



**Pulse**  
Electronics  
POWER



SHORT  
FORM  
CATALOG

## POWER MAGNETICS

Pulse Electronics has become one of the world's most **trusted** electronic components partners. It's our mission to help our customers build the next **great product** by providing the needed technical solutions **simply** and **easily**.

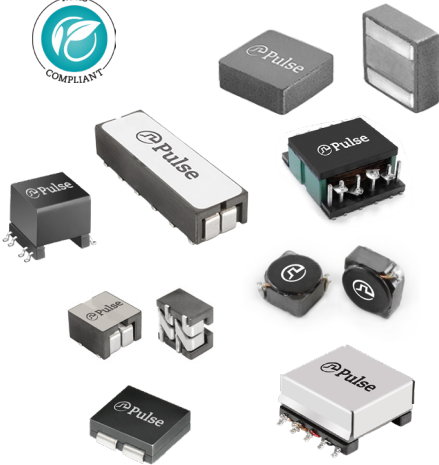
● INDUCTORS

● CURRENT SENSE  
MAGNETICS

● GATE DRIVE  
TRANSFORMERS

● COMMON MODE  
CHOKES

● SWITCH MODE  
TRANSFORMERS



Pulse offers a complete range of magnetics for both high-frequency switching power supply applications, as well as 50/60Hz current sense applications. The switching power magnetics include power inductors, power transformers, current sense magnetics, gate drive transformers and common mode chokes. For complete product information, visit [www.power.pulseelectronics.com](http://www.power.pulseelectronics.com)

Pulse also designs and manufactures a wide array of custom and application specific magnetics. Contact Pulse Power Business Unit for [product support](#) or to request [design services](#) for your next unique product.

NOTE: For additional listings of Pulse Power magnetics, locate other Power data sheets at this URL: <http://www.power.pulseelectronics.com>

## OVERVIEW: PULSE POWER MAGNETICS

### Power Inductors

#### Surface Mount (SMT)

- Unshielded Drum Core Inductors (up to 30 A)
- Shielded Drum Core Inductors (up to 17 A)
- Power Bead Inductors (up to 98 A)
- Molded Powder Inductors (up to 55 A)
- Flat Coil Inductors (up to 40 A)
- Planar and Round Wire Coil Inductors (up to 73 A)
- Toroid Inductors (up to 40 A)

#### Through Hole (THT)

- Toroid Inductors (up to 48 A)
- Power Bead Inductors (up to 80 Apk)

### High-Frequency Switch Mode Transformers

#### Surface Mount (SMT)

- Planar Transformers (30 W, 75 W, 150 W, 300 W)
- Wirewound Transformers (Up to 200 W)
- High Isolation Transformers (up to 5kVrms)
- Custom transformers available upon request

#### Through Hole (THT)

- Wirewound Transformers (Up to 500 W)
- Custom transformers available upon request

### Gate Drive Transformers

#### Surface Mount (SMT)

- Operational, Basic and reinforced Insulation for DC/DC applications >5k VRMS)

#### Through Hole (THT)

- Reinforced Insulation for AC/DC applications (3000 Vrms)

### Current Sense Magnetics

#### Surface Mount (SMT)

- Operational Insulation (500 VRMS)
- Five platforms (4 A, 10 A, 15 A, 20 A, 35 A)

#### Through Hole (THT)

- Reinforced Insulation (3000 VRMS)
- Multiple platforms (up to 30 A)

50/60Hz AC Current Sensing

- Sidewinder Product Line (1000A+)

### Common Mode Chokes

#### Surface Mount (SMT)

- Up to 20 A
- 500 VRMS and 1500 VRMS Isolation
- Over 10 package sizes available
- Customer designs available upon request

