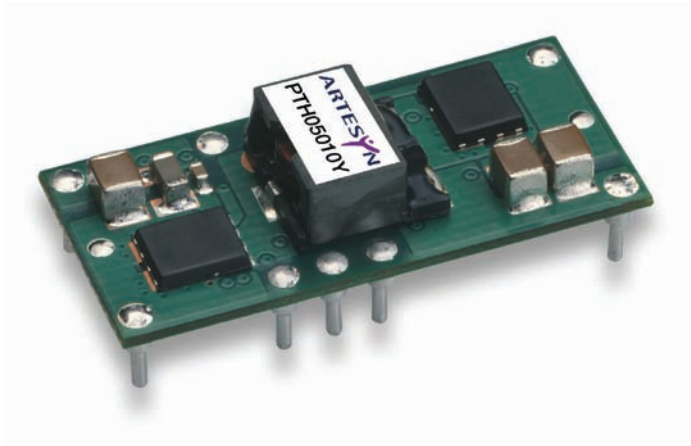


## PTHxx010Y 3.3/5/12 Vin

**Total Power:** 27 Watts  
**# of Outputs:** Single



### Special Features

- $V_{TT}$  bus termination output (output the system  $V_{REF}$ )
- 15 A output current
- 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 91%
- 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:	PTH03010Y PTH05010Y PTH12010Y	2.95 - 3.65 Vdc 4.5 - 5.5 Vdc 10.8 - 13.2 Vdc
Undervoltage lockout:		
	PTH03010Y	Vin increasing Vin decreasing 2.45 V typ., 2.80 V max. 2.20 V min., 2.40 V typ.
	PTH05010Y	Vin increasing Vin decreasing 4.30 V typ., 4.45 V max. 3.40 V min., 3.70 V typ.
	PTH12010Y	Vin increasing Vin decreasing 9.5 V typ., 10.4 V max. 8.80 V min., 9.0 V typ.
Input capacitance: (See Note 3, page 3)	PTH03010Y & PTH05010Y PTH12010Y	470 $\mu$ F 560 $\mu$ F
Remote ON/OFF:		Positive logic

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

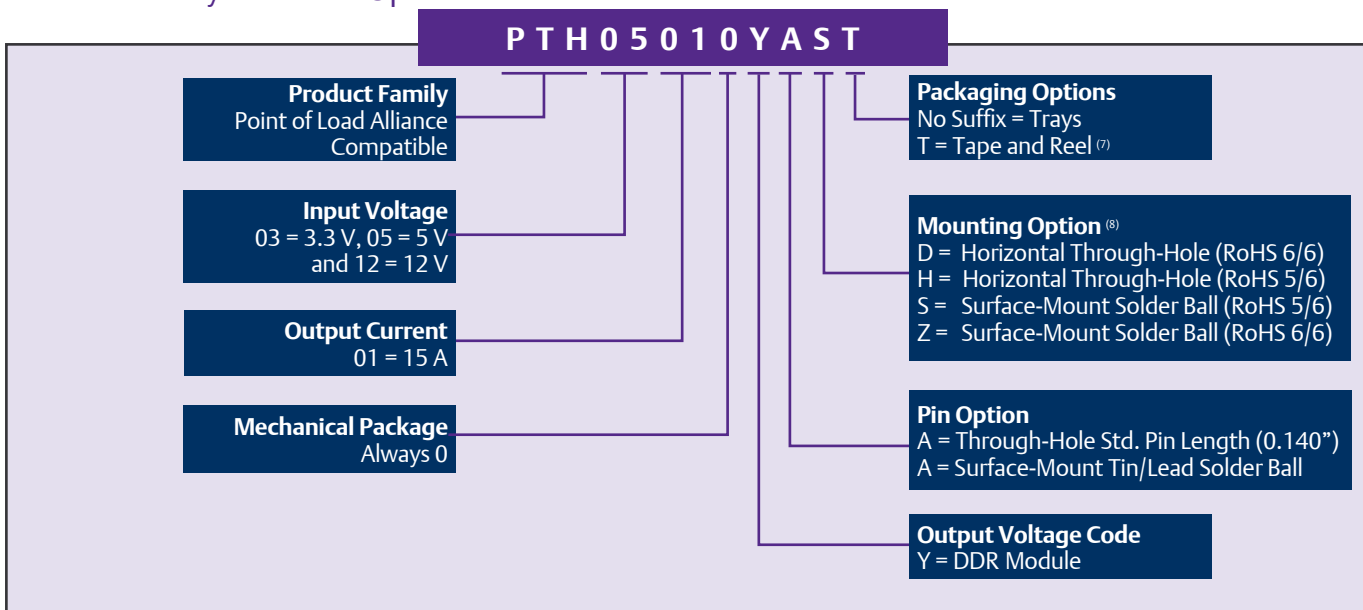
Output		
Output current: (over $V_{REF}$ range) (See Note 1, page 3)	PTH03010Y & PTH05010Y PTH12010Y	$\pm 15$ A $\pm 12$ A
Tracking range for $V_{REF}$ :		0.55 - 1.8 V
Tracking tolerance to $V_{REF}$ ( $V_{TT} - V_{REF}$ ): (over line, load & temperature)		-10 mV to + 10 mV
Ripple and noise:	20 MHz bandwidth	20 mV pk-pk
Load transient response: (See Note 4, page 3)		30 $\mu$ s settling time Overshoot/undershoot 30 mV typ.
Output capacitance:		
Non-ceramic values (See Notes 4 & 5, page 3)	PTH03010Y PTH05010Y PTH12010Y	470 $\mu$ F typ., 8,200 $\mu$ F max. 470 $\mu$ F typ., 8,200 $\mu$ F max. 940 $\mu$ F typ., 6,600 $\mu$ F max.
Ceramic values (See Note 4, page 3)	PTH03010Y PTH05010Y PTH12010Y	200 $\mu$ F typ., 300 $\mu$ F max. 200 $\mu$ F typ., 300 $\mu$ F max. 400 $\mu$ F typ., 600 $\mu$ F max.
(See Note 6, page 3)	ESR (non-ceramic)	4 m $\Omega$ min.

