

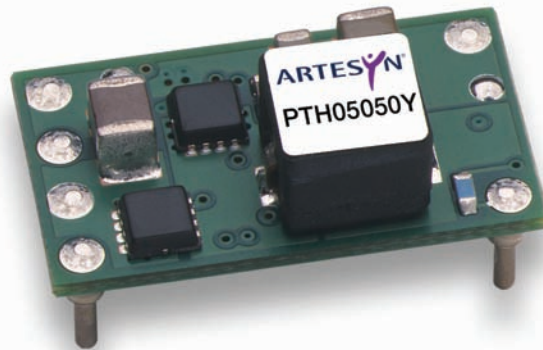


**THE DATASHEET OF
PTH12050YAD**



PTHxx050Y 3.3/5/12 Vin

Total Power: 10.8 Watts
of Outputs: Single



Rev. 3.23.09_137
PTHxx050Y Series
1 of 5



Special Features

- V_{TT} bus termination output (output the system V_{REF})
- 6 A output current (8 A peak)
- 3.3, 5, or 12 Vdc input voltage
- DDR and QDR compatible
- ON/OFF inhibit (for V_{TT} stand-by)
- Under-voltage lockout
- Operating temperature range: -40 °C to +85 °C
- Efficiencies up to 88%
- Output overcurrent protection (non-latching, auto-reset)
- 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 current:	No load	10 mA
Input voltage range:	PTH03050Y PTH05050Y PTH12050Y	2.95 - 3.65 Vdc 4.5 - 5.5 Vdc 10.8 - 13.2 Vdc
Undervoltage lockout:		
	PTH03050Y	Vin increasing Vin decreasing 2.45 V typ., 2.80 V max. 2.20 V min., 2.40 V typ.
	PTH05050Y	Vin increasing Vin decreasing 4.30 V typ., 4.45 V max. 3.40 V min., 3.70 V typ.
	PTH12050Y	Vin increasing Vin decreasing 9.5 V typ., 10.4 V max. 8.80 V min., 9.0 V typ.
Input capacitance: (See Note 4, page 3)	PTH03050Y & PTH05050Y PTH12050Y	470 μ F 560 μ F
Remote ON/OFF:		Active high

All specifications are typical at nominal input, $V_{REF} = 1.25$ V, full load at 25 °C unless otherwise stated
 C_{in} , C_{o1} , C_{o2} = typical value



Specifications Continued

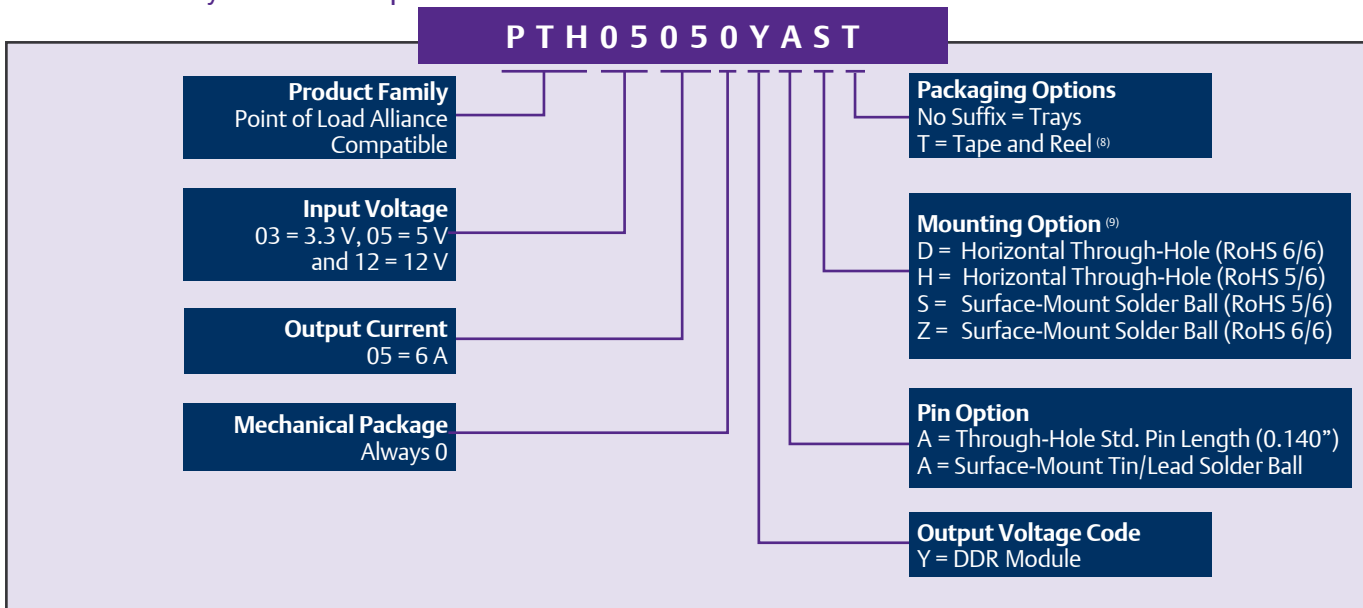
Output		
Output current: (over V_{REF} range)	All models Continuous (See Note 1, page 3) Repetitive pulse (See Note 2, page 3)	± 6 A ± 8 A
Tracking range for V_{REF} :		0.55 - 1.8 V
Tracking tolerance to V_{REF} ($V_{TT} - V_{REF}$): (over line, load & temperature)		-10 mV to + 10 mV
Ripple and noise:	20 MHz bandwidth	20 mV pk-pk
Load transient response: (See Note 5, page 3)		80 μ s settling time Overshoot/undershoot 25 mV typ.
Output capacitance:		
Non-ceramic values (See Notes 5 & 6, page 3)	PTH03050Y PTH05050Y PTH12050Y	470 μ F typ., 3,300 μ F max. 470 μ F typ., 3,300 μ F max. 940 μ F typ., 3,300 μ F max.
Ceramic values (See Note 5, page 3)	PTH03050Y PTH05050Y PTH12050Y	200 μ F typ., 300 μ F max. 200 μ F typ., 300 μ F max. 400 μ F typ., 600 μ F max.
(See Note 7, page 3)	ESR (non-ceramic)	4 m Ω min.