#### Through Hole (THT)

- Up to 23 A
- 3000 VRMS Isolation
- Multiple package sizes available

### Application Information, Modelling and Reliability Data

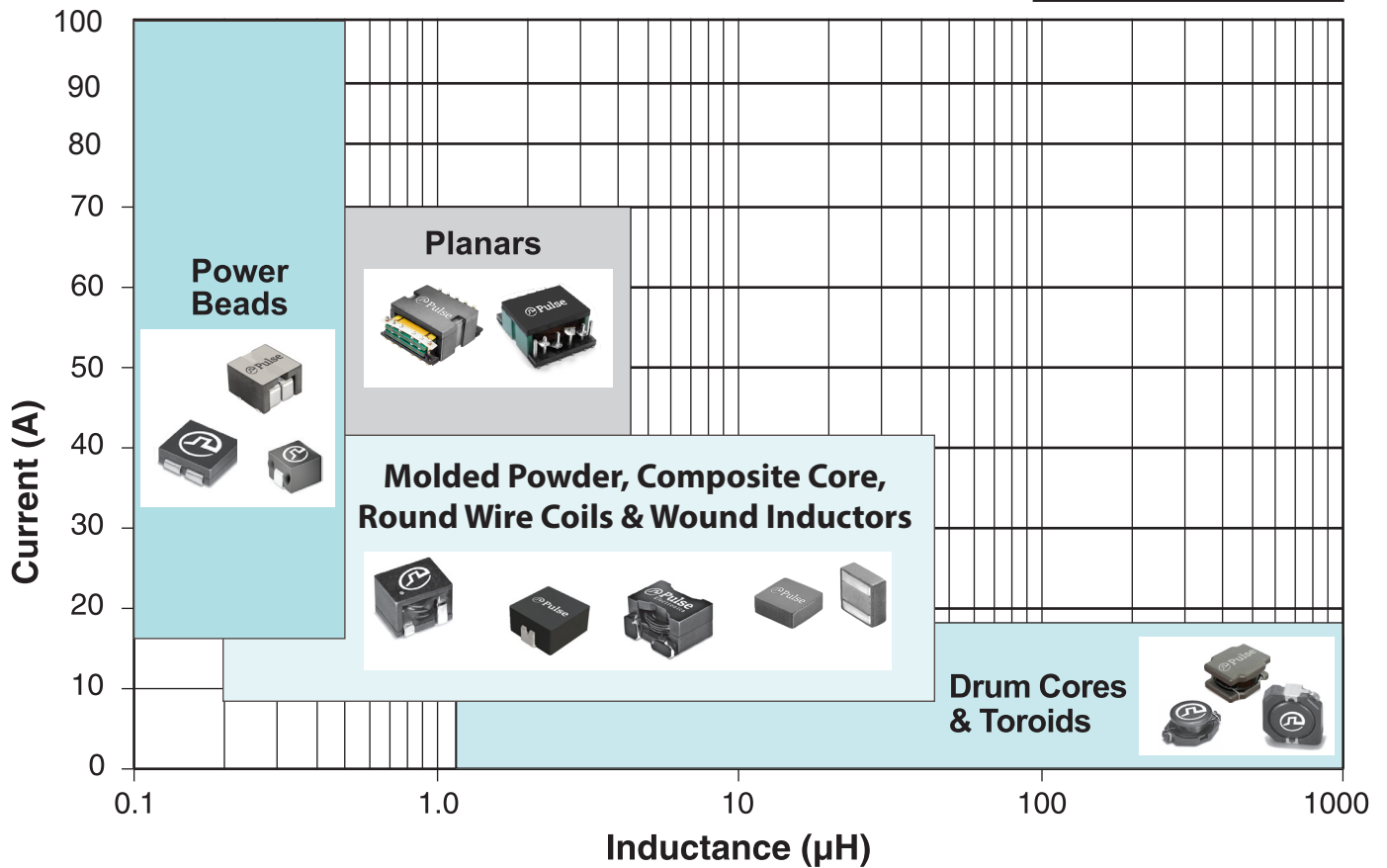
- Visit the Pulse Electronics website to view a wide range of technical papers
- Spice Models, 3D Step Files, Qualification Data and Reliability Numbers are all available upon request
- Faster time to market
- Finite element analysis for rapid prototyping
- AC loss modelling for size and shape optimizations