General Specifications		
Efficiency: $I_o = 10$ A	PTH03010Y PTH05010Y PTH12010Y	88% typ. 88% typ. 85% typ.
Insulation voltage:		Non-isolated
Switching frequency:	PTH03010Y PTH05010Y PTH12010Y	300 - 400 kHz 300 - 400 kHz 200 - 300 kHz
Approvals and standards:		EN60950 UL/cUL60950
Material flammability:		UL94V-0
Dimensions:	(L x W x H)	34.80 x 15.75 x 9.00 mm 1.370 x 0.620 x 0.354 in
Weight:		3.7 g (0.13 oz)
MTBF:	Telcordia SR-332	6,000,000 hours
Environmental Specifications		
Thermal Performance: (See Note 2, page 3)	Operating ambient, temperature Non-operating	-40 $^{\circ}$ C to +85 $^{\circ}$ C -40 $^{\circ}$ C to +125 $^{\circ}$ C
MSL ('Z' suffix only):	JEDEC J-STD-020C	Level 3
Protection		
Overcurrent threshold (auto reset):	PTH03010Y & PTH05010Y PTH12010Y	27.5 A typ. 20.0 A typ.

### Ordering Information

Output Power (max)	Input Voltage	$V_{TT}$ Range	Output Currents		Efficiency (max)	Model Numbers <sup>(8,9)</sup>
			Min	Max		
27 W	2.95 - 3.65 Vdc	0.55 - 1.8 Vdc	0 A	± 15 A	88%	PTH03010Y
27 W	4.5 - 5.5 Vdc	0.55 - 1.8 Vdc	0 A	± 15 A	88%	PTH05010Y
21.6 W	10.8 - 13.2 Vdc	0.55 - 1.8 Vdc	0 A	± 15 A	85%	PTH12010Y

