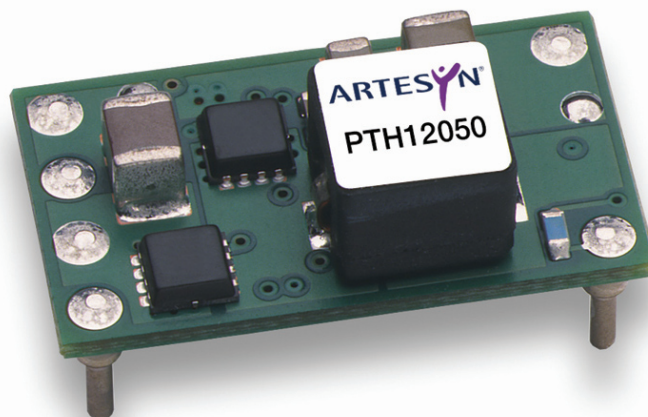


PTH12050 12 Vin

Total Power: 33 Watts
of Outputs: Single



Rev.3.12.09_169
PTH12050
1 of 5



Special Features

- 6 A output current
- 12 V input voltage
- Wide-output voltage adjust
1.2 Vdc - 5.5 Vdc for suffix 'W' &
0.8 Vdc - 1.8 Vdc for suffix 'L'
- Auto-track™ sequencing*
- Pre-bias start-up
- Efficiencies up to 93%
- Output ON/OFF inhibit
- Output voltage sense
- Point-of-Load-Alliance (POLA)
compatible
- Available RoHS compliant
- 2 Year Warranty

Safety

- 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

Specifications

Input		
Input voltage range:	(See Note 3, page 3)	10.8 - 13.2 Vdc
Input current:	No load	10 mA typ.
Remote ON/OFF:	(See Note 1, page 3)	Positive logic
Start-up time:		1 V/ms
Undervoltage lockout:		8.8 - 0.4 V typ.
Track input voltage:	Pin 8 (See Note 6, page 3)	± 0.3 Vin

All specifications are typical at nominal input, full load at 25°C unless otherwise stated. $C_{in} = 100 \mu F$,
 $C_{out} = 0 \mu F$