# POWER MAGNETICS

## PRODUCT OVERVIEW: SMT POWER INDUCTORS

Power Inductor Selection Charts, Surface Mount and Through-Hole

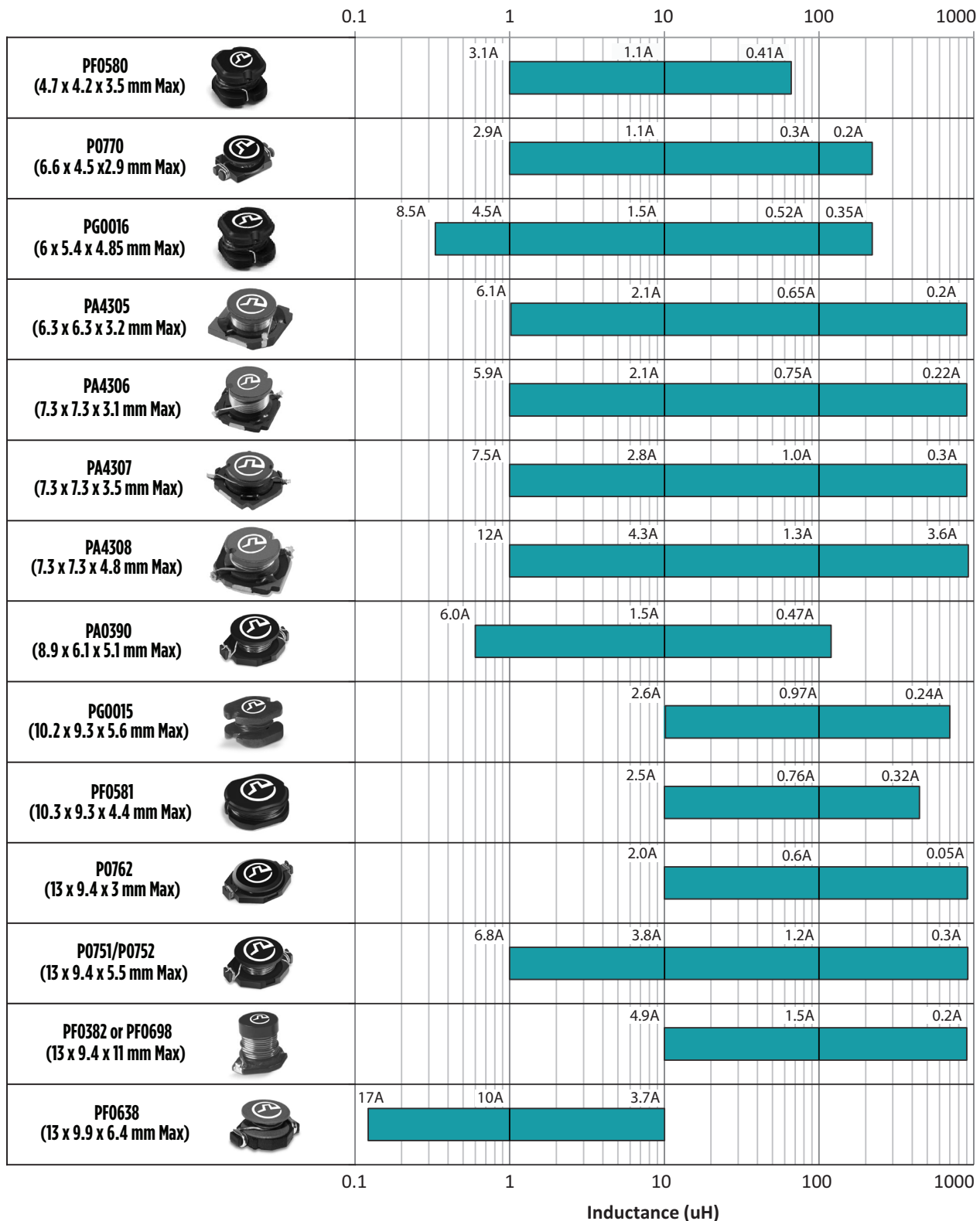
### SMT Inductors



- [Unshielded Drum Core Inductors](#) - typically for lower current application and less efficiency sensitive designs
- [Shielded Drum Core Inductors](#) - typically for lower current applications, shielded designs helps with EMI
- [Toroid Inductors](#) - versatile multi-use platforms for single and dual winding applications
- [Wire-wound Inductors](#) - high-inductance (>5µH) - mid to high current (15-40 A) applications
- [Composite Core Inductors](#) - mid inductance, (.10µH to 17.7µH) mid to high current (.5 to 32A)
- [Molded Powder Inductors](#) - mid-inductance (0.2 to 20 µH), wide current (5-55A), high saturation
- [Round Wire Coil Inductors](#) - mid-inductance, high-efficiency inductors (0.3 to 20µH) up to 50A
- [Power Bead Inductors](#) - low-inductance (<0.5µH), high current (>100A) applications for single and multi-phase applications
- [Planar Inductors](#) - mid-inductance (0.5 to 4uH), high current (>73A) applications

