

## General Specifications

|                         |                        |                                                     |
|-------------------------|------------------------|-----------------------------------------------------|
| Efficiency              | (See Efficiency Table) | 94% max.                                            |
| Insulation voltage      |                        | Non-isolated                                        |
| Switching frequency     |                        | 300 kHz typ. $\pm 25$ kHz                           |
| Approvals and standards |                        | EN60950, UL/cUL60950                                |
| Material flammability   |                        | UL94V-0                                             |
| Dimensions              | L x W x H              | 25.27 x 15.75 x 9.00 mm<br>0.995 x 0.620 x 0.354 in |
| Weight                  |                        | 3.98 g (0.13 oz)                                    |
| MTBF                    | Telcordia SR-332F      | 7,092,000 hours                                     |

## EMC Characteristics

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

## Environmental Specifications

|                                     |                                                            |                                       |
|-------------------------------------|------------------------------------------------------------|---------------------------------------|
| Thermal performance<br>(See Note 2) | Operating ambient temperature<br>Non-operating temperature | -40 °C to +85 °C<br>-40 °C to +125 °C |
| MSL ('Z' suffix only)               | JEDEC J-STD-020C                                           | Level 3                               |

### Protection

|               |            |              |
|---------------|------------|--------------|
| Short-circuit | Auto reset | 20 A typical |
|---------------|------------|--------------|

## Ordering Information

| Model Number <sup>(9)</sup> | Output Power (Max.) | Input Voltage | Output Voltage | Output Current (Min.) | Output Current (Max.) | Efficiency (Typical) | Regulation <sup>(9)</sup> |             |
|-----------------------------|---------------------|---------------|----------------|-----------------------|-----------------------|----------------------|---------------------------|-------------|
|                             |                     |               |                |                       |                       |                      | Line                      | Load        |
| PTH05060                    | 36 W                | 4.5 - 5.5 Vdc | 0.8 - 3.6 V    | 0 A                   | 10 A                  | 94%                  | $\pm 10$ mV               | $\pm 12$ mV |

## Part Number System with Options

| Product Family                    | Input Voltage | Output Current | Mechanical Package | Output Voltage Code | Pin Option <sup>(9)</sup> | Mounting Options                                                                   | Pin Option                                            |
|-----------------------------------|---------------|----------------|--------------------|---------------------|---------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------|
| <b>PTH</b>                        | <b>05</b>     | <b>06</b>      | <b>0</b>           | <b>W</b>            | <b>A</b>                  | <b>S</b>                                                                           | <b>T</b>                                              |
| Point-of-Load Alliance compatible | 05 = 5 V      | 06 = 10 A      | Always 0           | W = Wide            |                           | D = Horizontal through-hole (RoHS 6/6)<br>Z = Surface-mount solder ball (RoHS 6/6) | No Suffix = Trays<br>T = Tape and Reel <sup>(9)</sup> |

## Output Voltage Adjustment

The ultra-wide output voltage trim range offers major advantages to users who select the PTH05060. 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 PTH05060 converter leaves the factory the output has been adjusted to the default voltage of 0.8 V.

Efficiency Table (I<sub>o</sub> = 10 A)

| Output Voltage         | Efficiency |
|------------------------|------------|
| V <sub>o</sub> = 1.0 V | 85%        |
| V <sub>o</sub> = 1.2 V | 86%        |
| V <sub>o</sub> = 1.5 V | 89%        |
| V <sub>o</sub> = 1.8 V | 90%        |
| V <sub>o</sub> = 2.0 V | 91%        |
| V <sub>o</sub> = 2.5 V | 92%        |
| V <sub>o</sub> = 3.3 V | 94%        |

### Notes:

- Remote ON/OFF, Positive Logic  
ON: Pin 3 open; or V > V<sub>in</sub> - 0.5 V  
OFF: Pin 3 GND; or V < 0.8 V (min - 0.2 V).
- See Figures 1 & 2 for safe operating curves.
- A 330  $\mu$ F electrolytic input capacitor is required for proper operation. The capacitor must be rated for a minimum of 500 mA rms of ripple current.
- An external output capacitor is not required for basic operation. Adding 330  $\mu$ F of distributed capacitance at the load will improve the transient response.
- 1 A/ $\mu$ s load step, 50 to 100% I<sub>max</sub>, C<sub>out</sub> = 330  $\mu$ F.
- If utilized V<sub>out</sub> will track applied voltage by  $\pm 0.3$  V (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 159 for more details.
- Tape and reel packaging only available on the surface-mount versions.
- 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> to find a suitable alternative.