General Specifications		
Efficiency: $I_o = 4$ A	PTH03050Y PTH05050Y PTH12050Y	88% typ. 87% typ. 84% typ.
Insulation voltage:		Non-isolated
Switching frequency:	PTH03050Y PTH05050Y PTH12050Y	550 - 650 kHz 550 - 650 kHz 200 - 300 kHz
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	6,000,000 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		
Overcurrent threshold (auto reset):	All models	12 A typ.

Ordering Information

Output Power (max)	Input Voltage	V_{TT} Range	Output Currents		Efficiency (max)	Model Numbers ^(9, 10)
			Min	Max		
10.8 W	2.95 - 3.65 Vdc	0.55 - 1.8 Vdc	0 A	± 6 A	88%	PTH03050Y
10.8 W	4.5 - 5.5 Vdc	0.55 - 1.8 Vdc	0 A	± 6 A	88%	PTH05050Y
10.8 W	10.8 - 13.2 Vdc	0.55 - 1.8 Vdc	0 A	± 6 A	85%	PTH12050Y

Part Number System with Options



Notes

- Rating is conditional on the module being soldered to a 4 layer PCB with 1 oz. copper. See the SOA curves or contact the factory for appropriate derating. The PTH03050Y and PTH05050Y require no derating up to 85 °C operating temperature and natural convection airflow.
- Up to 10 ms pulse period at 10% maximum duty.
- This control pin has an internal pull-up to the input voltage V_{in} . 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 Application Note 178.
- An input capacitor is required for proper operation. The capacitor must be rated for a minimum of 300 mA rms (750 mA rms for 12 V input) of ripple current.
- The typical value of external output capacitance value ensures that V_{TT} meets the specified transient performance requirements for the memory bus terminations. Lower values of capacitance may be possible when the measured peak change in output current is consistently less than 3 A. Test conditions were 15 A/ μ s load step, -1.5 A to +1.5 A.
- This is the calculated maximum. The minimum ESR limitation will often result in a lower value. Consult Application Note 178 for further details.
- This is the typical ESR for all the electrolytic (non-ceramic) output capacitance. Use 7 m Ω as the minimum when using max-ESR values to calculate.
- Tape and reel packaging only available on the surface-mount versions.
- To order Pb-free (RoHS compatible) surface-mount parts replace the mounting option 'S' with 'Z', e.g. PTHXX050YAZ. To order Pb-free (RoHS compatible) through-hole parts replace the mounting option 'H' with 'D', e.g. PTHXX050YAD.
- 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