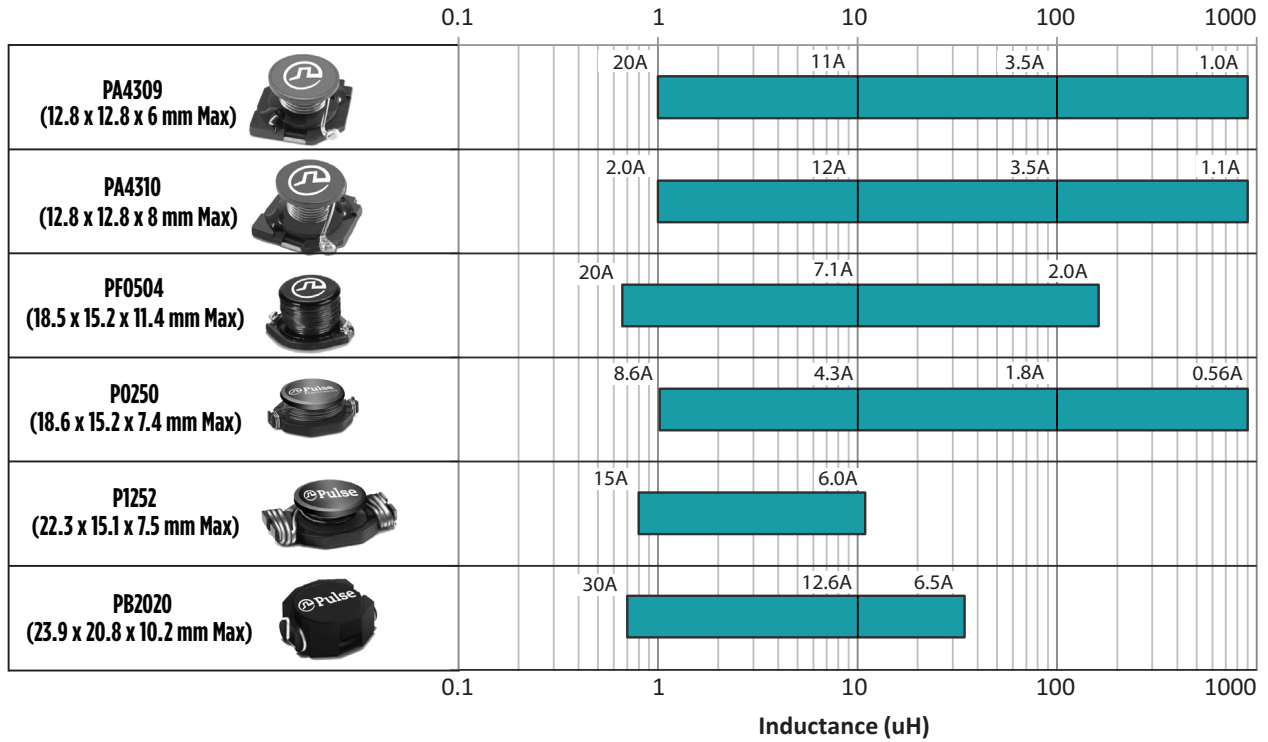
## POWER MAGNETICS

### PRODUCT OVERVIEW: SMT UNSHIELDED DRUM CORE INDUCTORS

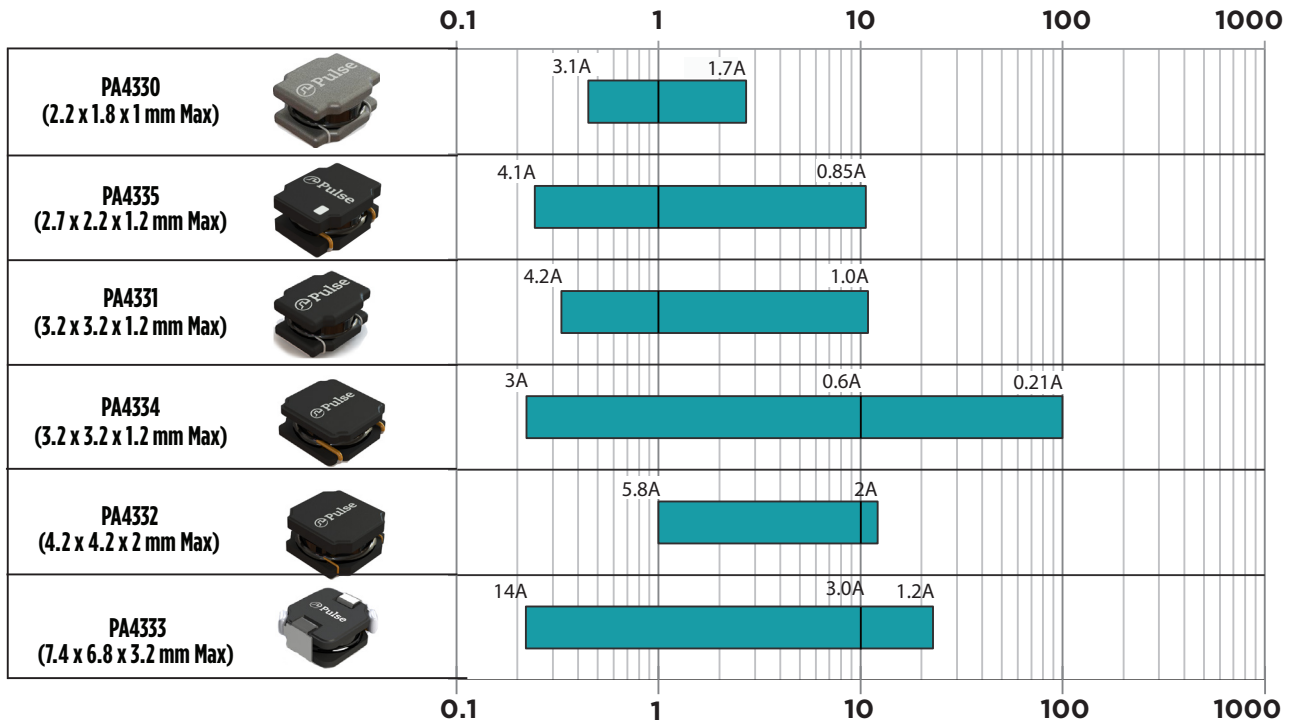