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



Specifications Continued

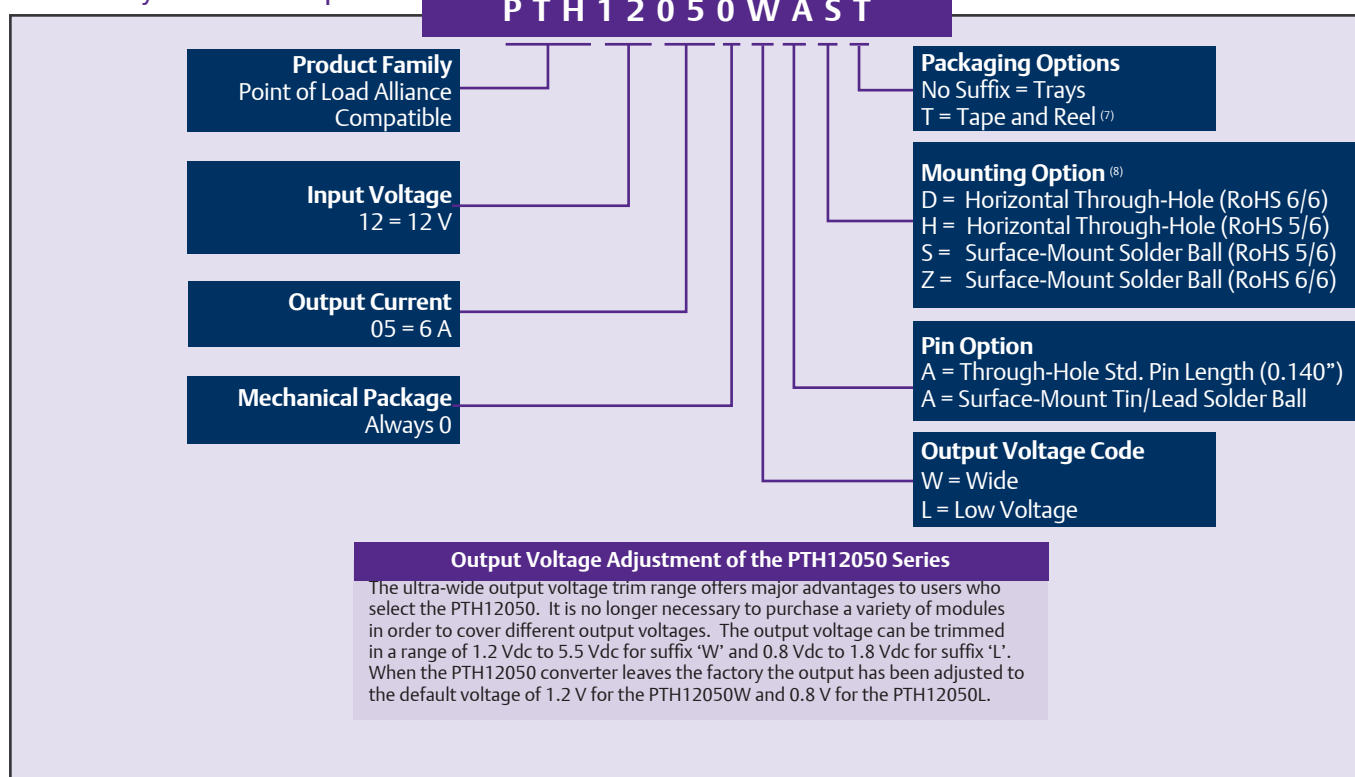
Output		
Voltage adjustability: (See Note 4, page 3)	Suffix 'W' Suffix 'L'	1.2 - 5.5 Vdc 0.8 - 1.8 Vdc
Setpoint accuracy:		± 2.0% Vo
Line regulation:		± 5 mV typ.
Load regulation:		± 5 mV typ.
Total regulation:		± 3.0% Vo
Minimum load:		0 A
Ripple and noise: 20 MHz bandwidth	Suffix 'W' Vo 2.5 V Vo > 2.5 V Suffix 'L' Vo 1.0 V Vo > 1.0 V	25 mV pk-pk 1% Vo 20 mV pk-pk 30 mV pk-pk
Temperature co-efficient:	-40 °C to +85 °C	± 0.5% Vo
Transient response:	(See Note 5, page 3)	70 µs recovery time Overshoot/undershoot 100 mV
Margin adjustment:		± 5.0% Vo

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 3
Insulation voltage:		Non-isolated
Switching frequency: Over V_{in} and I_o ranges	Suffix 'W' Suffix 'L'	320 kHz typ. 250 kHz typ.
Approvals and standards:		EN60950 UL/cUL60950
Material flammability:		UL94V-0
Dimensions:	(L x W x H)	22.10 x 12.57 x 8.50 mm 0.870 x 0.495 x 0.335 in
Weight:		2.9 g (0.10 oz)
MTBF:	Telcordia SR-332	7,092,000 hours
Environmental Specifications		
Thermal Performance: (See Note 2, page 3)	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	14 A typ.

Ordering Information

Output Power (max)	Input Voltage	Output Voltage	Output Currents		Efficiency (max)	Regulation		Model Numbers ^(9, 10)
			Min	Max		Line	Load	
33 W	10.8 - 13.2 Vdc	0.8 - 1.8 Vdc	0 A	6 A	88%	±5 mV	±5 mV	PTH12050L
33 W	10.8 - 13.2 Vdc	1.2 - 5.5 Vdc	0 A	6 A	93%	±5 mV	±5 mV	PTH12050W

