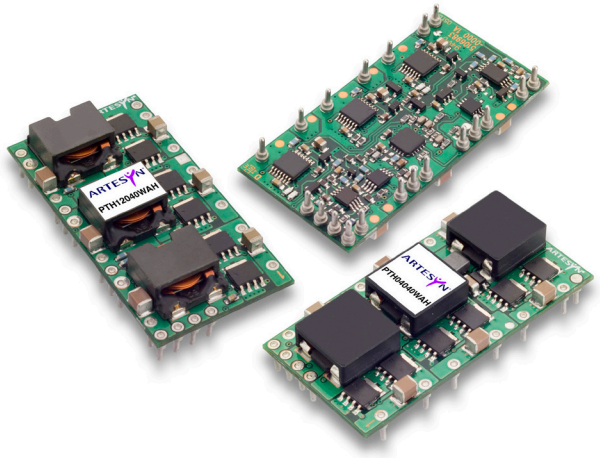
PTH12040
12 Vin

Total Power: 275 Watts
# of Outputs: Single



RoHS 2002/95/EC

Special Features

- 50 A output current (5)
- 12 V input voltage (8 Vdc to 14 Vdc)
- Wide-output voltage adjust
  - 0.8 Vdc to 5.5 Vdc
- Auto-track™ sequencing*
- Margin up/down controls
- Efficiencies up to 96%
- Output ON/OFF inhibit
- Differential remote sense
- Programmable Under-Voltage Lockout (UVLO)
- Point-of-Load-Alliance (POLA) compatible
- Available RoHS compliant
- 2 Year Warranty

Safety

- 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

Specifications

Input		
Input voltage range:	(See Note 3)	8 - 14 Vdc
Input standby current:	(See Note 2)	35 mA typ.
Remote ON/OFF:	(See Note 1)	Positive logic
Start-up time:		1 V/ms
Undervoltage lockout: + Pin 8 open	(See Note 8)	6.6 - 7.5 V typ.
Track input current:	Pin 18 (See Note 7)	- 0.13 mA
Output		
Voltage adjustability:		0.8 - 5.5 Vdc
Setpoint accuracy:	(See Note 1)	± 2.0% Vo
Line regulation:		± 5 mV typ.
Load regulation:		± 5 mV typ.
Total regulation:	(See Note 1)	± 3.0% Vo
Minimum load:		0 A
Ripple and noise:	20 MHz bandwidth	15 mV typ.
Transient response:	(See Note 4)	70 µs recovery time Overshoot/undershoot 150 mV
Margin adjustment:	(See Note 7)	± 5.0% Vo

All specifications are typical at nominal input, full load at 25 °C unless otherwise stated
Cin = 1000 µF, Cout = 660 µF

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

ARTESYN®

EMERSON™ Network Power

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

General Specifications		
Efficiency:		See efficiency table on page 3
Insulation voltage:		Non-Isolated
Switching frequency:		1.05 kHz
Approvals and standards:		EN60950, UL/cUL60950
Material flammability:		UL94V-0
Dimensions:	(L x W x H)	51.94 x 26.54 x 9.07 mm 2.045 x 1.045 x 0.357 in
Weight:		17g (60 oz)
MTBF:	Telcordia SR-332	2,500,000 hours

Environmental Specifications

Thermal performance:	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	95 A
Thermal:		Auto recovery

Ordering Information

Output Power (max)	Input Voltage	Output Voltage	Output Currents		Efficiency (max)	Regulation		Model Numbers [9, 10]
			Min	Max		Line	Load	
275 W	8 - 14 Vdc	0.8 - 5.5 Vdc	0 A	50 A	96%	±5 mV	±5 mV	PTH12040W

Part Number System with Options

P T H 1 2 0 4 0 W A S

Product Family
Point of Load Alliance Compatible

Input Voltage
12 = 12 V

Output Current
04 = 50 A

Mechanical Package
Always 0

Mounting Option [9]
D = Horizontal Through-Hole (RoHS 6/6)
H = Horizontal Through-Hole (RoHS 5/6)
S = Surface-Mount Solder Ball (RoHS 5/6)
Z = Surface-Mount Solder Ball (RoHS 6/6)

Pin Option
A = Through-Hole Std. Pin Length (0.140")
A = Surface-Mount Tin/Lead Solder Ball

Output Voltage Code
W = Wide

Output Voltage Adjustment of the PTH12040W Series

The ultra-wide output voltage trim range offers major advantages to users who select the PTH12040W. 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 5.5 Vdc. When the PTH12040W converter leaves the factory the output has been adjusted to the default voltage of 0.8 V.