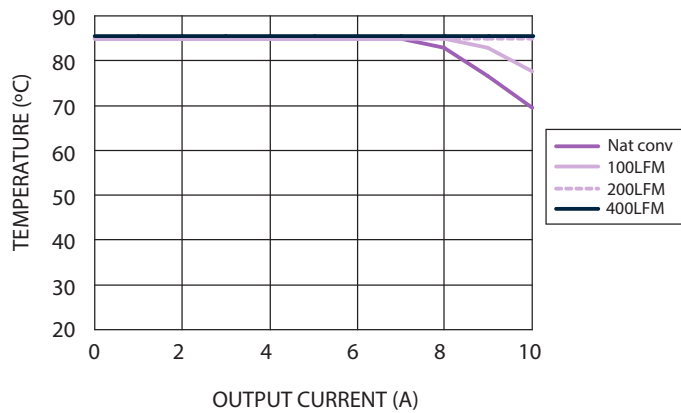


Figure 1 - Safe Operating Area  
Vin = 5 V, Output Voltage = 3.3 V (See Note A)

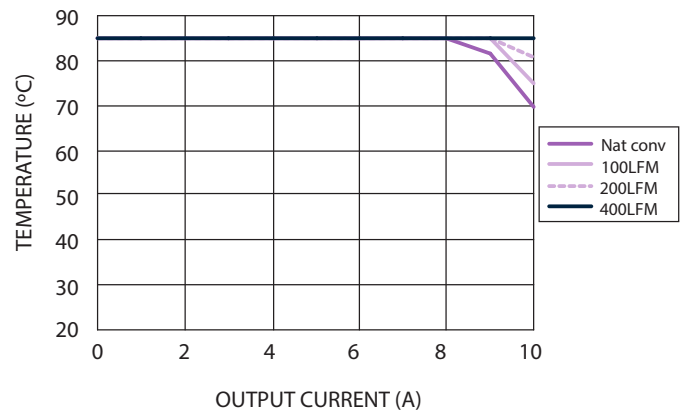


Figure 2 - Safe Operating Area  
Vin = 5 V, Output Voltage = 1.0 V (See Note A)

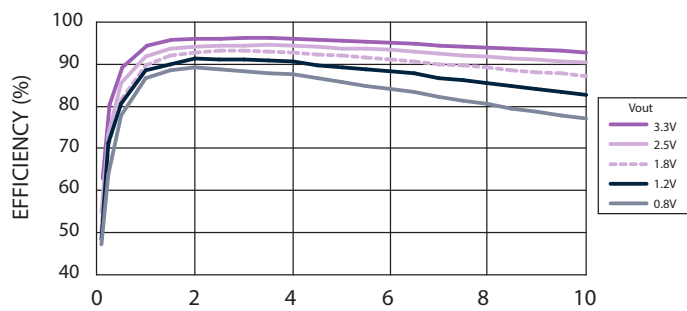


Figure 3 - Efficiency vs Load Current  
Vin = 5 V (See Note B)