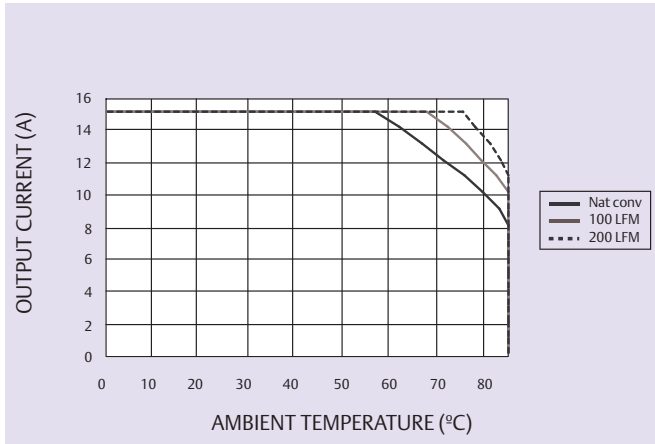
### Part Number System with Options



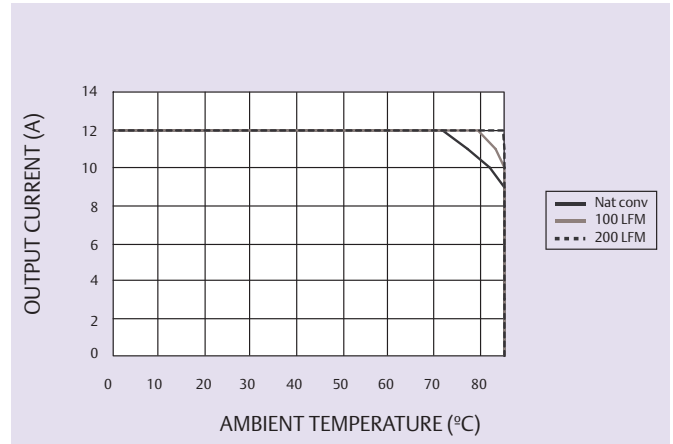
### Notes

- 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.
- 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 177.
- An input capacitor is required for proper operation. The capacitor must be rated for a minimum of 800 mA rms 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/ $\mu$ 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 177 for further details.
- This is the typical ESR for all the electrolytic (non-ceramic) output capacitance. Use 7 m $\Omega$  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. PTHXX010YAZ. To order Pb-free (RoHS compatible) through-hole parts replace the mounting option 'H' with 'D', e.g. PTHXX010YAD.
- 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.

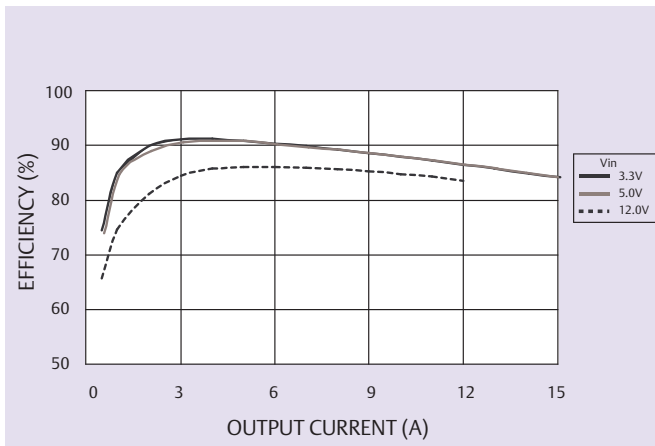
## Characteristic Data



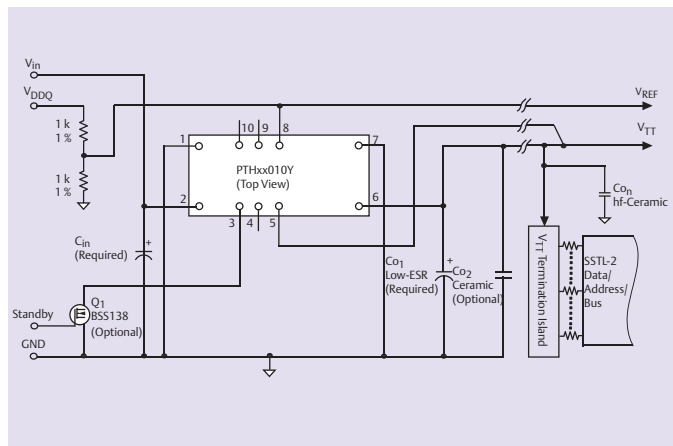
**Figure 1 - Safe Operating Area**  
 $V_{in} = 3.3\text{ V}$ ,  $V_{REF} = 1.25\text{ V}$ ,  $I_{out} = 15\text{ A}$  (See Note A)



