2V	87%
V <sub>o</sub> = 1.5V	89%
V <sub>o</sub> = 1.8V	90%
V <sub>o</sub> = 2.0V	91%
V <sub>o</sub> = 2.5V	93%
V <sub>o</sub> = 3.3V	95%

**Notes**

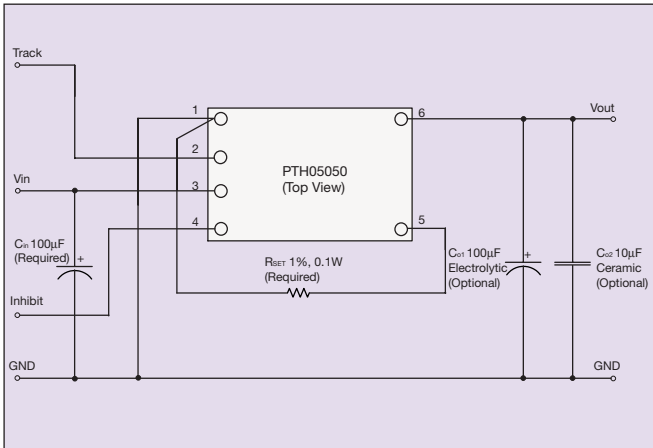
- Remote ON/OFF. Positive Logic  
ON: Pin 3 open; or V > V<sub>in</sub> - 0.5V  
OFF: Pin 3 GND; or V < 0.8V (min - 0.2V).
- See Figure 1 for safe operating curve.
- A 100µF electrolytic input capacitor is required for proper operation. The capacitor must be rated for a minimum of 300mA rms of ripple current.
- An external output capacitor is not required for basic operation. Adding 100µF of distributed capacitance at the load will improve the transient response.
- 1A/µs load step, 50 to 100% I<sub>Omax</sub>, C<sub>out</sub> = 100µF.
- If utilized V<sub>out</sub> will track applied voltage by ±0.3V (up to V<sub>o</sub> 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 158 for more details.
- Tape and reel packaging only available on the surface-mount versions.



**Figure 1 - Safe Operating Area**  
Vin = 5V, Output Voltage = 3.3V (See Note A)



**Figure 2 - Efficiency vs Load Current**  
Vin = 5V (See Note B)



**Figure 3 - Standard Application**

### Notes

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

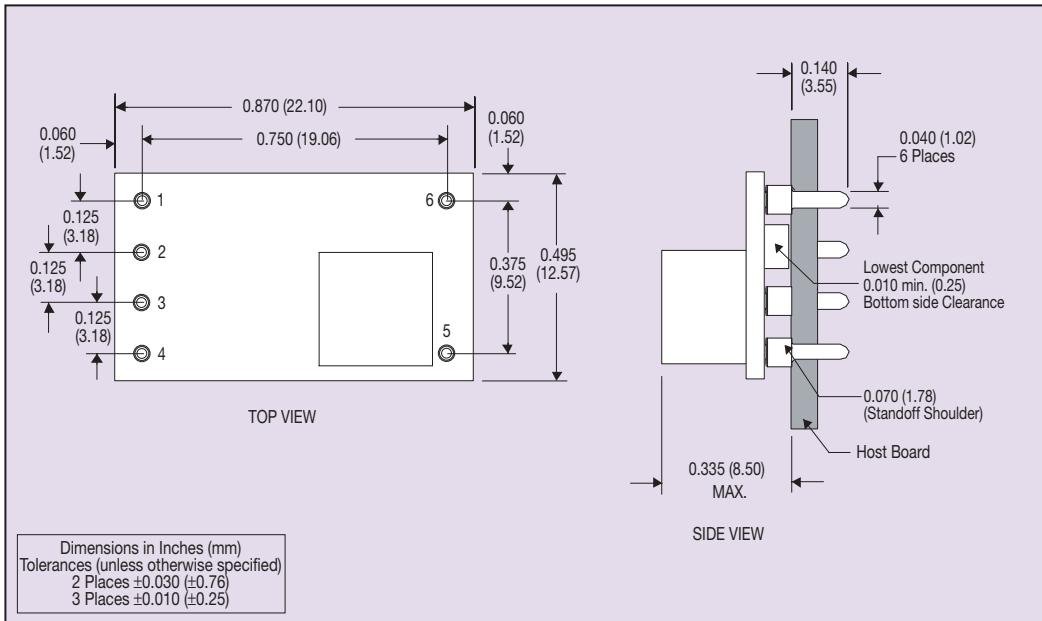


Figure 4 - Plated Through-Hole Mechanical Drawing

PIN CONNECTIONS	
PIN NO.	FUNCTION
1	Ground
2	Track
3	Vin
4	Inhibit*
5	Vo adjust
6	Vout

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

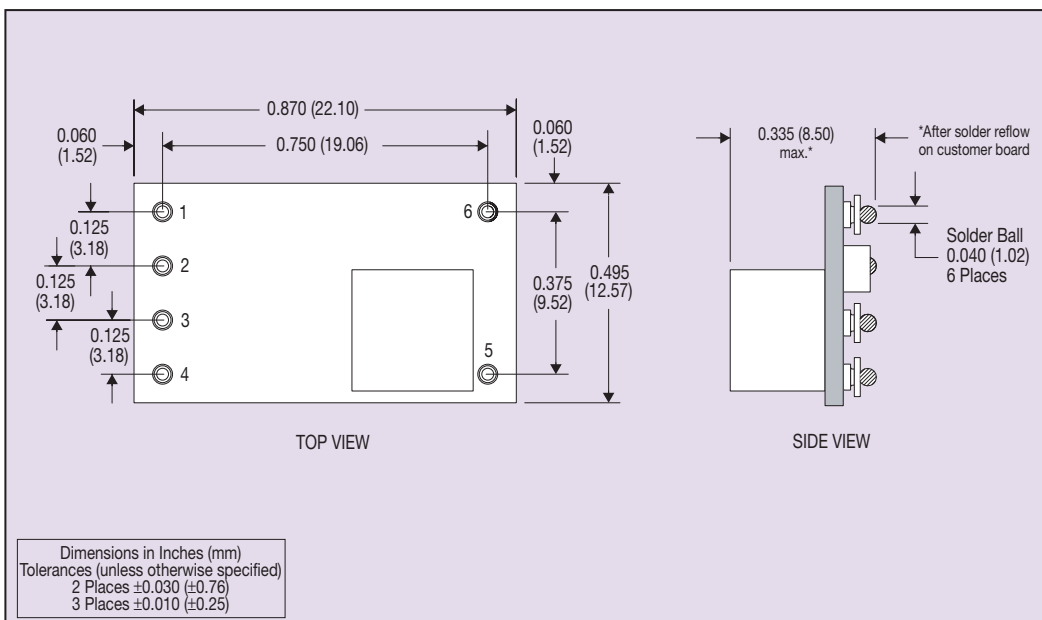


Figure 5 - Surface-Mount Mechanical Drawing

Data Sheet © Artesyn Technologies® 2004

The information and specifications contained in this data sheet are believed to be correct at time of publication. However, Artesyn Technologies accepts no responsibility for consequences arising from printing errors or inaccuracies. The information and specifications contained or described herein are subject to change in any manner at any time without notice. No rights under any patent accompany the sale of any such product(s) or information contained herein.