

PTH12020

12 Vin Single Output

Data Sheet

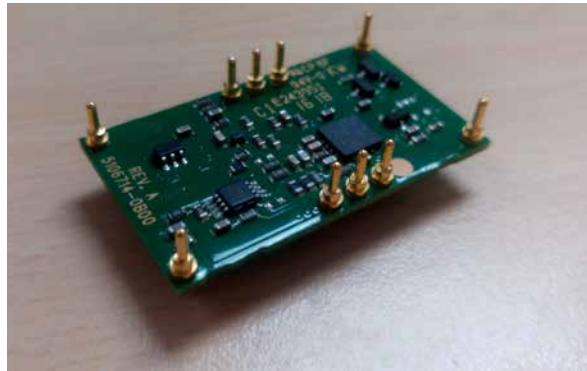
Total Power: 99 Watts
of Outputs: Single

SPECIAL FEATURES

- 18 A output current
- 12 V input voltage
- Wide-output voltage adjust:
1.2 - 5.5 Vdc for suffix 'W'
0.8 - 1.8 Vdc for suffix 'L'
- Auto-track™ sequencing*
- Margin up/down controls
- Efficiencies up to 95%
- Output ON/OFF inhibit
- Output voltage sense
- Point-of-Load-Alliance (POLA) compatible
- RoHS compliant
- Two year warranty

SAFETY

- UL/cUL CAN/CSA-C22.2 No. 60950-1-03/UL 60950-1
- TÜV Product Service (EN60950)
- CB Report and Certificate to IEC60950



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)	±0.3 Vin
Output		
Voltage adjustability	(See Note 4)	1.2 - 5.5 Vdc (Suffix 'W') 0.8 - 1.8 Vdc (Suffix 'L')
Setpoint accuracy		±2.0% Vo
Line regulation		±5 mV typical
Load regulation		±5 mV typical
Total regulation		±3.0% Vo
Minimum load		0 A
Ripple and noise	20 MHz bandwidth	32 mV pk-pk (Suffix 'W') 1% Vo (Suffix 'L')
Temperature co-efficient	-40 °C to +85 °C	±0.5% Vo
Transient response	(See Note 5)	70 µs recovery time Overshoot/undershoot 130 mV
Margin adjustment		±5.0% Vo

All specifications are typical at nominal input, full load at 25 °C unless otherwise stated.
Cin = 560 µF, Cout = 0 µF.

*Auto-track is a trademark of Texas Instruments.

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 ⁽⁸⁾	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.

Notes:

