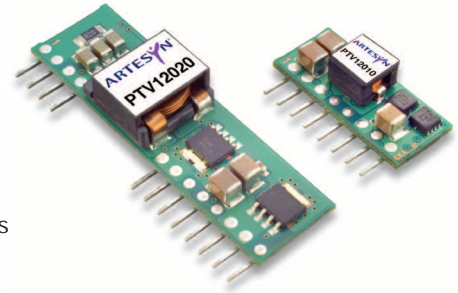


- 18 A output current
- 3.3 Vin input voltage
- Wide-output voltage adjust (0.8 Vdc to 2.5 Vdc)
- Auto-track™ sequencing*
- Pre-bias start-up
- Efficiencies up to 96%
- Output ON/OFF inhibit
- Output voltage sense
- Vertical through-hole mounting
- Point-of-Load-Alliance (POLA) compatible
- Undervoltage lockout
- Available RoHS compliant



2 YEAR WARRANTY

The PTV03020 is a non-isolated dc-dc converter from Artesyn under the Point of Load Alliance (POLA) standard. The vertical mounting option of the PTV03020 module provides performance in less than 20% of the space that is required by alternative solutions. The Auto-Track™ 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. The PTV03020 has an input voltage of 2.95 Vdc to 3.6 Vdc and offers a wide 0.8 Vdc to 2.5 Vdc output voltage range with up to 18 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
 $C_{in} = 680 \mu F$ and $22 \mu F$ (Ceramic), $C_{out} = 0 \mu F$

SPECIFICATIONS

OUTPUT SPECIFICATIONS

| | | |
|------------------------------------|------------------|--|
| Voltage adjustability | (See Note 4) | 0.8-2.5 Vdc |
| Setpoint accuracy | (See Note 8) | ±2.0% Vo |
| Line regulation | | ±5 mV typ. |
| Load regulation | | ±5 mV typ. |
| Total regulation | (See Note 8) | ±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 120 mV |

INPUT SPECIFICATIONS

| | | |
|-----------------------|------------------------|----------------|
| Input voltage range | (See Note 3) | 2.95-3.6 Vdc |
| Input standby current | | 10 mA typ. |
| Remote ON/OFF | (See Note 1) | Positive logic |
| Undervoltage lockout | (Increasing) | 2.7 V typ. |
| Track input current | Pin 9 (See Notes 6, 7) | -0.13 mA |

GENERAL SPECIFICATIONS

| | | |
|-------------------------|------------------------|--|
| Efficiency | (See Efficiency Table) | 96% max. |
| Insulation voltage | | Non-isolated |
| Switching frequency | 250-340 kHz | 300 kHz typ. |
| Approvals and standards | | EN60950 UL/cUL60950 |
| Material flammability | | UL94V-0 |
| Dimensions | (L x W x H) | 44.45 x 9.39 x 12.70 mm 1.75 x 0.37 x 0.50 in |
| Weight | | 5.5 g (0.19 oz) |
| MTBF | Telcordia SR-332 | 5,000,000 hours |

ENVIRONMENTAL SPECIFICATIONS

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

PROTECTION

| | | |
|-----------------|------------|---------------|
| Overcurrent | Auto reset | 35 A typ. |
| Overtemperature | | Auto recovery |

