

## Specifications Continued

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:	Over $V_{in}$ and $I_o$ ranges	575 kHz typ.
Approvals and standards:		EN60950, UL/cUL60950
Material flammability:		UL94V-0
Dimensions:	(L x W x H)	34.80 x 28.45 x 9.00 mm 1.370 x 1.120 x 0.354 in
Weight:		7g (0.25 oz)
MTBF:	Telcordia SR-332	2,821,000 hours

## Environmental Specifications

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

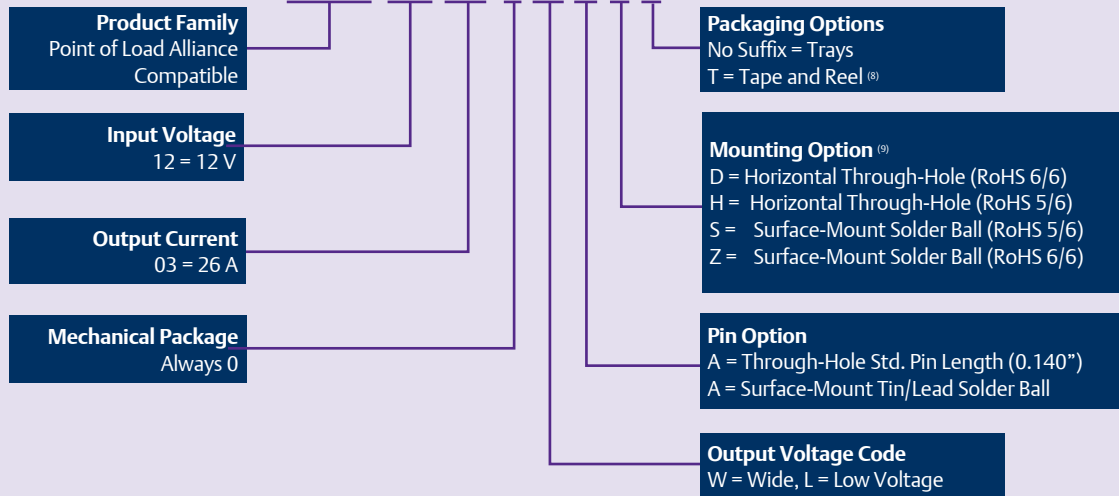
Protection		
Short circuit:	Auto reset	40 A typ.
Thermal:		Auto recovery

## Ordering Information

Output Power (max)	Input Voltage	Output Voltage	Output Currents		Efficiency (max)	Regulation		Model Numbers <sup>(9, 10)</sup>
			Min	Max		Line	Load	
143 W	10.2 - 13.8 Vdc	0.8 - 1.8 Vdc	0 A	26 A	89%	±5 mV	±5 mV	PTH12030L
143 W	10.2 - 13.8 Vdc	1.2 - 5.5 Vdc	0 A	26 A	94.5%	±5 mV	±5 mV	PTH12030W

### Part Number System with Options

**PTH12030WAST**



### Output Voltage Adjustment of the PTH12030 Series

The ultra-wide output voltage trim range offers major advantages to users who select the PTH12030. 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 Vdc to 5.5 Vdc for suffix 'W' and 0.8 Vdc to 1.8 Vdc for suffix 'L'. When the PTH12030 converter leaves the factory the output has been adjusted to the default voltage of 1.2 V for the PTH12030W and 0.8 V for the PTH12030L.

Efficiency Table - PTH12030W ( $I_O = 18$  A)

Output Voltage	Efficiency
$V_O = 5.0$ V	94.5%
$V_O = 3.3$ V	92.7%
$V_O = 2.5$ V	91.4%
$V_O = 2.0$ V	90.3%
$V_O = 1.8$ V	89.5%
$V_O = 1.5$ V	88.2%
$V_O = 1.2$ V	86.2%

