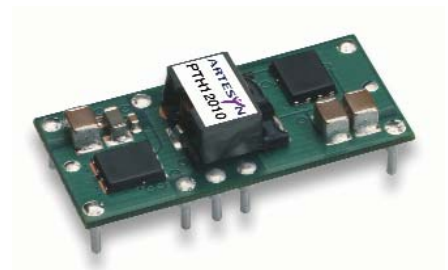


- 12 A output current
- 12 V input voltage
- Wide-output voltage adjust
  - 1.2 Vdc to 5.5 Vdc for suffix 'W' and 0.8 Vdc to 1.8 Vdc for suffix 'L'
- Auto-track™ sequencing\*
- Margin up/down controls
- Efficiencies up to 94%
- Output ON/OFF inhibit
- Output voltage sense
- Point-of-Load-Alliance (POLA) compatible
- Available RoHS compliant

**NEW Product**



The PTH12010 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 and efficiencies up to 94%. The PTH12010 has an input voltage of 10.8 Vdc to 13.2 Vdc and offers a wide 1.2 Vdc to 5.5 Vdc output voltage range with up to 12 A 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  
 $C_{in} = 560 \mu F$ ,  $C_{out} = 0 \mu F$

**SPECIFICATIONS**

OUTPUT SPECIFICATIONS		
Voltage adjustability (See Note 4)	Suffix '-W' Suffix '-L'	1.2-5.5 Vdc 0.8-1.8 Vdc
Setpoint accuracy		±2.0% Vo
Line regulation		±10 mV typ.
Load regulation		±12 mV typ.
Total regulation		±3.0% Vo
Minimum load		0 A
Ripple and noise 20 MHz bandwidth	Suffix '-W' Suffix '-L'	25 mV pk-pk 25 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 100 mV
Margin adjustment		±5.0% Vo

INPUT SPECIFICATIONS		
Input voltage range	(See Note 3)	10.8-13.2 Vdc
Input current	No load	10 mA typ.
Remote ON/OFF	(See Note 1)	Positive logic
Start-up time		1 V/ms
Undervoltage lockout		9.0-9.5 V typ.
Track input voltage	Pin 8 (See Note 6)	±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 Tables on page 2
Insulation voltage		Non-isolated
Switching frequency	Suffix '-W' Suffix '-L'	300 kHz to 400 kHz 200 kHz to 300 kHz
Approvals and standards		EN60950 UL/cUL60950
Material flammability		UL94V-0
Dimensions	(L x W x H)	34.80 x 15.75 x 9.00 mm 1.370 x 0.620 x 0.354 in
Weight		5 g (0.18 oz)
MTBF	Telcordia SR-332	7,092,000 hours

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

PROTECTION		
Short-circuit	Auto reset	20 A typ.

