

ELECTRICAL SPECIFICATIONS

Input		
Input voltage range	(See Note 3)	10.8 - 13.2 Vdc
Input current	No load	10 mA typical
Remote ON/OFF	(See Note 1)	Positive logic
Start-up time		1 V/ms
Undervoltage lockout		9.2 - 9.7 V typical
Track input voltage	Pin 8 (See Notes 6)	$\pm 0.3 V_{in}$
Output		
Voltage adjustability	(See Note 4)	1.2 - 5.5 Vdc (Suffix 'W') 0.8 - 1.8 Vdc (Suffix 'L')
Setpoint accuracy		$\pm 2.0\% V_o$
Line regulation		± 5 mV typical
Load regulation		± 5 mV typical
Total regulation		$\pm 3.0\% V_o$
Minimum load		0 A
Ripple and noise	20 MHz bandwidth	32 mV pk-pk (Suffix 'W') 1% V_o (Suffix 'L')
Temperature co-efficient	-40 °C to +85 °C	$\pm 0.5\% V_o$
Transient response	(See Note 5)	70 μ s recovery time Overshoot/undershoot 130 mV
Margin adjustment		$\pm 5.0\% V_o$

All specifications are typical at nominal input, full load at 25 °C unless otherwise stated.
 $C_{in} = 560 \mu F$, $C_{out} = 0 \mu F$.

GENERAL SPECIFICATIONS

Efficiency		See Efficiency Table
Insulation voltage		Non-isolated
Switching frequency	Suffix 'W' Suffix 'L'	260 - 380kHz 200 - 300 kHz
Approvals and standards		EN60950, UL/cUL60950
Material flammability		UL94V-0
Dimensions	L x W x H	37.97 x 22.10 x 9.00 mm 1.495 x 0.870 x 0.354 in
Weight		7 g (0.25 oz)
MTBF	Telcordia SR-332	5,236,000 hours

EMC CHARACTERISTICS

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

ENVIRONMENTAL SPECIFICATIONS

Thermal performance (See Note 2)	Operating ambient temperature Non-operating temperature	-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	30 A typical
Thermal		Auto recovery

ORDERING INFORMATION

Model Number ⁽⁹⁾	Output Power (Max.)	Input Voltage	Output Voltage	Output Current (Min.)	Output Current (Max.)	Efficiency (Typical)	Regulation	
							Line	Load
PTH12020L	99 W	10.8 - 13.2 Vdc	0.8 - 1.8 Vdc	0 A	18 A	89%	±5 mV	±5 mV
PTH12020W	99 W	10.8 - 13.2 Vdc	1.2 - 5.5 Vdc	0 A	18 A	95%	±5 mV	±5 mV

PART NUMBER SYSTEM WITH OPTIONS

Product Family	Input Voltage	Output Current	Mechanical Package	Output Voltage Code	Pin Option ⁽⁸⁾	Mounting Options	Pin Option
PTH	12	02	0	W	A	S	T
Point-of-Load Alliance compatible	12 = 12 V	02 = 18 A	Always 0	W = Wide L = Low Voltage		D = Horizontal through-hole (RoHS 6/6) Z = Surface-mount solder ball (RoHS 6/6)	No Suffix = Trays T = Tape and Reel ⁽⁸⁾

OUTPUT VOLTAGE ADJUSTMENT

The ultra-wide output voltage trim range offers major advantages to users who select the PTH12020. 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 1.2 - 5.5 Vdc. When the PTH12020 converter leaves the factory the output has been adjusted to the default voltage of 1.2 V.

Efficiency Table: PTH12020W (Io = 18 A)	
Output Voltage	Efficiency
Vo = 5.0 V	95%
Vo = 3.3 V	93%
Vo = 2.5 V	92%
Vo = 1.8 V	90%
Vo = 1.5 V	88%
Vo = 1.2 V	86%
Efficiency Table: PTH12020L (Io = 18 A)	
Output Voltage	Efficiency
Vo = 1.8 V	89%
Vo = 1.5 V	87%
Vo = 1.2 V	85%
Vo = 1.0 V	83%
Vo = 0.8 V	80%

Notes:

- Remote ON/OFF, Positive Logic
ON: Pin 3 open; or $V > V_{in} - 0.5\text{ V}$
OFF: Pin 3 GND; or $V < 0.8\text{ V}$ (min - 0.2 V).
- See Figures 1, 2 and 3 for safe operating curves.
- 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_{omax} , $C_{out} = 330\text{ }\mu\text{F}$.
- If utilized V_{out} will track applied voltage by $\pm 0.3\text{ V}$ (up to V_o set point).
- 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.