International Safety Standard Approvals



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

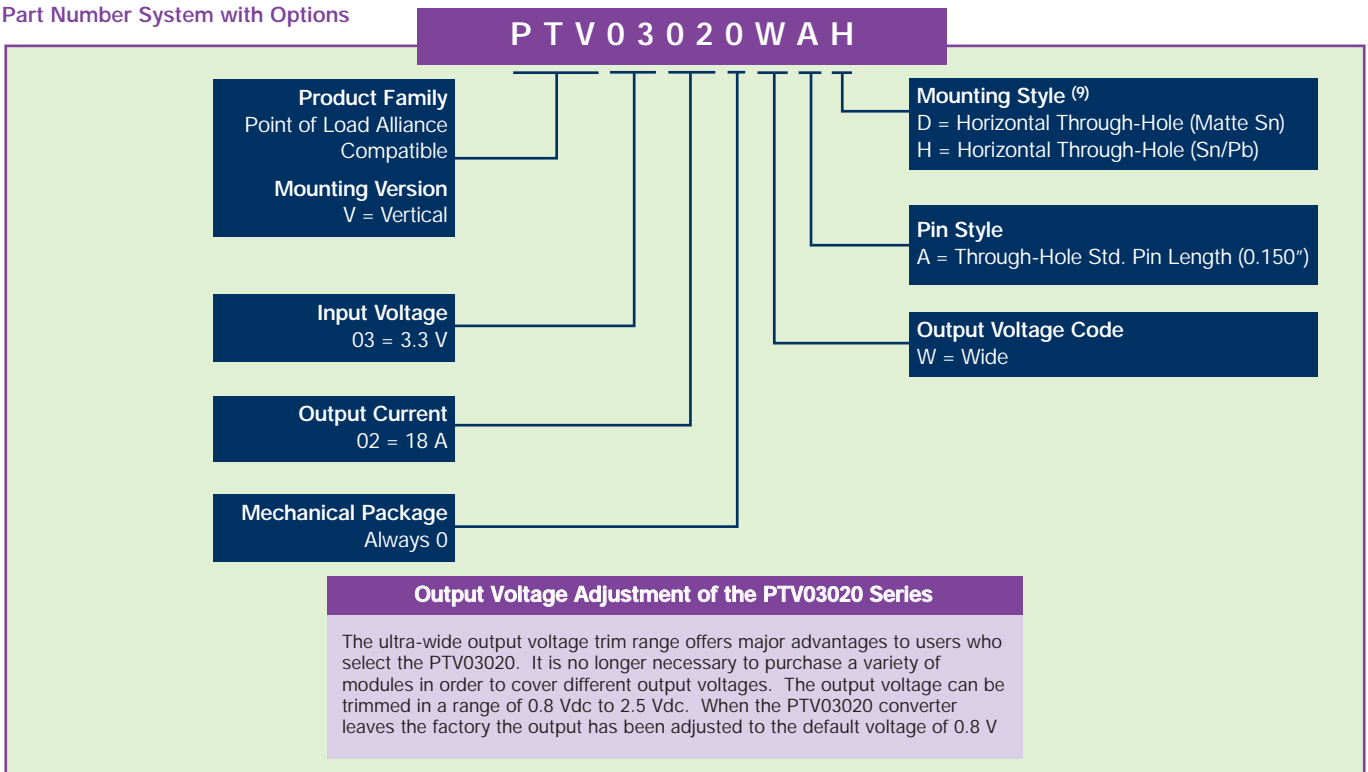


TÜV Product Service (EN60950) Certificate No. B 04 06 38572 044
CB Report and Certificate to IEC60950, Certificate No. US/8292/UL

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

| OUTPUT POWER (MAX.) | INPUT VOLTAGE | OUTPUT VOLTAGE | OUTPUT CURRENT (MIN.) | OUTPUT CURRENT (MAX.) (2) | EFFICIENCY (MAX.) | REGULATION | | MODEL NUMBER (9,10) |
|---------------------|---------------|----------------|-----------------------|---------------------------|-------------------|------------|-------|---------------------|
| | | | | | | LINE | LOAD | |
| 45 W | 2.95-3.6 Vdc | 0.8-2.5 Vdc | 0 A | 18 A | 96% | ±5 mV | ±5 mV | PTV03020W |