Part Number System with Options



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 Figure 1 for safe operating curve.
- A 100 μF electrolytic input capacitor is required for proper operation. The capacitor must be rated for a minimum of 750 mA rms of ripple current. $C_2 = 10 \mu F$ ceramic capacitor, required for output voltages of 3.3 V and higher
- An external output capacitor is not required for basic operation. Adding 100 μF of distributed capacitance at the load will improve the transient response.
- 1 A/ μs load step, 50 to 100% I_{Omax} ; $C_{out} = 100 \mu F$.
- 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 μF ceramic capacitor. See Figure 3 for Standard application schematic.
- To order Pb-free (RoHS compatible) surface-mount parts replace the mounting option 'S' with 'Z', e.g. PTH12050WAZ. To order Pb-free (RoHS compatible) through-hole parts replace the mounting option 'H' with 'D', e.g. PTH12050WAD.
- 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.

Efficiency Table - PTH12050W ($I_O = 5 A$)

Output Voltage	Efficiency
$V_o = 5.0 V$	93%
$V_o = 3.3 V$	91%
$V_o = 2.5 V$	89%
$V_o = 2.0 V$	88%
$V_o = 1.8 V$	87%
$V_o = 1.5 V$	86%
$V_o = 1.2 V$	84%

Efficiency Table - PTH12050L ($I_O = 5 A$)

Output Voltage	Efficiency
$V_o = 1.8 V$	88%
$V_o = 1.5 V$	87%
$V_o = 1.2 V$	85%
$V_o = 1.0 V$	83%
$V_o = 0.8 V$	81%

Characteristic Data

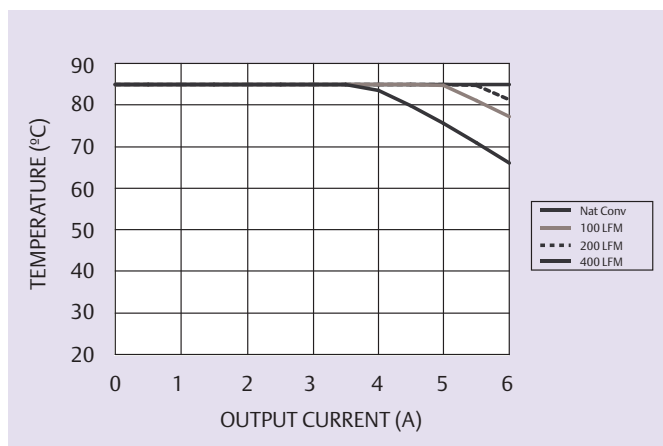


Figure 1 - Safe Operating Area for PTH12050W
 $V_{in} = 12\text{ V}$, Output Voltage = 3.3 V (See Note A)

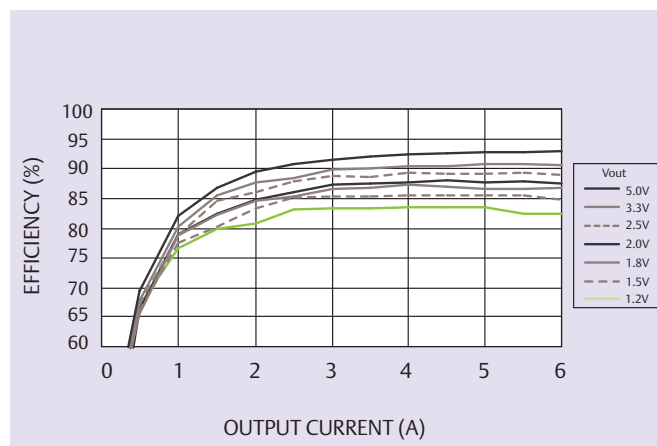


Figure 2 - Efficiency vs Load Current for PTH12050W
 $V_{in} = 12\text{ V}$ (See Note B)