PTH12020W CHARACTERISTIC DATA

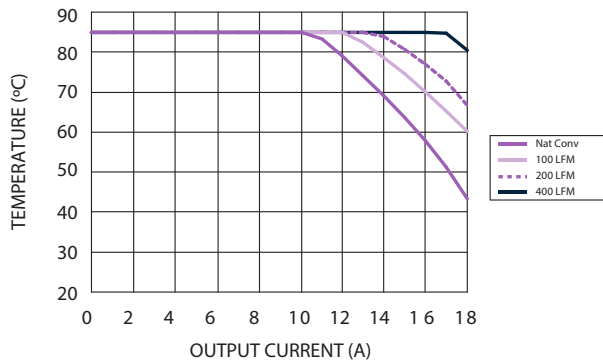


Figure 1 - Safe Operating Area
 $V_{in} = 12\text{ V}$, Output Voltage = 5 V (See Note A)

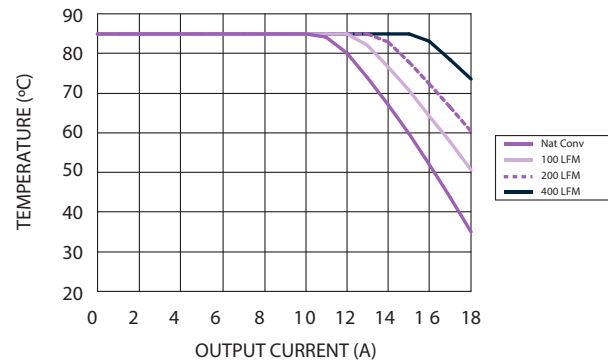


Figure 2 - Safe Operating Area
 $V_{in} = 12\text{ V}$, Output Voltage = 3.3 V (See Note A)

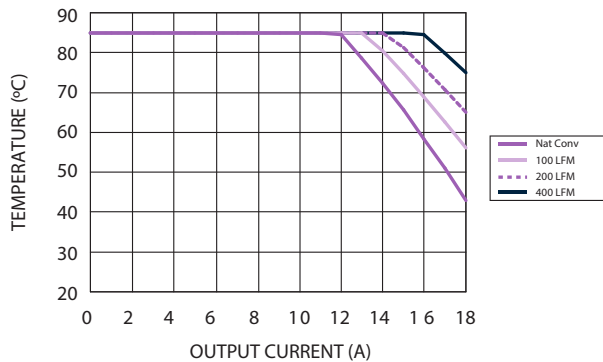


Figure 3 - Safe Operating Area
 $V_{in} = 12\text{ V}$, Output Voltage $\leq 1.8\text{ V}$ (See Note A)

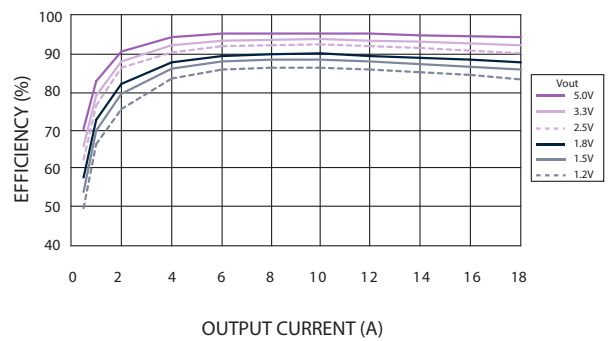


Figure 4 - Efficiency vs Load Current
 $V_{in} = 12\text{ V}$ (See Note B)

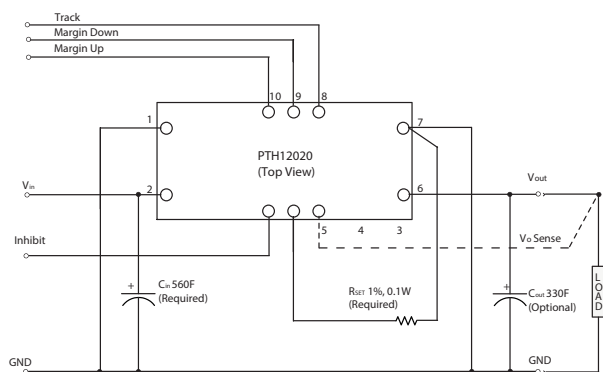


Figure 5 - Standard Application

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.

PTH12020L CHARACTERISTIC DATA

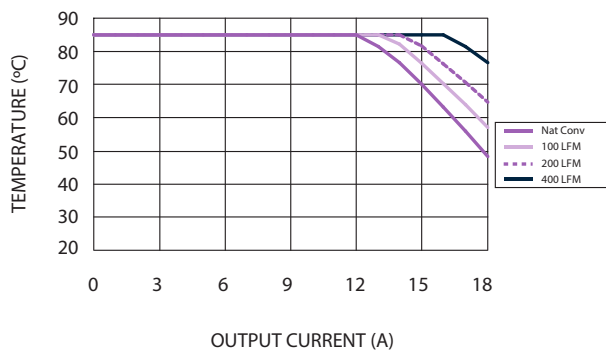


Figure 6 - Safe Operating Area for PTH12020L
 $V_{in} = 12\text{ V}$, Output Voltage = 1.8 V (See Note A)