Part Number System with Options



Notes

- Remote ON/OFF. Positive logic
ON: Pin 3 open; or $V > V_{in} - 0.5 V$
OFF: Pin 3 GND; or $V < 0.6 V$
- See Figure 1 for safe operating curve.
- A 680 μF electrolytic input capacitor is required for proper operation as well as a 2 μF high-frequency ceramic capacitor. The electrolytic capacitor must be rated for a minimum of 750 mA rms of ripple current.
- An external output capacitor is not required for basic operation. Adding 33 μF of distributed capacitance at the load will improve the transient response.
- 1A/ μs load step, 50 to 100% $I_{o,max}$, $C_3 = 330 \mu F$.
- 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 197 for more details.
- The set-point voltage tolerance is affected by the tolerance and stability of R_{Set} . The stated limit is unconditionally met if R_{Set} has a tolerance of 1% with 100°C or better temperature stability.
- To order Pb-free (RoHS compatible) through-hole parts replace the mounting option 'H' with 'D', e.g. PTV03020WAD.
- 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 ($I_o = 12 A$)

| OUTPUT VOLTAGE | EFFICIENCY |
|----------------|------------|
| $V_o = 2.5 V$ | 95 |
| $V_o = 1.8 V$ | 92 |
| $V_o = 1.5 V$ | 90 |
| $V_o = 1.2 V$ | 88 |
| $V_o = 1.0 V$ | 86 |
| $V_o = 0.8 V$ | 83 |

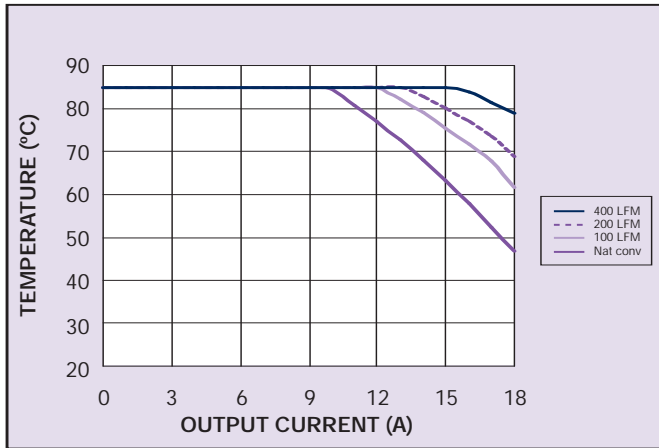


Figure 1 - Safe Operating Area
Vin = 3.3 V, Output Voltage = 2.5 V (See Note A)

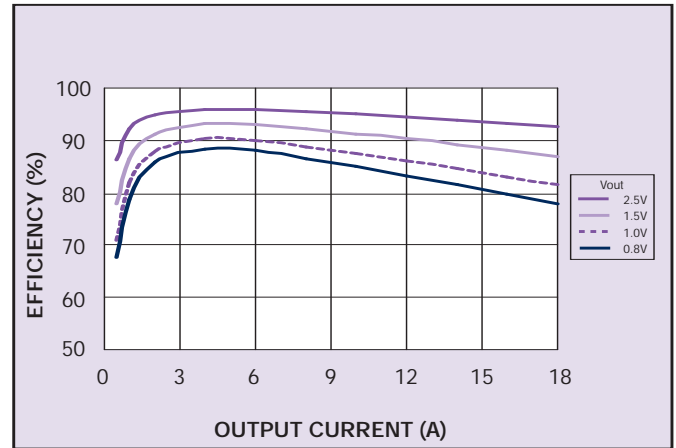


Figure 2 - Efficiency vs Load Current
Vin = 3.3 V (See Note B)

