

## PTH05050 5 Vin Single Output

Total Power: 21.6W  
Input Voltage: 4.5 - 5.5VDC  
# of Outputs: Single



### Special Features

- 6 A output current
- 5 V input voltage
- Wide-output voltage adjust (0.8 Vdc to 3.6 Vdc)
- 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
- Available RoHS compliant
- 2 Year Warranty

### Safety

UL/cUL CAN/CSA-C22.2  
No. 60950-1-03/UL 60950-1,  
File No. E186249

TÜV Product Service (EN60950)  
Certificate No.  
B 06 07 38572 068

## Electrical Specifications

### Output

Voltage adjustability	(See note 4)	0.8 - 3.6 Vdc
Setpoint accuracy		± 2.0% Vo
Line regulation		±10% mV typ.
Load regulation		±12 mV typ.
total regulation		± 3% Vo
Minimum load		0 A
Ripple and noise	20 MHz bandwidth	20 mV pk-pk
Temperature co-efficient	-40°C to +85 °C	± 5% Vo
Transient response (see note 5)		70 μs recovery time Overshoot/undershoot 100 MV

### Input

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

### 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	550 kHz to 650 Khz	
Approvals and standards	EN60950 UL/cUL60950	
Material flammability	UL94V-0	
Dimensions	(L x W x H)	22.10 x 12.57 x 8.50 mm 0.870 x 0.495 x 0.335 in.
Weight		2.9 g (0.10 oz)
MTBF demonstrated	Telcordia SR-332F	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
MSL ('Z' suffix only)	JEDEC J-STD-020C	Level 3

## Protection

Short-circuit	Auto reset	12 A typ.
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\*Auto-track™ is a trade mark of Texas Instruments

All specifications are typical at nominal input, full load at 25 °C unless otherwise stated  
Cin = 100 µF, Cout = 0 µF

## Ordering Information

Output Power (Max.)	Input Voltage	Output Voltage	Output Current (Min.)	Output Current (Max.)	Efficiency (Typ.)	Regulation <sup>2</sup>		Model Number
						Line	Load	
21.6 W	4.5 - 5.5 Vdc	0.8 - 3.6 V	0 A	6 A	95%	± 10 mV	± 12 mV	PTH05050

## Part Number System with Options

Product Family	Input Voltage	Output Current	Mechanical Package	Output Voltage Code	Pin Option <sup>(8)</sup>	Mounting Option <sup>(9)</sup>	Packaging Options
<b>PTH</b>	<b>05</b>	<b>05</b>	<b>0</b>	<b>W</b>	<b>A</b>	<b>S</b>	<b>T</b>
POLA compatible	05 = 5 V	05 = 6 A	Always 0	W = Wide	A = Through-Hole Std. Pin Length (0.140") A = Surface-mount Tin/Lead Solder Ball	D = Horizontal Through-hole (RoHS 6/6) H = Horizontal Through-hole (roHS 5/6) S = Surface-mount (RoHS 5/6) Z = Surface-mount (RoHS 6/6)	No suffix = Trays T = Tape and Reel

### Notes

- Remote ON/OFF. Positive Logic  
ON: Pin 3 open; or  $V > V_{in} - 0.5 V$   
OFF: Pin 3 GND; or  $V < 0.8 V$  (min - 0.2 V).
- See Figure 1 for safe operating curve.
- A 100  $\mu F$  electrolytic input capacitor is required for proper operation. The capacitor must be rated for a minimum of 300 mA rms of ripple current.
- An external output capacitor is not required for basic operation. Adding 100  $\mu F$  of distributed capacitance at the load will improve the transient response.
- 1 A/ $\mu s$  load step, 50 to 100%  $I_{o,max}$ ,  $C_{out} = 100 \mu F$ .
- If utilized  $V_{out}$  will track applied voltage by  $\pm 0.3 V$  (up to  $V_o$  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.
- To order Pb-free (RoHS compatible) surface-mount parts replace the mounting option 'S' with 'Z', e.g. PTH05050WAZ. To order Pb-free (RoHS compatible) through-hole parts replace the mounting option 'H' with 'D', e.g. PTH05050WAD.
- NOTICE: Some models do not support all options. Please contact your local sales representative or use the on-line model number search tool at <http://www.powerconversions.com> to find a suitable alternative.

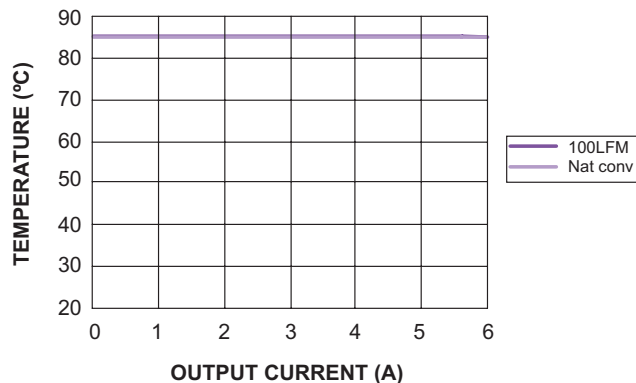


Figure 1 - Safe Operating Area  
 $V_{in} = 5 V$ , Output Voltage = 3.3 V (See Note A)

### 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 0.8 Vdc to 3.6 Vdc. When the PTH05050 converter leaves the factory the output has been adjusted to the default voltage of 0.8 V.