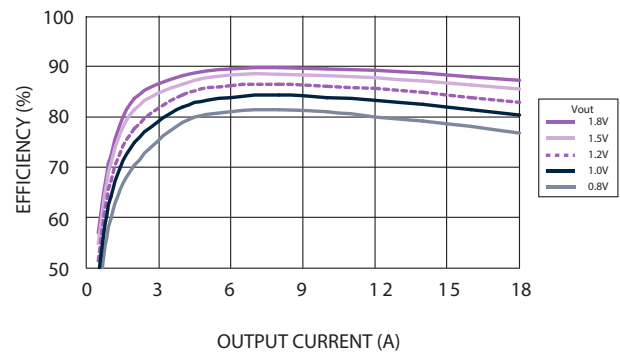


Figure 7 - Efficiency vs Load Current for PTH12020L
 $V_{in} = 12\text{ V}$ (See Note B)

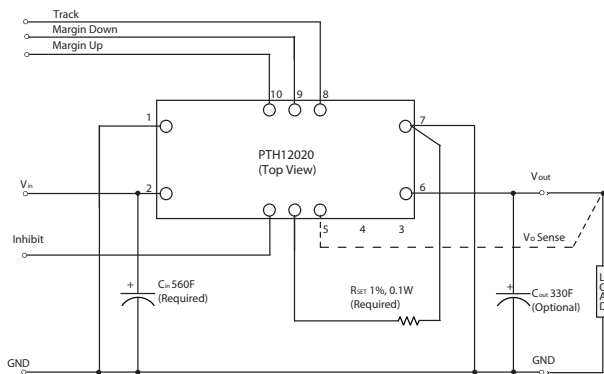


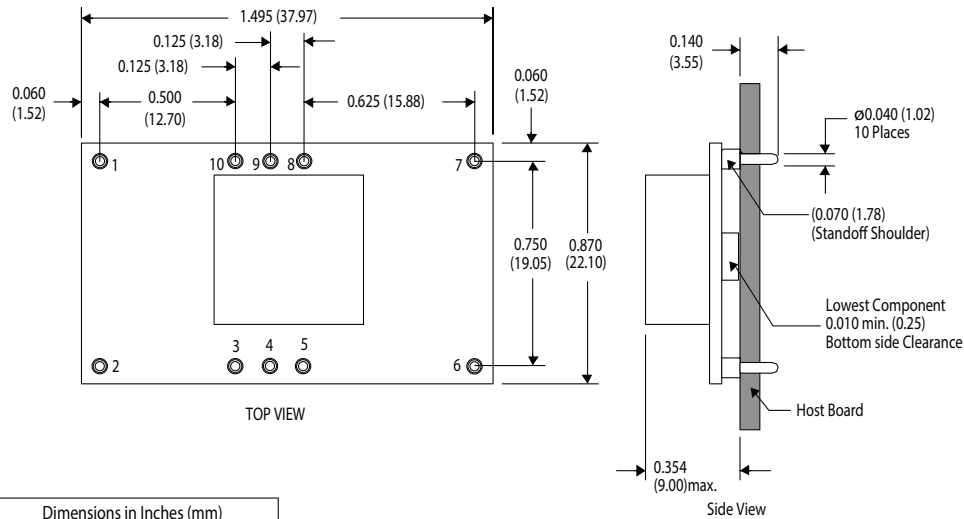
Figure 8 - Standard Application

Notes:

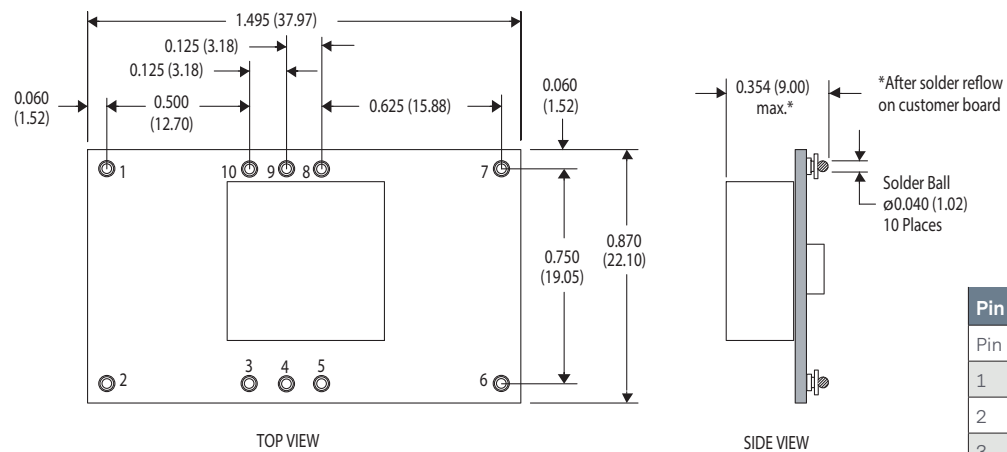
- A. SOA curves represent the conditions at which internal components are within the Artesyn derating guidelines.
- B. Characteristic data has been developed from actual products tested at 25 °C. This data is considered typical data for the converter.

MECHANICAL DRAWINGS

Plated through-hole



Surface-mount



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



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ABOUT ADVANCED ENERGY

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