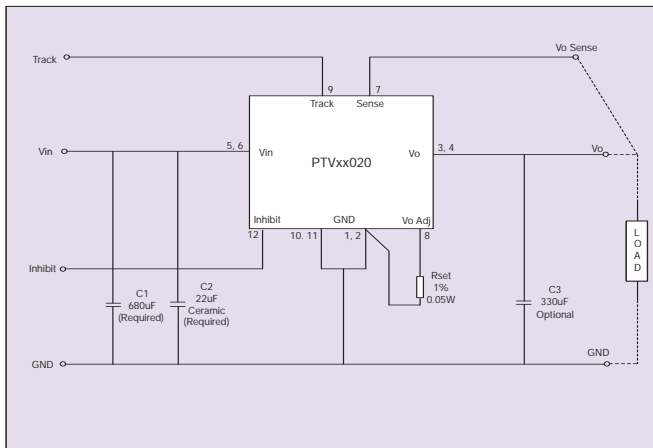
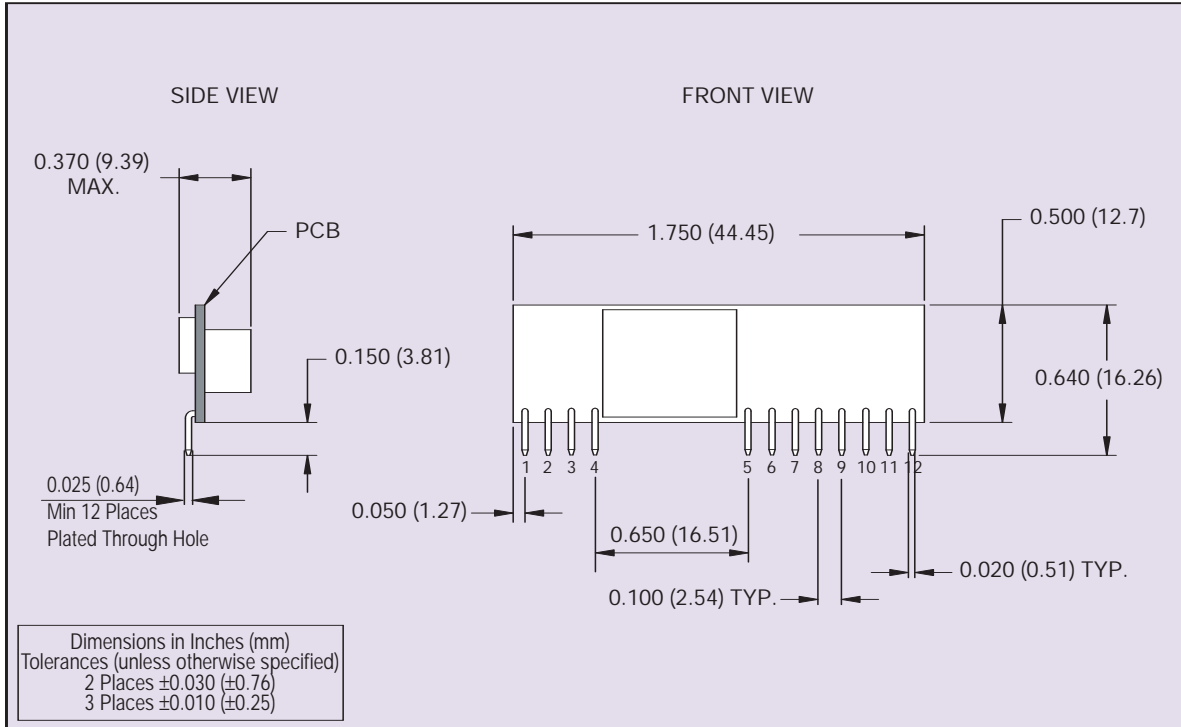


Figure 3 - Standard Application

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 25 °C. This data is considered typical data for the converter.



| PIN CONNECTIONS | |
|-----------------|-----------|
| PIN NO. | FUNCTION |
| 1 | Ground |
| 2 | Ground |
| 3 | Vout |
| 4 | Vout |
| 5 | Vin |
| 6 | Vin |
| 7 | Vo Sense |
| 8 | Vo Adjust |
| 9 | Track |
| 10 | Ground |
| 11 | Ground |
| 12 | Inhibit |

Figure 4 - Mechanical Drawing and Pinout Table

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