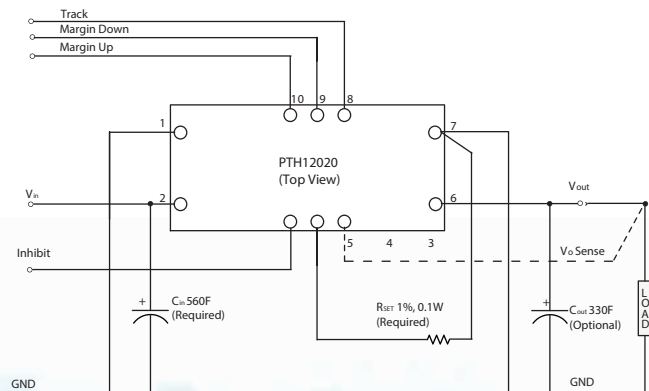
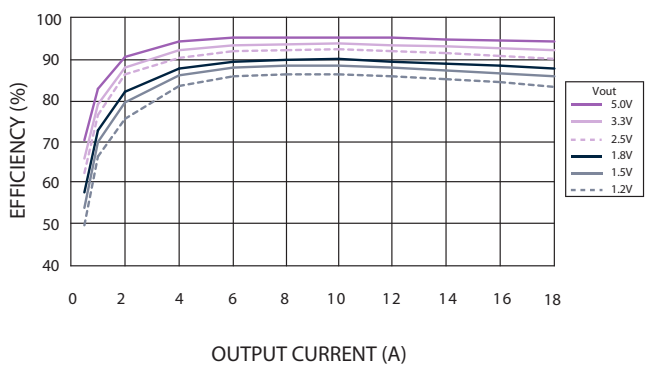
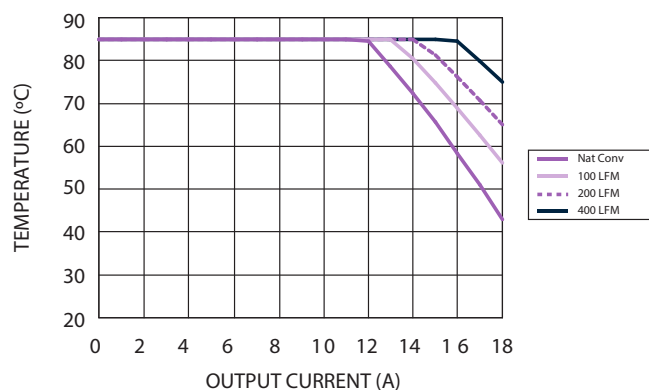
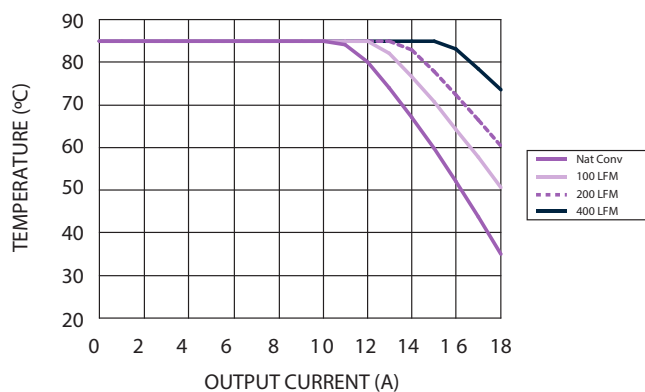
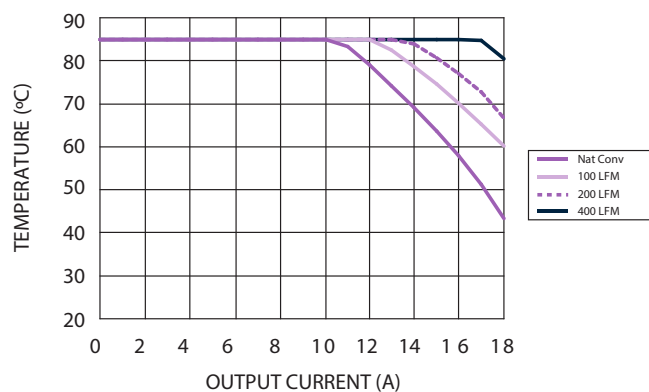
- Remote ON/OFF, Positive Logic
ON: Pin 3 open; or $V > V_{in} - 0.5 V$
OFF: Pin 3 GND; or $V < 0.8 V$ (min - 0.2 V).
- See Figures 1, 2 and 3 for safe operating curves.
- A 560 μF electrolytic input capacitor is required for proper operation. The capacitor must be rated for a minimum of 800 mA rms of 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_{max} , $C_{out} = 330 \mu F$.
- If utilized V_{out} will track applied voltage by $\pm 0.3 V$ (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.

Efficiency Table: PTH12020W
($I_o = 18 A$)

Output Voltage	Efficiency	Output Voltage	Efficiency
$V_o = 5.0 V$	95%	$V_o = 1.8 V$	89%
$V_o = 3.3 V$	93%	$V_o = 1.5 V$	87%
$V_o = 2.5 V$	92%	$V_o = 1.2 V$	85%
$V_o = 1.8 V$	90%	$V_o = 1.0 V$	83%
$V_o = 1.5 V$	88%	$V_o = 0.8 V$	80%
$V_o = 1.2 V$	86%		

Efficiency Table: PTH12020L
($I_o = 18 A$)

PTH12020W Characteristic Data



Notes:

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

PTH12020L Characteristic Data

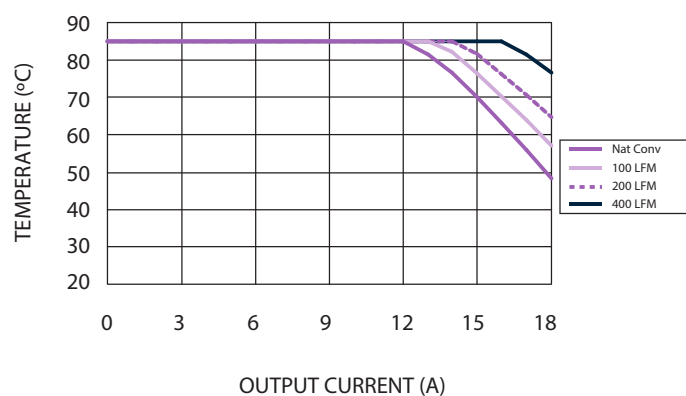


Figure 6 - Safe Operating Area for PTH12020L
 $V_{in} = 12\text{ V}$, Output Voltage = 1.8 V (See Note A)

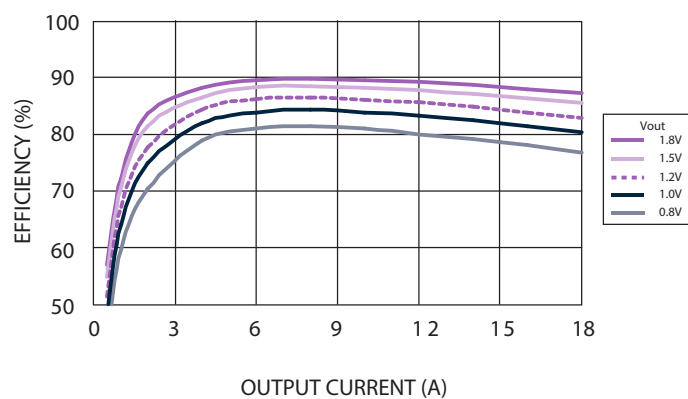


Figure 7 - Efficiency vs Load Current for PTH12020L
 $V_{in} = 12\text{ V}$ (See Note B)