# POWER MAGNETICS

## PRODUCT OVERVIEW: SMT UNSHIELDED DRUM CORE INDUCTORS

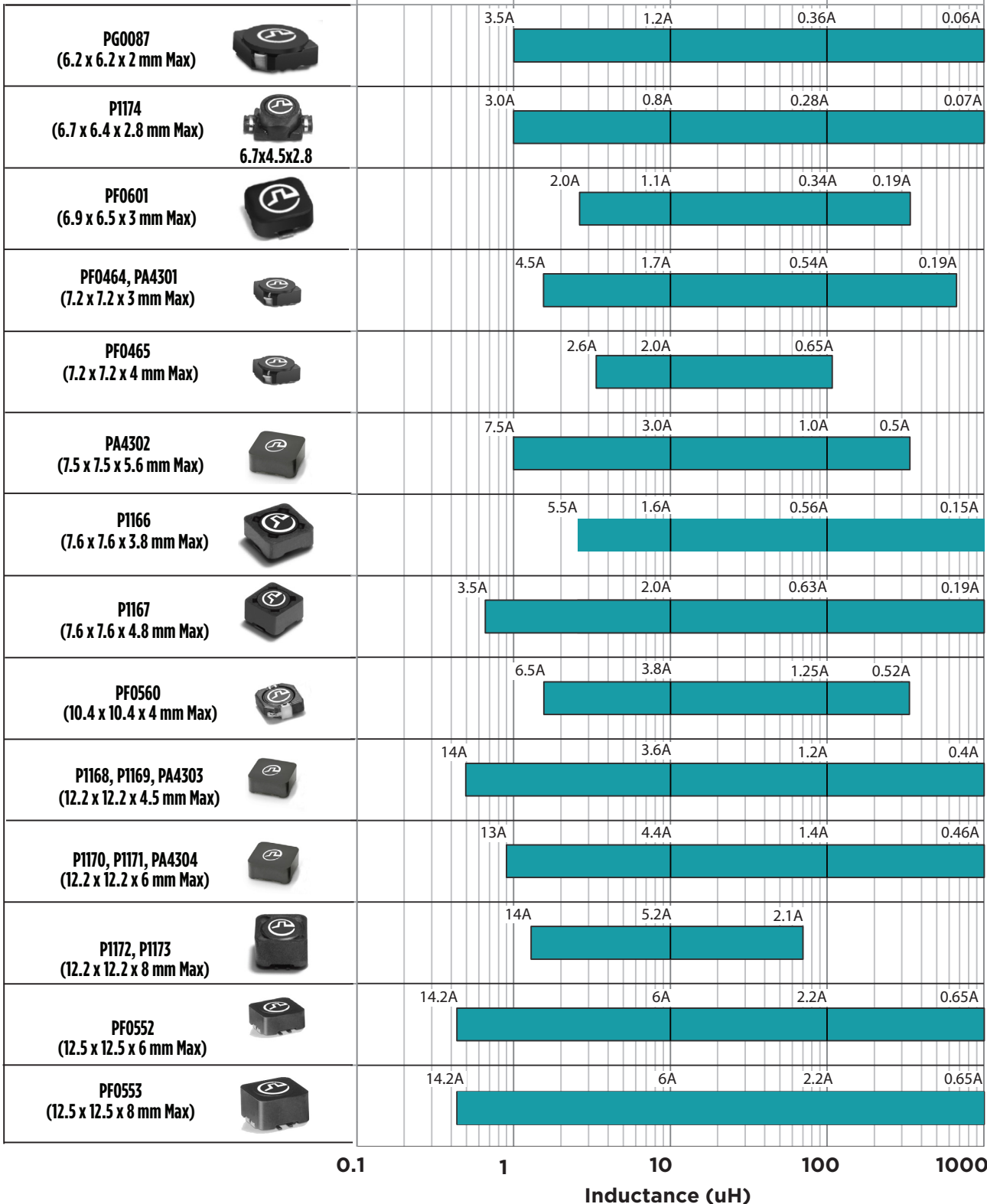