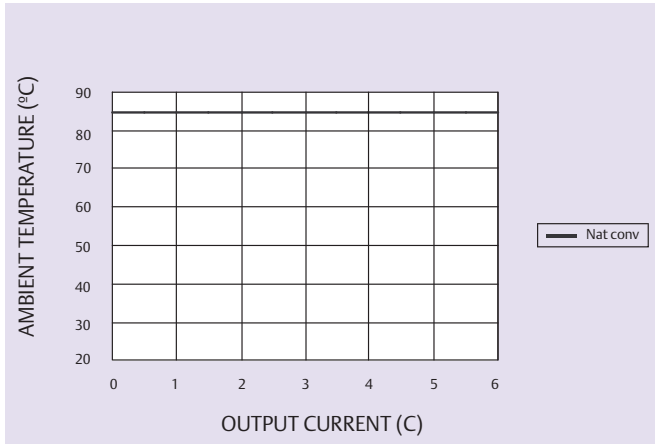


Figure 1 - Safe Operating Area
 $V_{in} = 3.3\text{ V}$, $V_{REF} = 1.25\text{ V}$, $I_{out} = 6\text{ A}$ (See Note A)

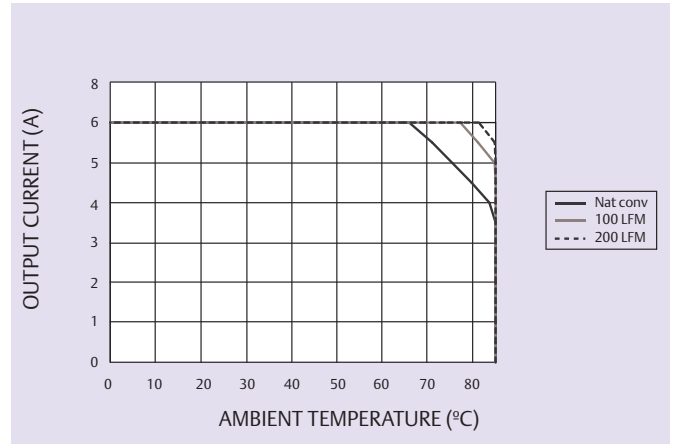


Figure 2 - Safe Operating Area
 $V_{in} = 12\text{ V}$, $V_{REF} = 1.25\text{ V}$, $I_{out} = 6\text{ A}$ (See Note A)

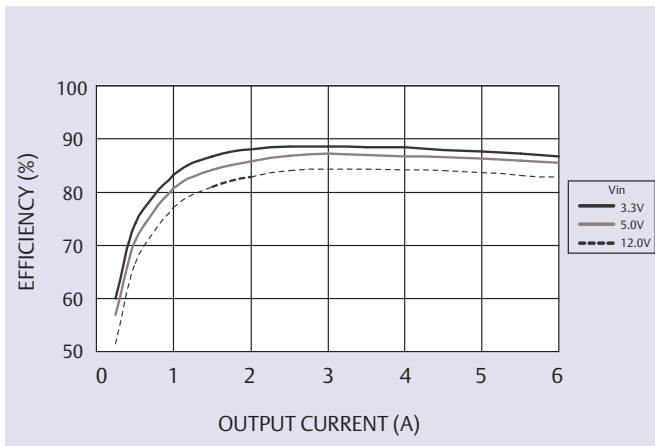


Figure 3 - Efficiency vs Load Current
 $V_{REF} = 1.25\text{ V}$ (See Note B)