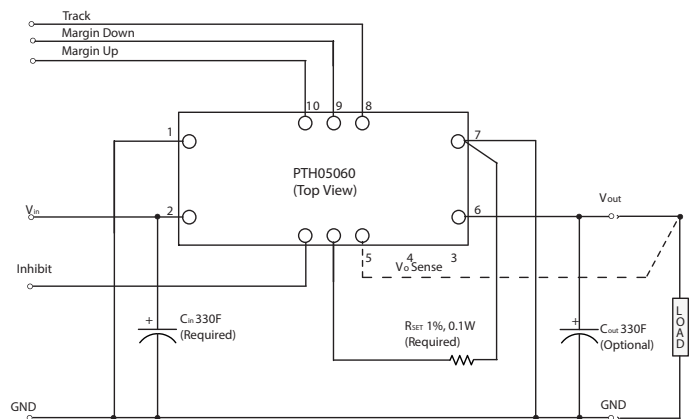


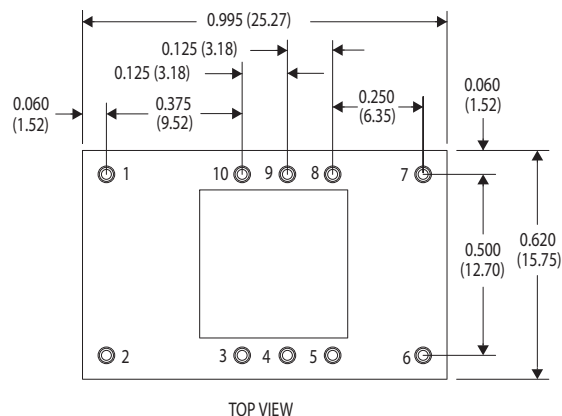
Figure 4 - Standard Application

**Notes:**

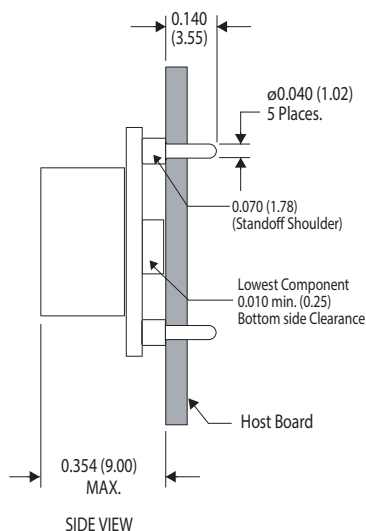
- A. SOA curves represent the conditions at which internal components are within the Artesyn derating guidelines.
- B. Characteristic data has been developed from actual products tested at 25 °C. This data is considered typical data for the converter.

## Mechanical Drawings

### Plated through-hole



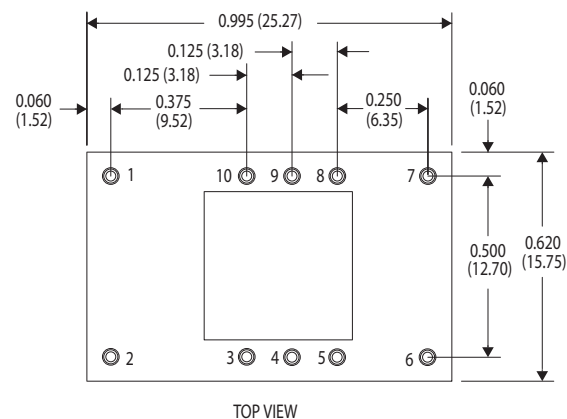
Dimensions in Inches (mm)  
Tolerances (unless otherwise specified)  
2 Places 0.030 (0.76)  
3 Places 0.010 (0.25)



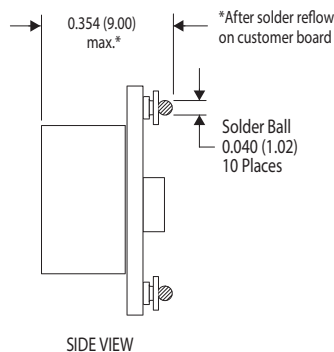
| Pin Assignments |              |
|-----------------|--------------|
| Pin             | Function     |
| 1               | Ground       |
| 2               | Vin          |
| 3               | Inhibit*     |
| 4               | Vo adjust    |
| 5               | Vo sense     |
| 6               | Vout         |
| 7               | Ground       |
| 8               | Track        |
| 9               | Margin down* |
| 10              | Margin up*   |

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

### Surface-mount



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



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