Efficiency Table - PTH12040W (I_O = 35 A)	
Output Voltage	Efficiency
Vo = 5.0 V	96%
Vo = 3.3 V	95%
Vo = 2.5 V	93%
Vo = 2.0 V	92%
Vo = 1.8 V	91%
Vo = 1.5 V	90%
Vo = 1.2 V	88%
Vo = 1.0 V	86%
Vo = 0.8 V	82%

Notes

1 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 ppm/°C or better temperature stability.
2 This control pin has an internal pull-up to 5 V nominal. If it is left open-circuit the module will operate when input power is applied. A small low leakage (<100 nA) MOSFET is recommended for control. For further information, consult the related application note. For further information, consult Application Note 193.
3 A 1000 µF input capacitor is required for proper operation. The capacitor must be rated for a minimum of 300 mA rms of ripple current.
4 This is with a 1 A/µs loadstep, 50 to 100% I_{omax}, I_o = 680 µF.
5 See Figures 1 and 2 for safe operating curves.
6 When the set-point voltage is adjusted higher than 3.6 V, a 10 V minimum input voltage is recommended.
7 A small low-leakage (<100 nA) MOSFET is recommended to control this pin. The open circuit voltage is less than 1 Vdc.
8 These are the default voltages. They may be adjusted using the 'UVLO Prog' control input. Consult Application Note No. 193 for further information.
9 To order Pb-free (RoHS compatible) surface-mount parts replace the mounting option 'S' with 'Z', e.g. PTH12040WAZ. To order Pb-free (RoHS compatible) through-hole parts replace the mounting option 'H' with 'D', e.g. PTH12040WAD.
10 NOTICE: Some models do not support all options. Please contact your local Emerson Network Power representative or use the on-line model number search tool at http://www.PowerConversion.com to find a suitable alternative.

Characteristic Data

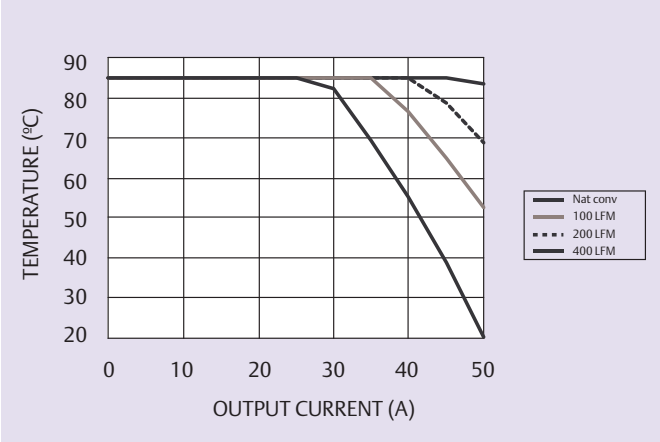


Figure 1 - Safe Operating Area
Vin = 12 V, Output Voltage = 3.3 V (See Note A)

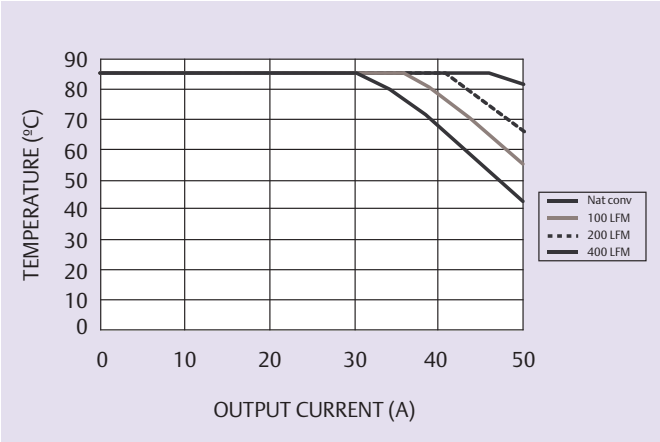


Figure 2 - Safe Operating Area
Vin = 12 V, Output Voltage = 1.2 V (See Note A)

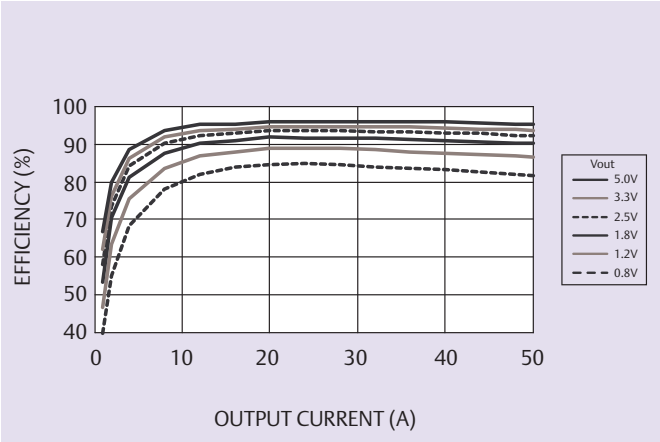


Figure 3 - Efficiency vs Load Current
Vin = 12 V (See Note B)

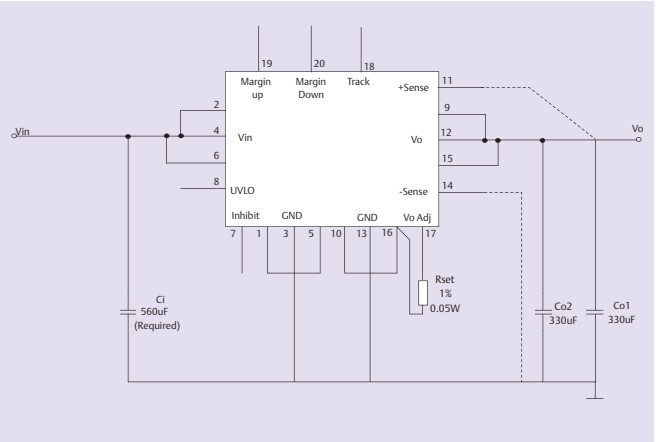


Figure 4 - Standard Application

Notes

A SOA curves represent the conditions at which internal components are within the Emerson Network Power 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