**International Safety Standard Approvals**



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

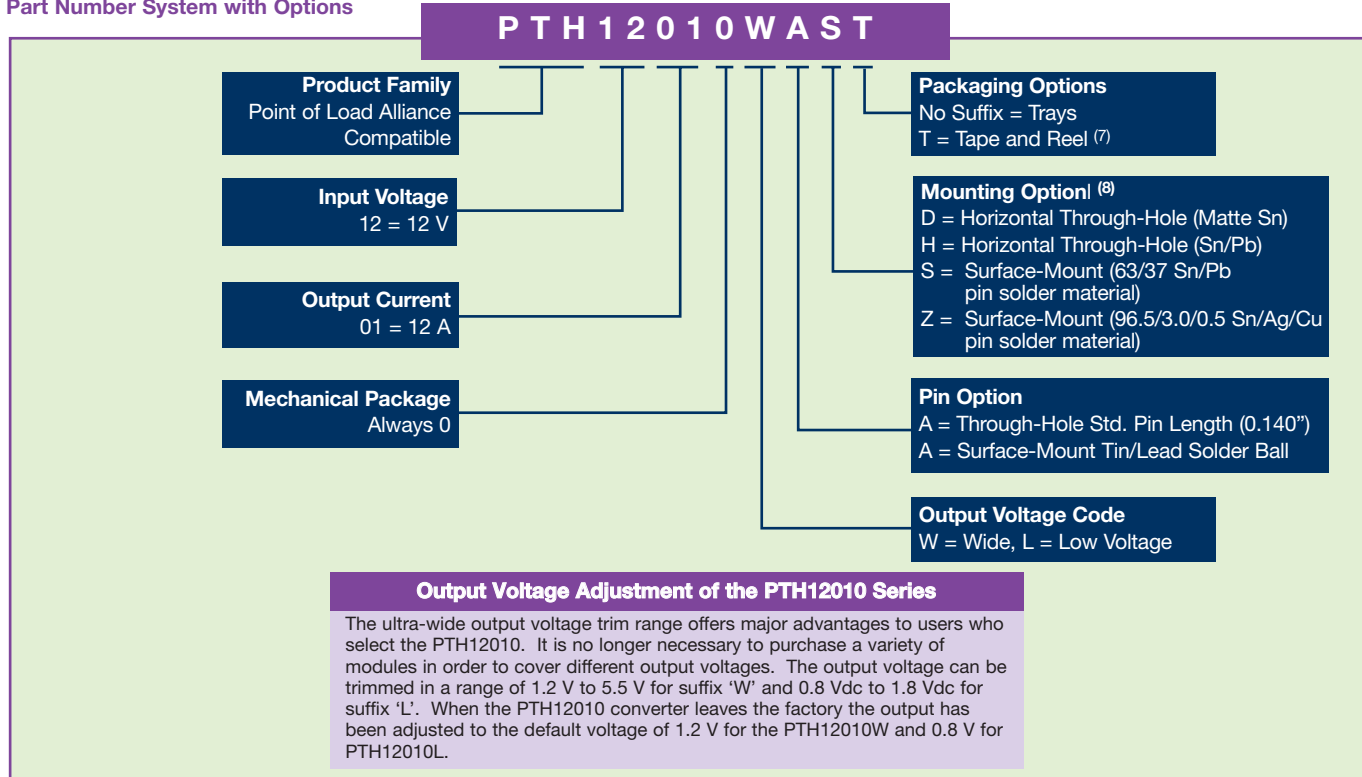


TÜV Product Service (EN60950) Certificate No. B 04 06 38572 044  
 CB Report and Certificate to IEC60950, Certificate No. US/8292/UL

\*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 <sup>(8,9)</sup>
						LINE	LOAD	
66 W	10.8-13.2 Vdc	0.8-1.8 Vdc	0 A	12 A	89%	±10 mV	±12 mV	PTH12010L
66 W	10.8-13.2 Vdc	1.2-5.5 Vdc	0 A	12 A	94%	±10 mV	±12 mV	PTH12010W

Part Number System with Options



EFFICIENCY TABLE - PTH12010W (I<sub>o</sub> = 8 A)

OUTPUT VOLTAGE	EFFICIENCY
Vo = 5.0 V	94%
Vo = 3.3 V	93%
Vo = 2.5 V	91%
Vo = 2.0 V	90%
Vo = 1.8 V	89%
Vo = 1.5 V	88%
Vo = 1.2 V	86%

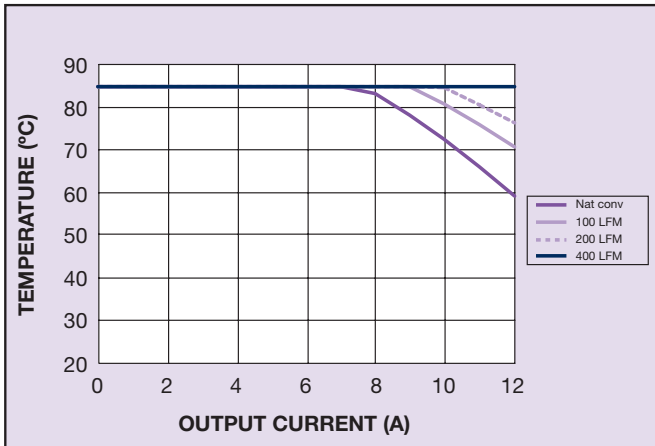
EFFICIENCY TABLE - PTH12010L (I<sub>o</sub> = 8 A)