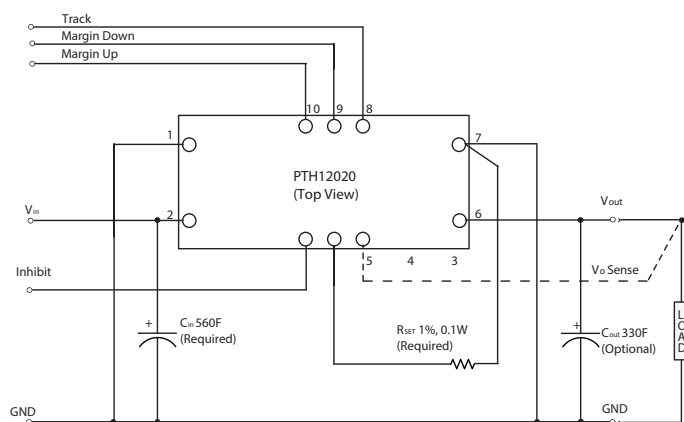


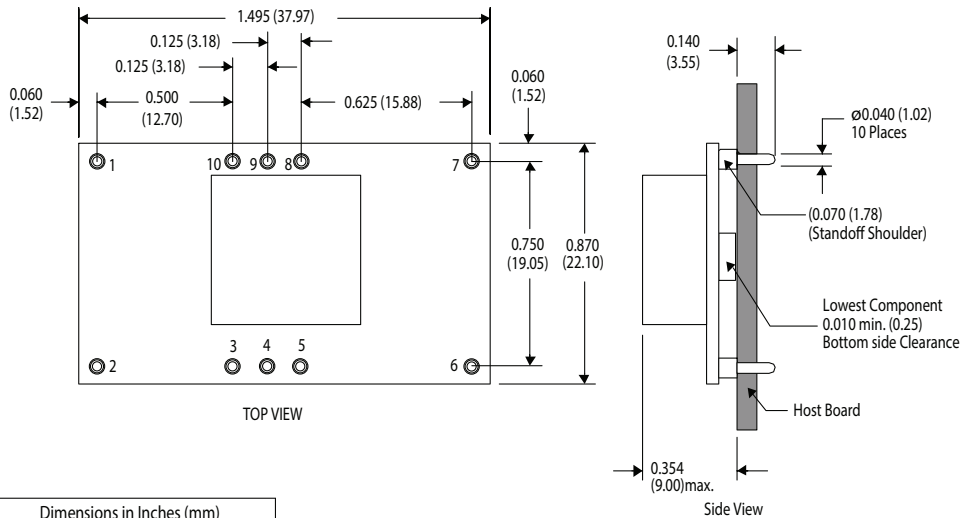
Figure 8 - Standard Application

Notes:

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Mechanical Drawings

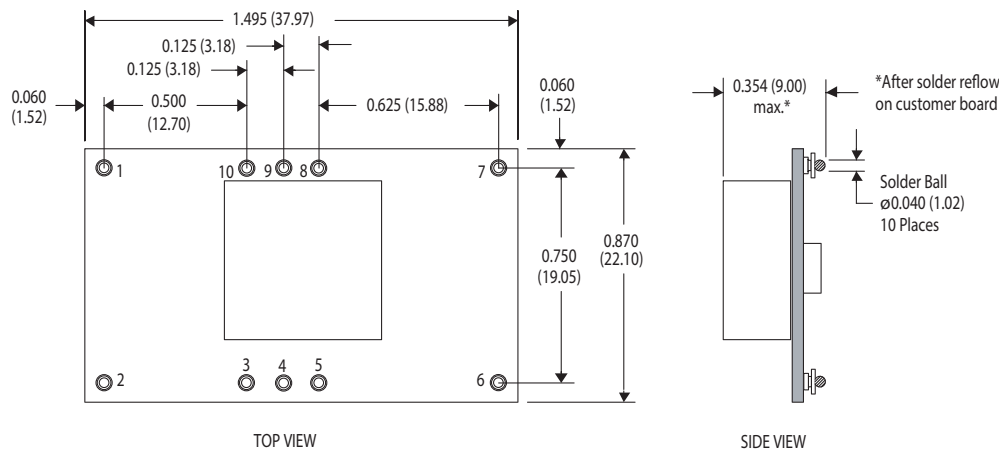
Plated through-hole



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



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