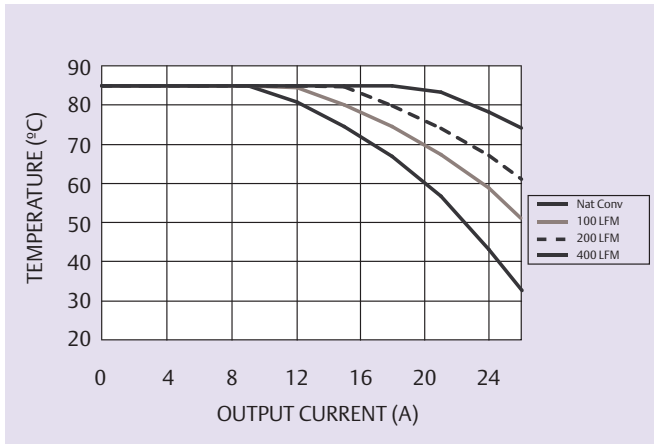
Efficiency Table - PTH12030L ( $I_O = 18$  A)

Output Voltage	Efficiency
$V_O = 1.8$ V	89%
$V_O = 1.5$ V	87%
$V_O = 1.2$ V	85%
$V_O = 1.0$ V	83%
$V_O = 0.8$ V	80%

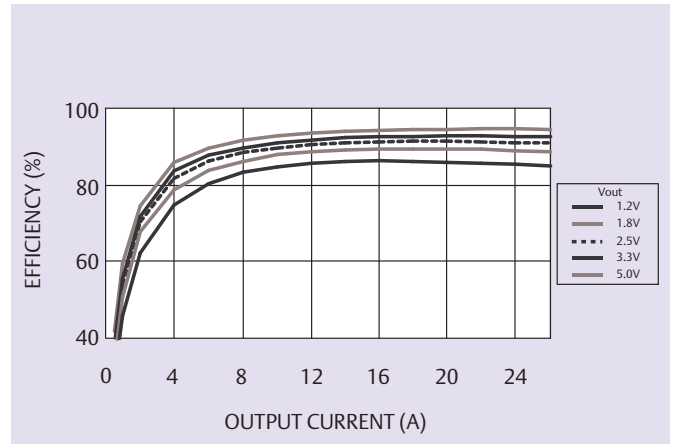
### Notes

- Remote ON/OFF. Active High  
ON: Pin 4 open; or  $V > V_{in} - 0.5$  V  
OFF: Pin 4 GND; or  $V < 0.8$  V (min - 0.2 V).
- See Figure 1 for safe operating curve of the PTH12030W and Figure 4 for safe operating curve of PTH12030L.
- A 560  $\mu$ F 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  $\mu$ F of distributed capacitance at the load will improve the transient response.
- 1 A/ $\mu$ s load step, 50 to 100%  $I_{Omax}$ ,  $C_{out} = 330$   $\mu$ 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.
- The pk-pk output ripple voltage is measured with an external 10  $\mu$ F ceramic capacitor. See Figure 3 Standard application schematic on the following page.
- To order Pb-free (RoHS compatible) surface-mount parts replace the mounting option 'S' with 'Z', e.g. PTH12030WAZ. To order Pb-free (RoHS compatible) through-hole parts replace the mounting option 'H' with 'D', e.g. PTH12030WAD.
- 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.