OUTPUT VOLTAGE	EFFICIENCY
Vo = 1.8 V	89%
Vo = 1.5 V	88%
Vo = 1.2 V	86%
Vo = 1.0 V	84%
Vo = 0.8 V	82%

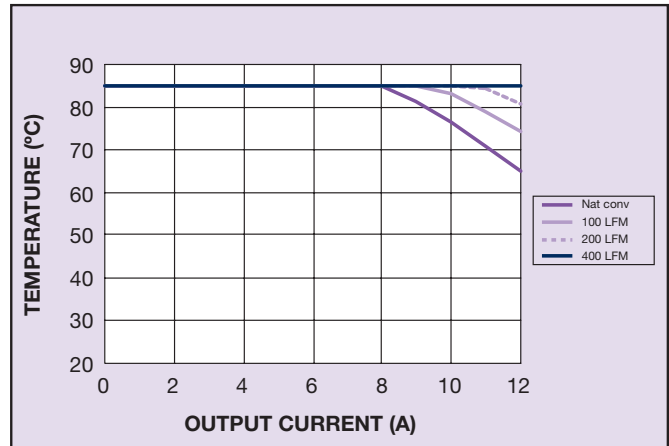
**Notes**

- 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).
- See Figures 1, 2 and 3 for safe operating curves for the PTH12010W and Figures 6 and 7 for PTH12010L.
- A 560 µF electrolytic input capacitor is required for proper operation. The capacitor must be rated for a minimum of 800 mA rms of ripple current.
- An external output capacitor is not required for basic operation. Adding 330 µF of distributed capacitance at the load will improve the transient response.
- 1 A/µs load step, 50 to 100% I<sub>o,max</sub>, C<sub>out</sub> = 330 µF.
- If utilized V<sub>out</sub> will track applied voltage by ±0.3 V (up to V<sub>o</sub> set point).
- 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. PTH12010WAZ. To order Pb-free (RoHS compatible) through-hole parts replace the mounting option 'H' with 'D', e.g. PTH12010WAD.
- 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.

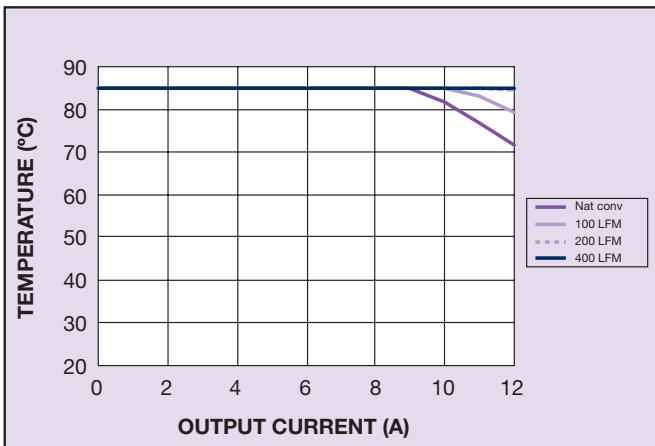
**PTH12010W Characteristic Data**



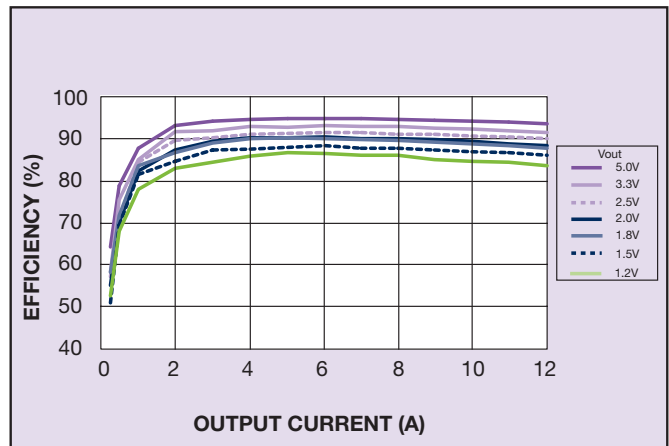
**Figure 1 - Safe Operating Area**  
Vin = 12 V, Output Voltage = 5 V (See Note A)



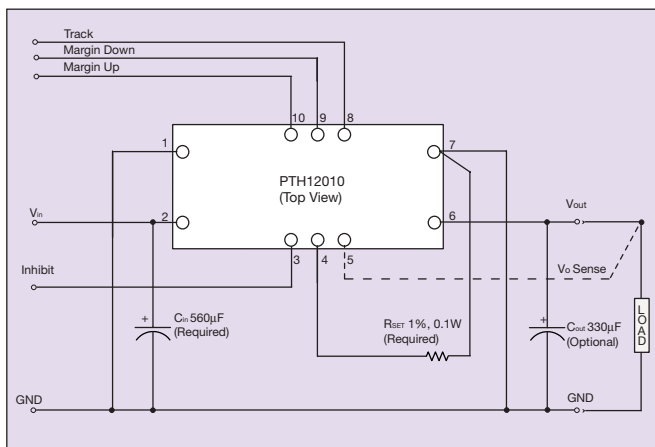
**Figure 2 - Safe Operating Area**  
Vin = 12 V, Output Voltage = 3.3 V (See Note A)