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

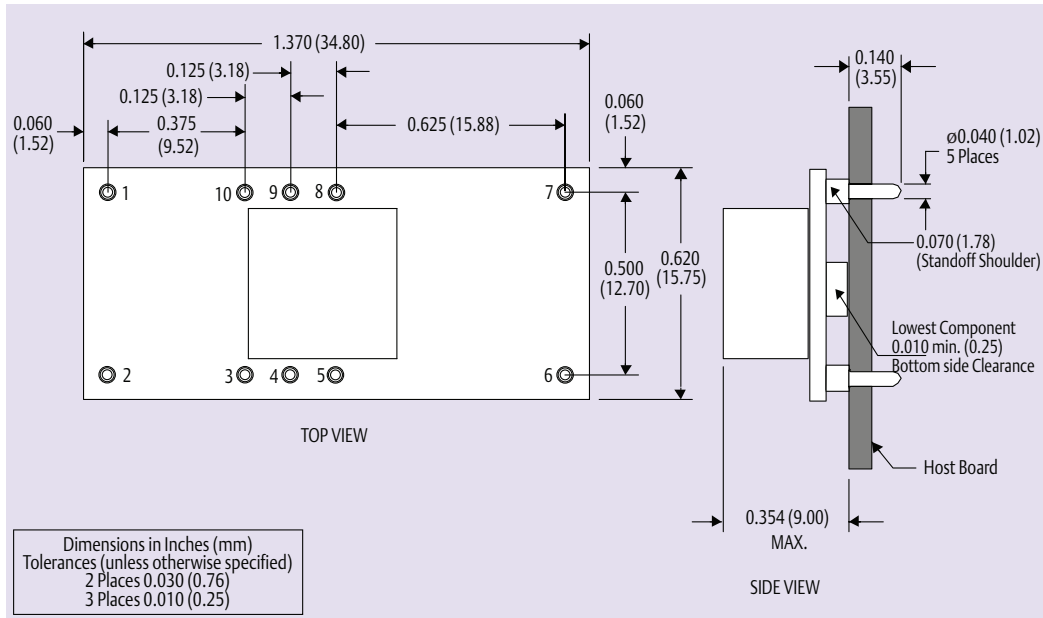


Figure 5 - Plated Through-Hole

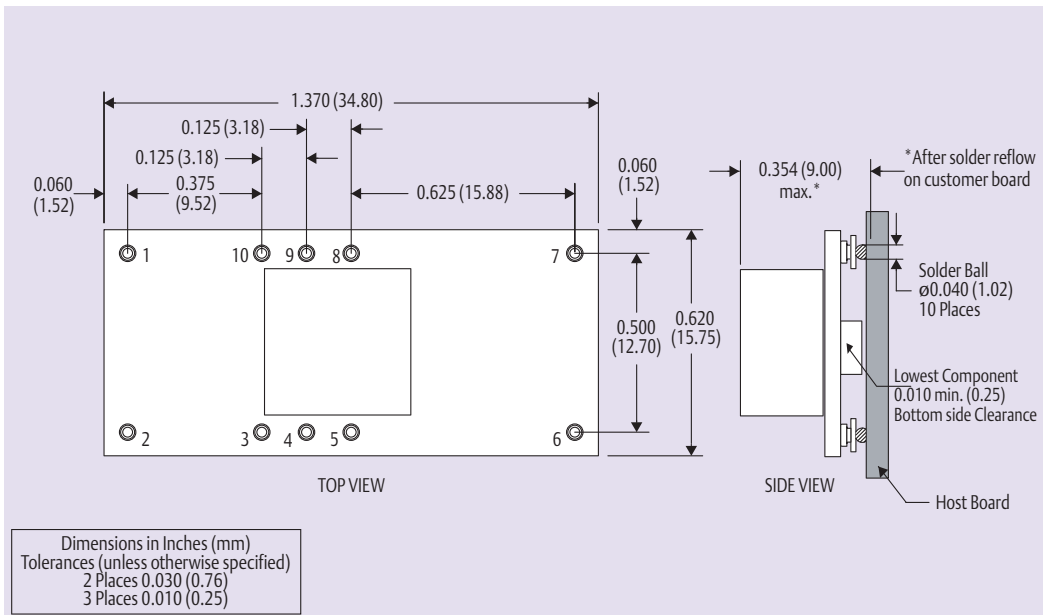


Figure 6 - Surface-Mount

Pin Connections		Pin Connections cont.	
Pin No.	Function	Pin No.	Function
Pin 1	Ground	Pin 6	V <sub>TT</sub>
Pin 2	V <sub>in</sub>	Pin 7	Ground
Pin 3	Inhibit*	Pin 8	V <sub>REF</sub>
Pin 4	N/C	Pin 9	N/C
Pin 5	V <sub>o</sub> sense	Pin 10	N/C

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

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