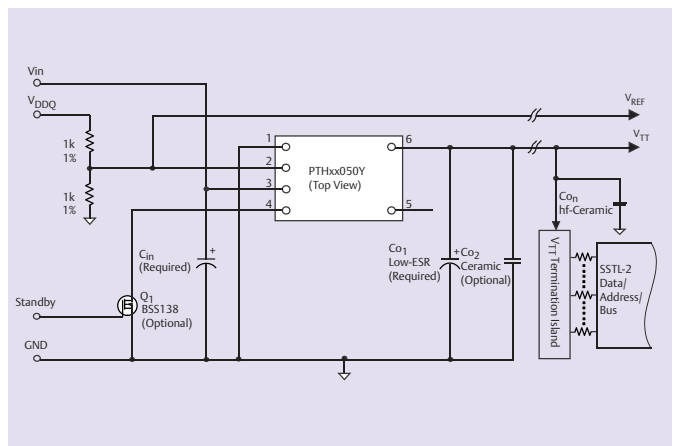


Figure 4 - Standard Application

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

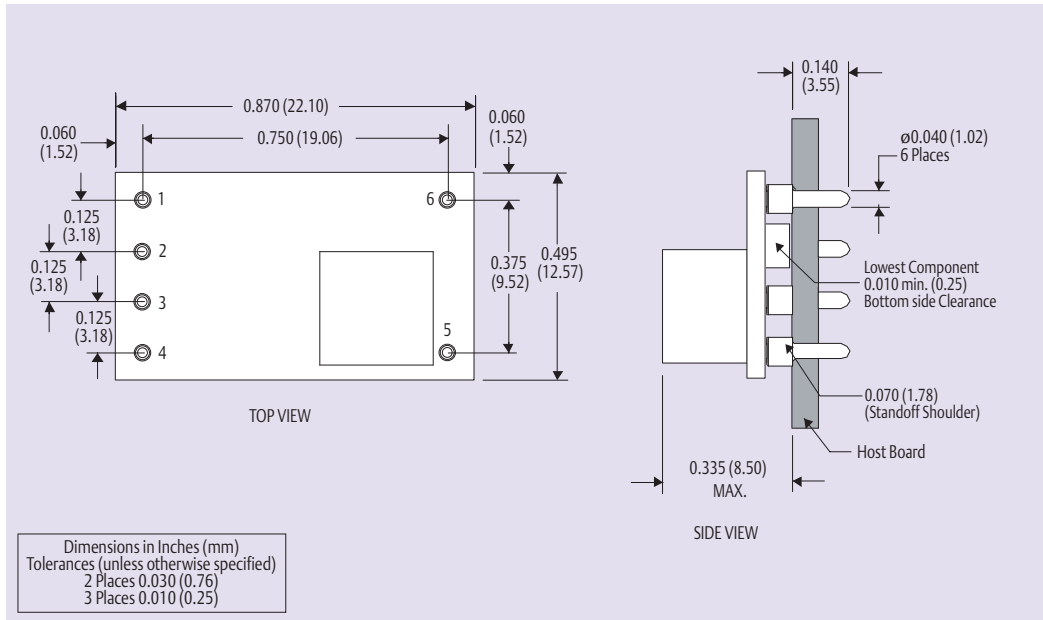


Figure 5 - Plated Through-Hole

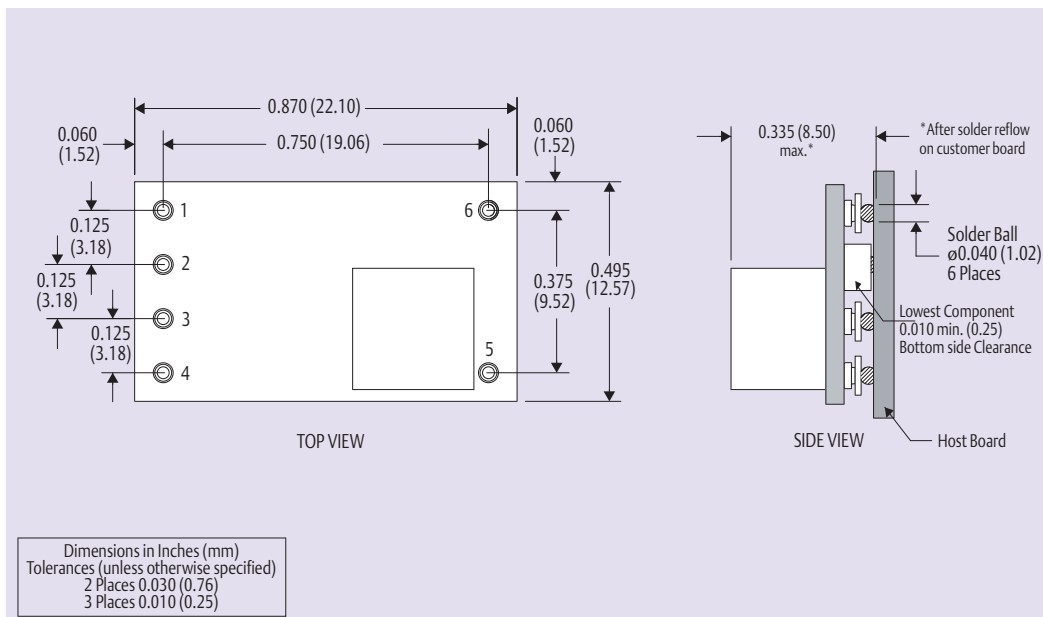


Figure 6 - Surface-Mount

Pin Connections	
Pin No.	Function
Pin 1	Ground
Pin 2	V _{REF}
Pin 3	V _{in}

Pin Connections cont.	
Pin No.	Function
Pin 4	Inhibit*
Pin 5	N/C
Pin 6	V _{TT}

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

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