**Figure 3 - Safe Operating Area**  
Vin = 12 V, Output Voltage ≤ 1.8 V (See Note A)



**Figure 4 - Efficiency vs Load Current**  
Vin = 12 V (See Note B)

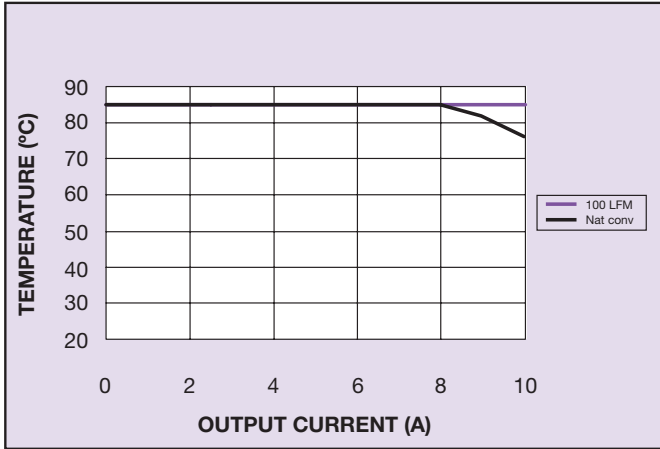


**Figure 5 - Standard Application**

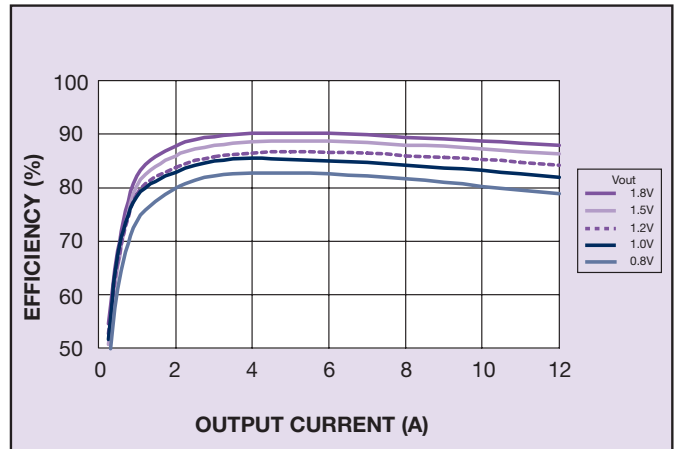
**Notes**

- 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.