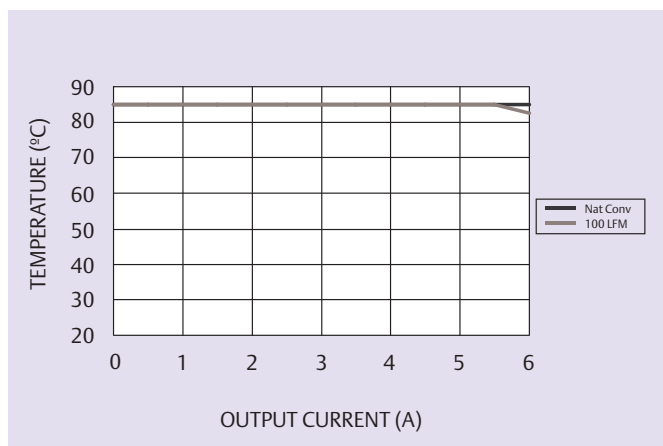


Figure 3 - Safe Operating Area for PTH12050L
 $V_{in} = 12\text{ V}$, Output Voltage = 1.8 V (See Note A)

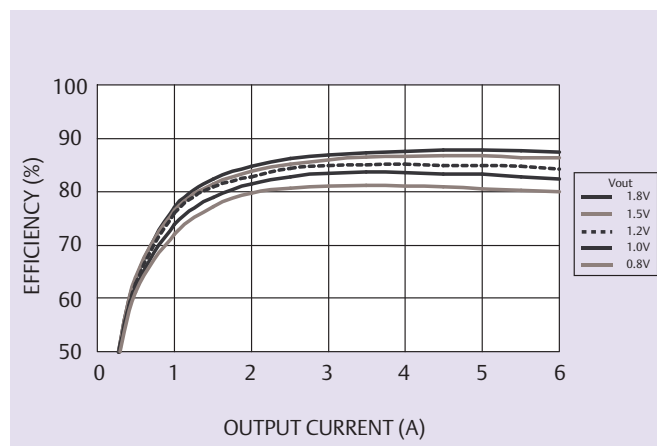


Figure 4 - Efficiency vs Load Current for PTH12050L
 $V_{in} = 12\text{ V}$ (See Note B)