#### Efficiency Table ( $I_o = 4 A$ )

Output Voltage	Efficiency
$V_o = 1.0 V$	85%
$V_o = 1.2 V$	87%
$V_o = 1.5 V$	89%
$V_o = 1.8 V$	90%
$V_o = 2.0 V$	91%
$V_o = 2.5 V$	93%
$V_o = 3.3 V$	95%

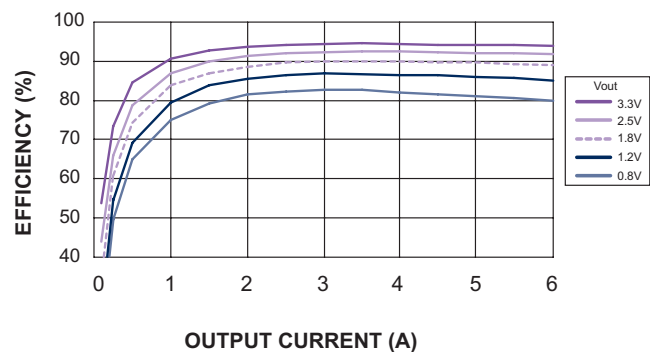
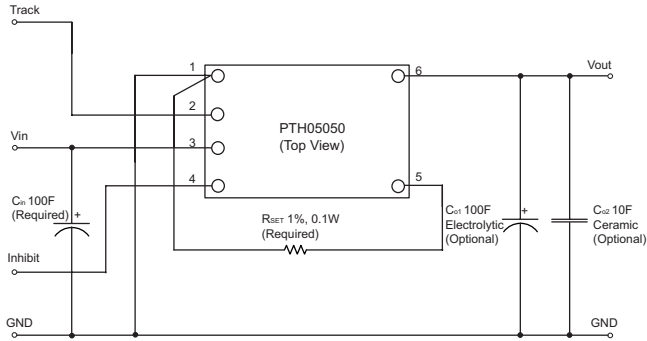


Figure 2 - Efficiency vs Load Current  
 $V_{in} = 5 V$  (See Note B)

# Specifications



## 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 3 - Standard Application

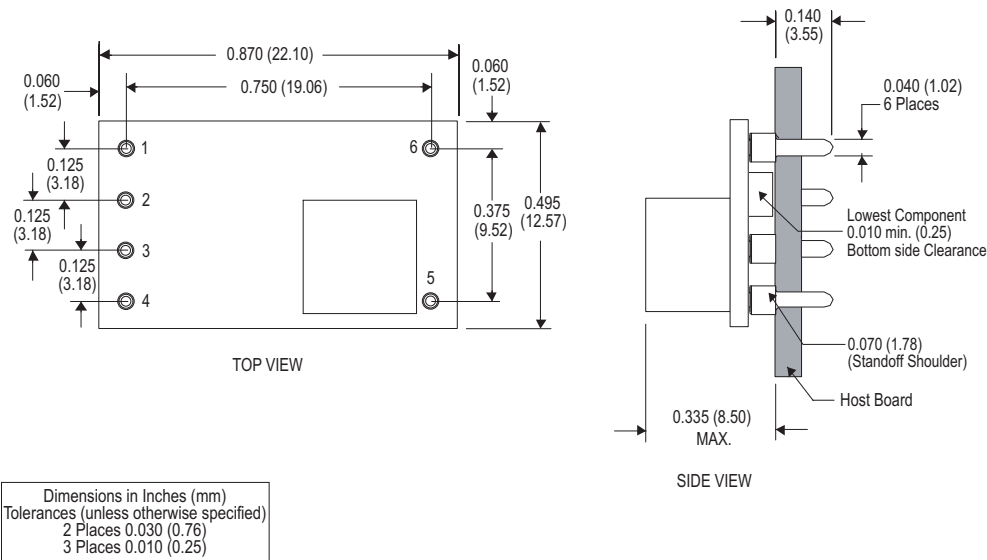
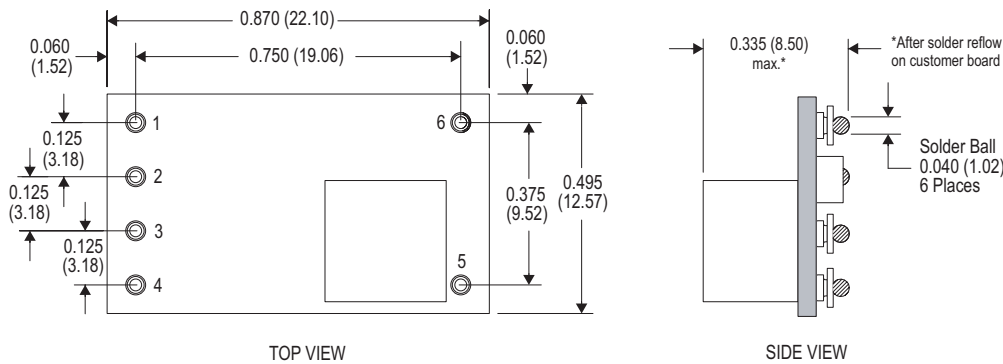


Figure 4 - Plated Through-Hole Mechanical Drawing

# Specifications



Dimensions in Inches (mm)  
Tolerances (unless otherwise specified)  
2 Places 0.030 (0.76)  
3 Places 0.010 (0.25)

Figure 5 - Surface-Mount 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

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