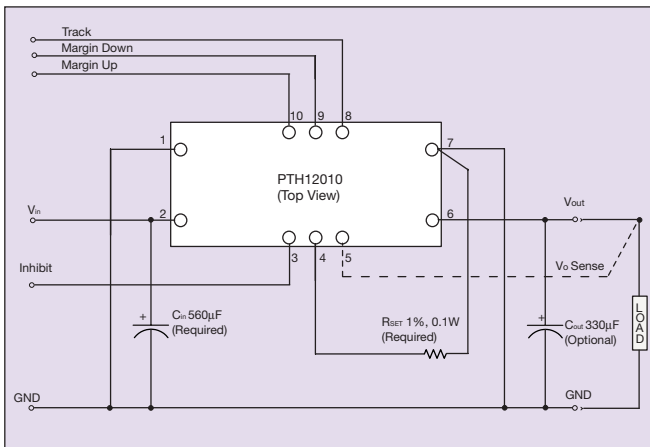
**PTH12010L Characteristic Data**



**Figure 6 - Safe Operating Area**  
Vin = 12 V, Output Voltage ≤ 1.8 V (See Note A)



**Figure 7 - Efficiency vs Load Current**  
Vin = 12 V (See Note B)



**Figure 8 - 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.

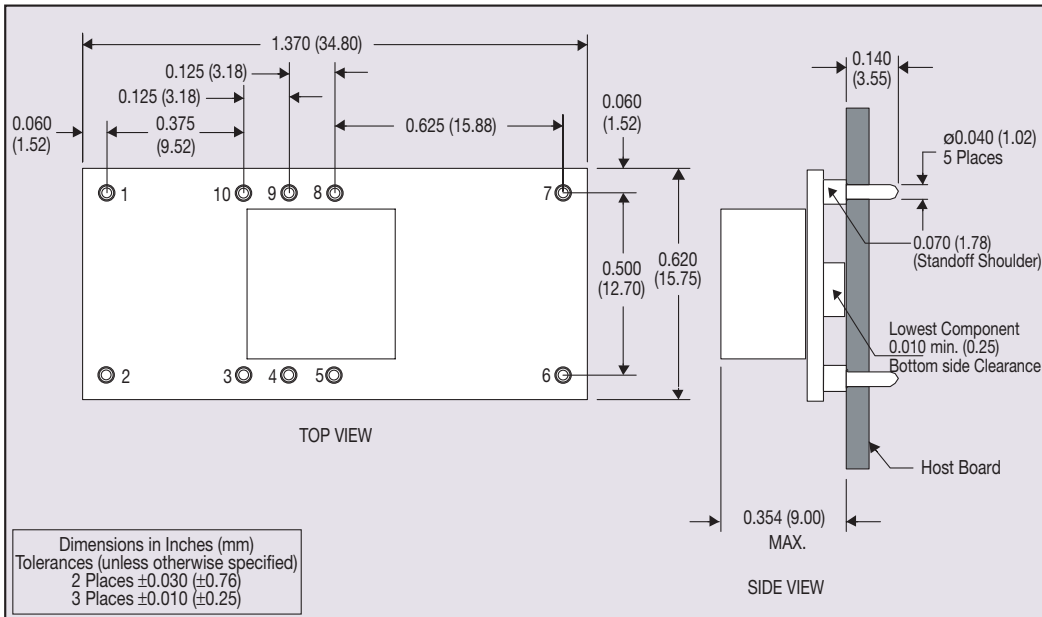


Figure 9 - Plated Through-Hole Mechanical Drawing

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

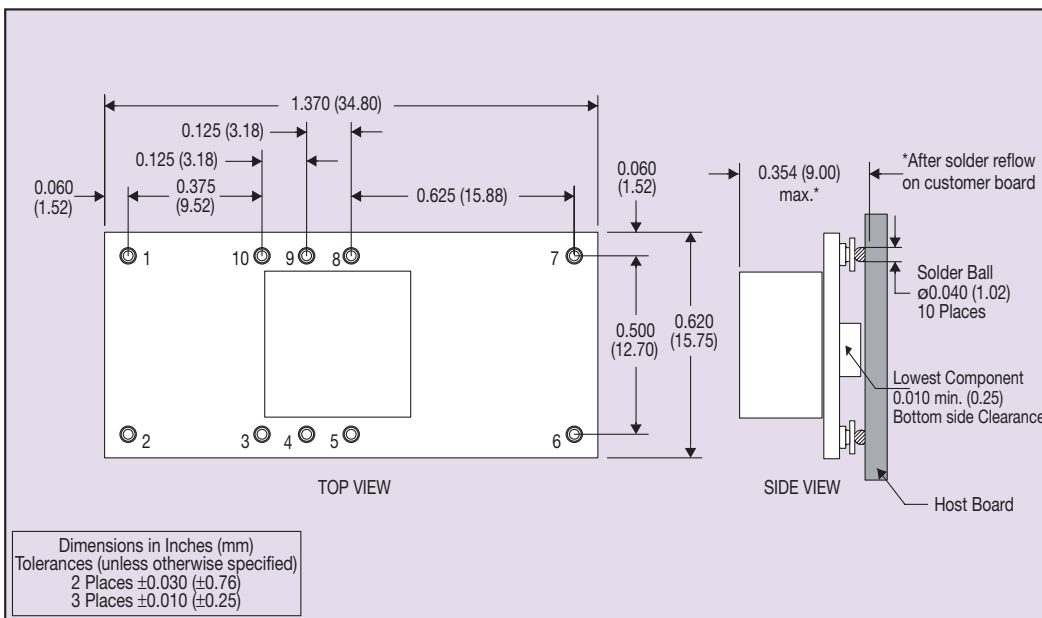


Figure 10 - Surface-Mount Mechanical Drawing

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[www.artesyn.com](http://www.artesyn.com)