## PTH12030W Characteristic Data

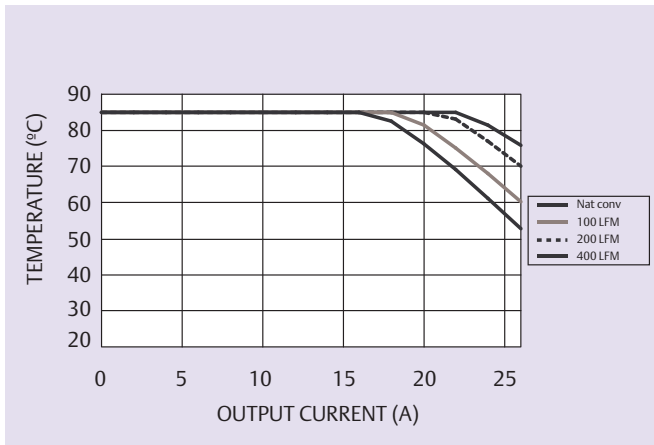


**Figure 1 - Safe Operating Area**  
 $V_{in} = 12\text{ V}$ , Output Voltage = 3.3 V (See Note A)

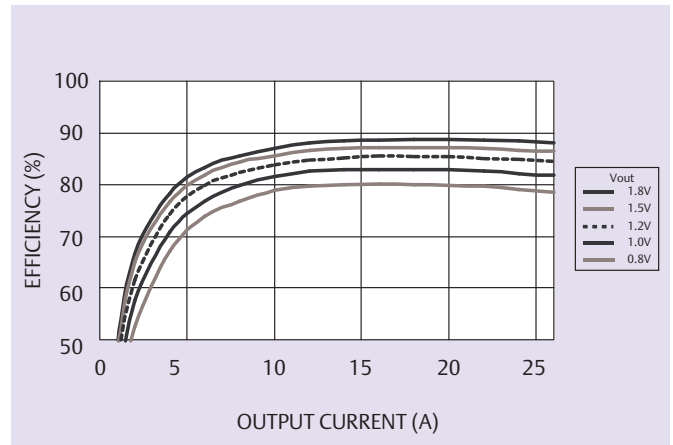


**Figure 2 - Efficiency vs Load Current**  
 $V_{in} = 12\text{ V}$  (See Note B)

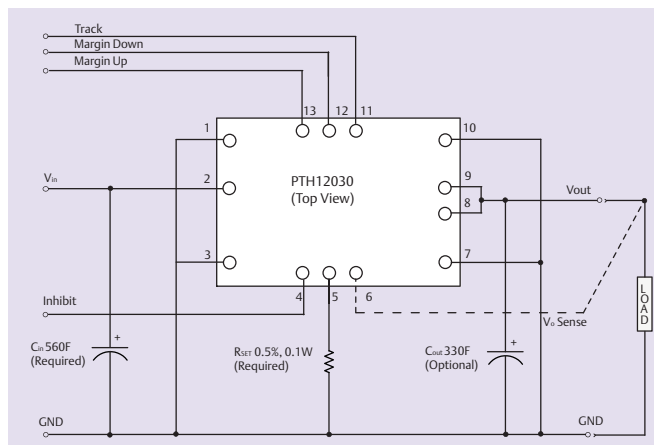
## PTH12030W Characteristic Data



**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 - All Models**

### 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

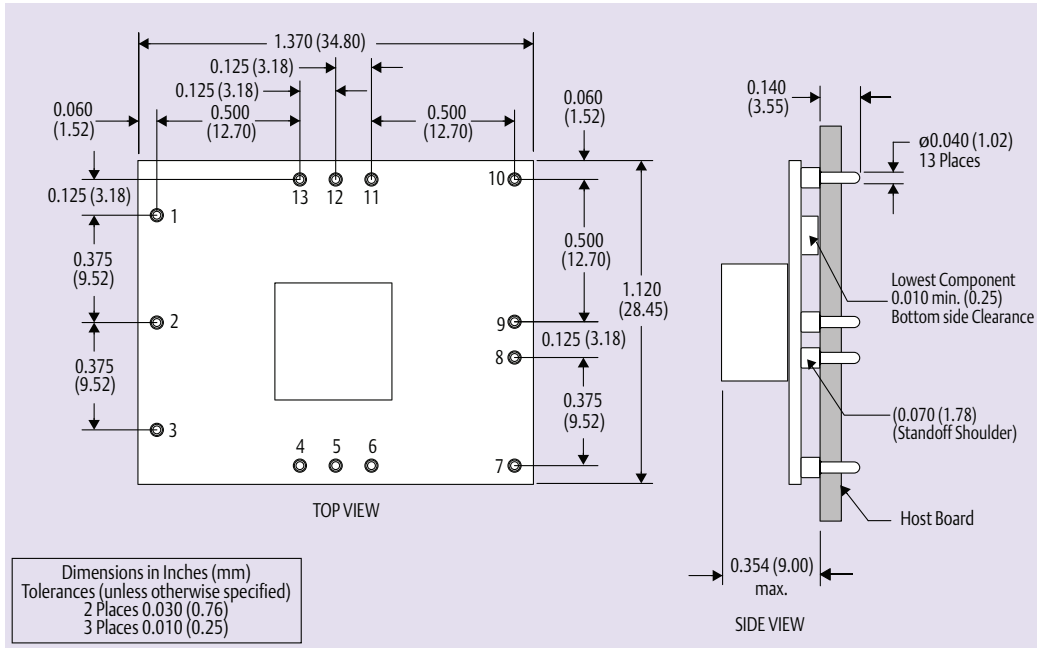


Figure 6 - Plated Through-Hole

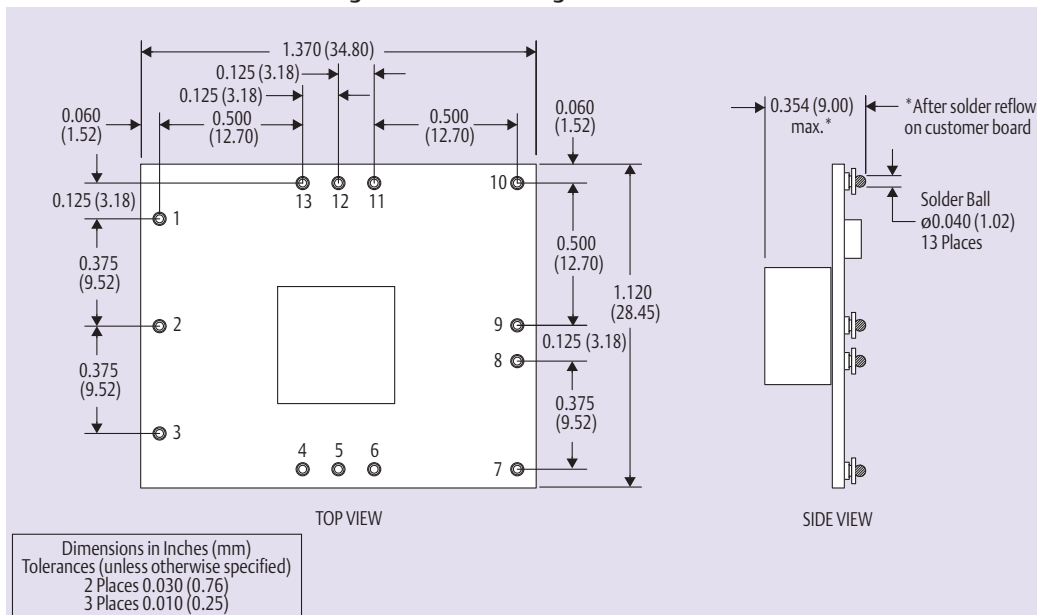


Figure 7 - Surface-Mount

Pin Connections	
Pin No.	Function
Pin 1	Ground
Pin 2	Vin
Pin 3	Ground
Pin 4	Inhibit*
Pin 5	Vo adjust

Pin Connections cont.	
Pin No.	Function
Pin 6	Vo sense
Pin 7	Ground
Pin 8	Vout
Pin 9	Vout
Pin 10	Ground

Pin Connections cont.	
Pin No.	Function
Pin 11	Track
Pin 12	Margin down*
Pin 13	Margin up*

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

### Americas

5810 Van Allen Way  
Carlsbad, CA 92008  
USA  
Telephone: +1 760 930 4600  
Facsimile: +1 760 930 0698

### Europe (UK)

Waterfront Business Park  
Merry Hill, Dudley  
West Midlands, DY5 1LX  
United Kingdom  
Telephone: +44 (0) 1384 842 211  
Facsimile: +44 (0) 1384 843 355

### Asia (HK)

14/F, Lu Plaza  
2 Wing Yip Street  
Kwun Tong, Kowloon  
Hong Kong  
Telephone: +852 2176 3333  
Facsimile: +852 2176 3888

For global contact, visit:

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

[techsupport.embeddedpower@emerson.com](mailto:techsupport.embeddedpower@emerson.com)

While every precaution has been taken to ensure accuracy and completeness in this literature, Emerson Network Power assumes no responsibility, and disclaims all liability for damages resulting from use of this information or for any errors or omissions.

### Emerson Network Power.

The global leader in enabling business-critical continuity.

- AC Power
- Connectivity
- DC Power
- Embedded Computing
- Embedded Power**
- Monitoring
- Outside Plant
- Power Switching & Controls
- Precision Cooling
- Racks & Integrated Cabinets
- Services
- Surge Protection

[EmersonNetworkPower.com](http://EmersonNetworkPower.com)

Emerson Network Power and the Emerson Network Power logo are trademarks and service marks of Emerson Electric Co.  
©2008 Emerson Electric Co.