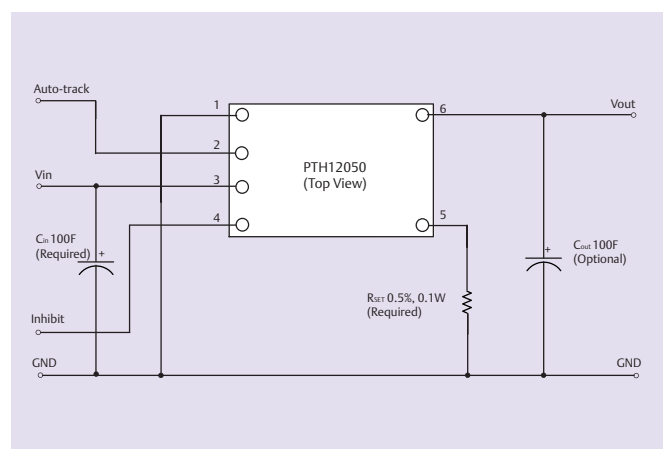


Figure 5 - Standard Application - All Models

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

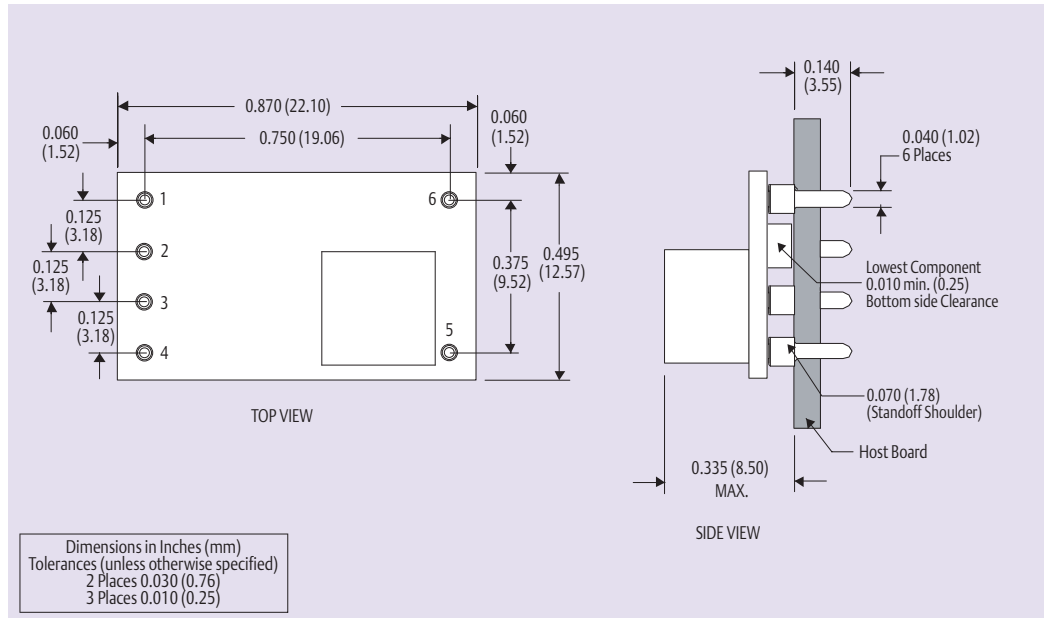


Figure 6 - Plated Through-Hole

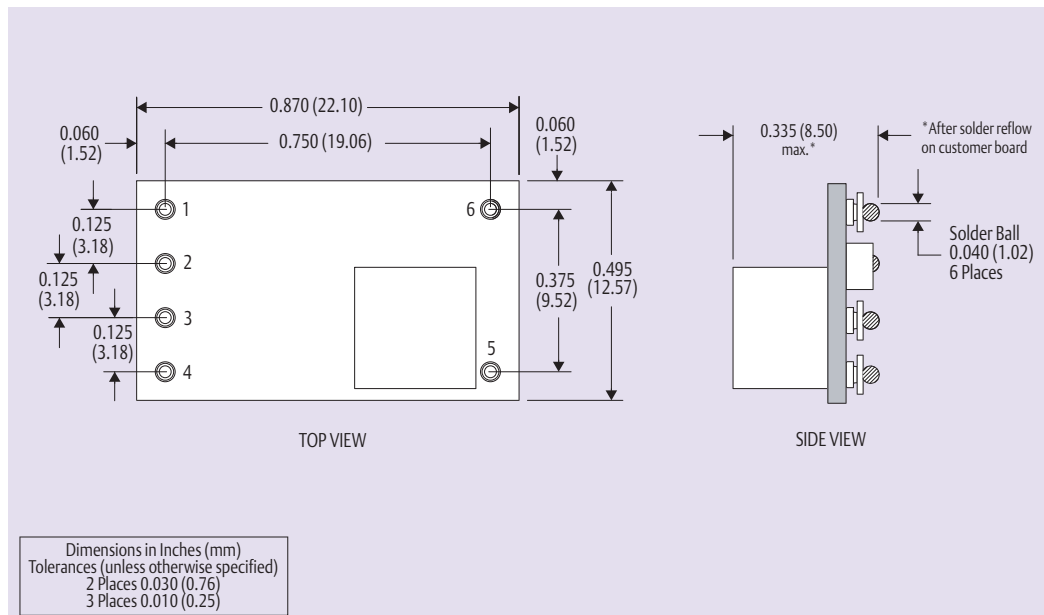


Figure 7 - Surface-Mount

Pin Connections	
Pin No.	Function
Pin 1	Ground
Pin 2	Track
Pin 3	Vin
Pin 4	Inhibit*
Pin 5	Vo adjust
Pin 6	Vout

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

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