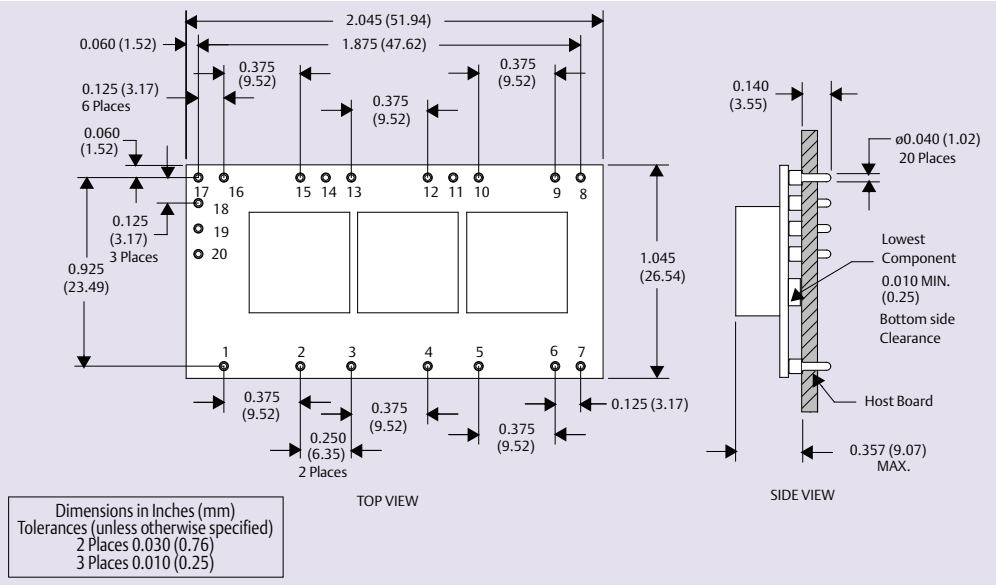


Figure 5 - Plated Through-Hole

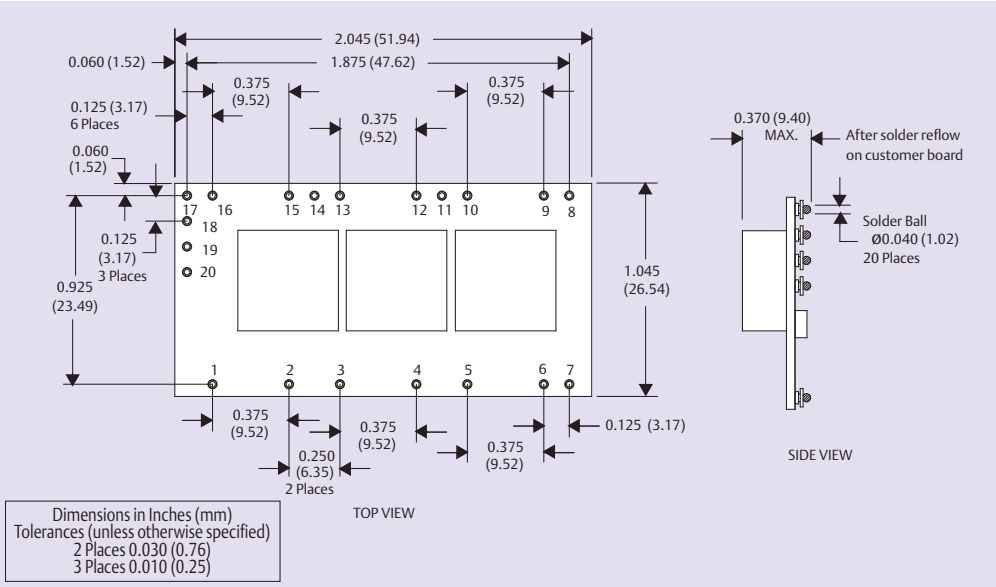


Figure 6 - Surface-Mount

Pin Connections	
Pin No.	Function
Pin 1	Ground
Pin 2	Vin
Pin 3	Ground
Pin 4	Vin
Pin 5	Ground
Pin 6	Vin
Pin 7	Inhibit*

Pin Connections cont.	
Pin No.	Function
Pin 8	UVLO Programming
Pin 9	Vout
Pin 10	Ground
Pin 11	Vs+
Pin 12	Vout
Pin 13	Ground
Pin 14	Vs-

Pin Connections cont.	
Pin No.	Function
Pin 15	Vout
Pin 16	Ground
Pin 17	Adjust
Pin 18	Track
Pin 19	Margin Up*
Pin 20	Margin Down*

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

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