## PRODUCT OVERVIEW: SMT FERRITE SHIELDED DRUM CORE INDUCTORS



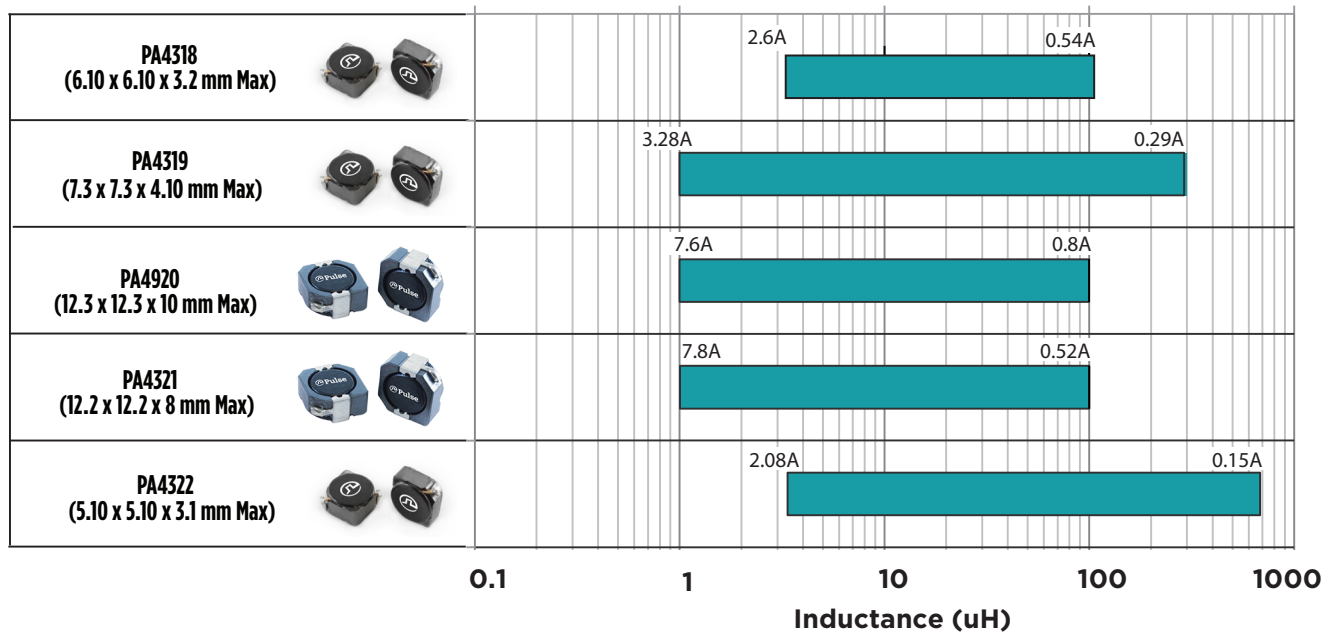
**POWER MAGNETICS**

**PRODUCT OVERVIEW: SMT FERRITE SHIELDED DRUM CORE INDUCTORS**



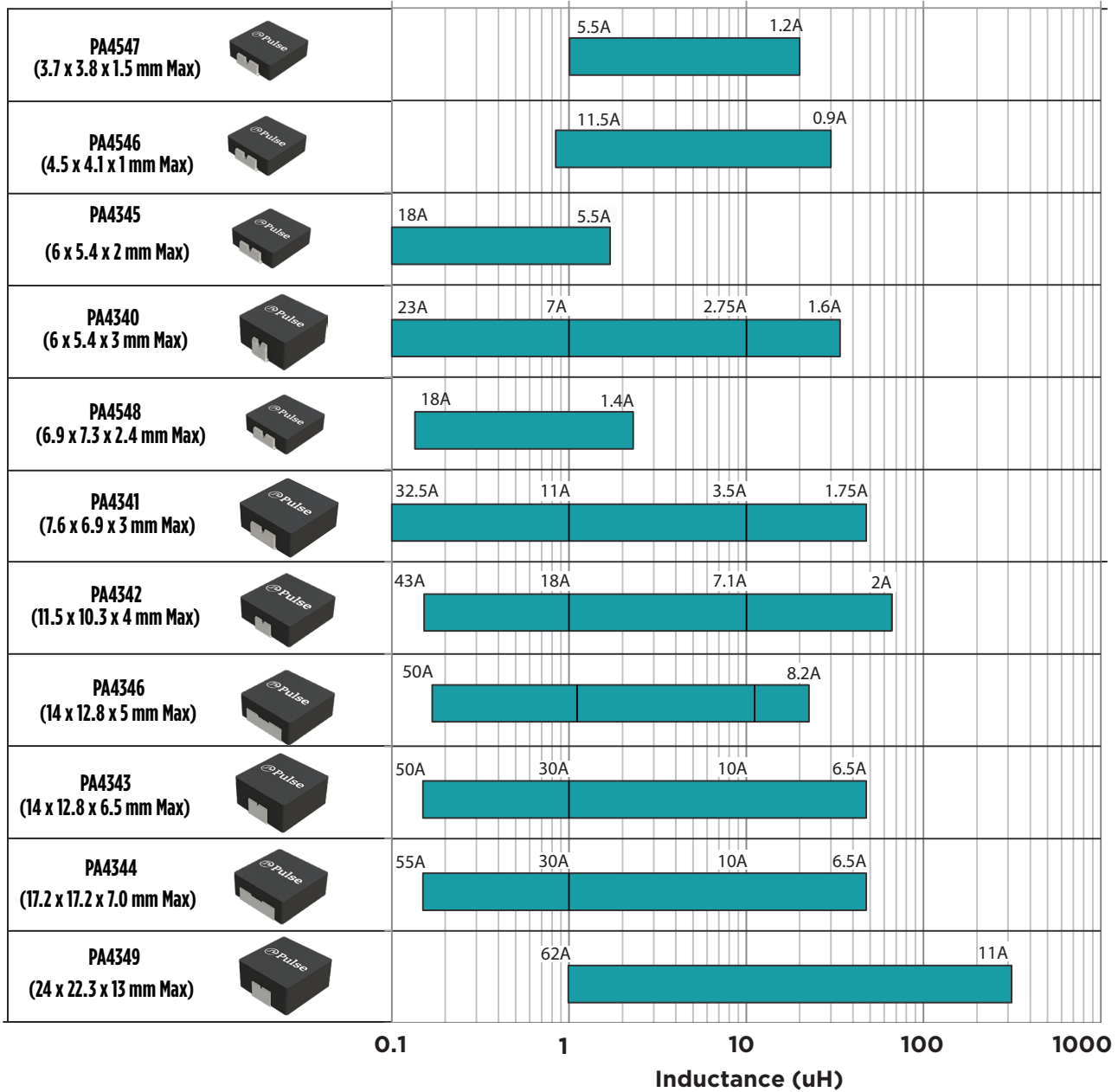
# POWER MAGNETICS

## PRODUCT OVERVIEW: SMT FERRITE SHIELDED DRUM CORE INDUCTORS



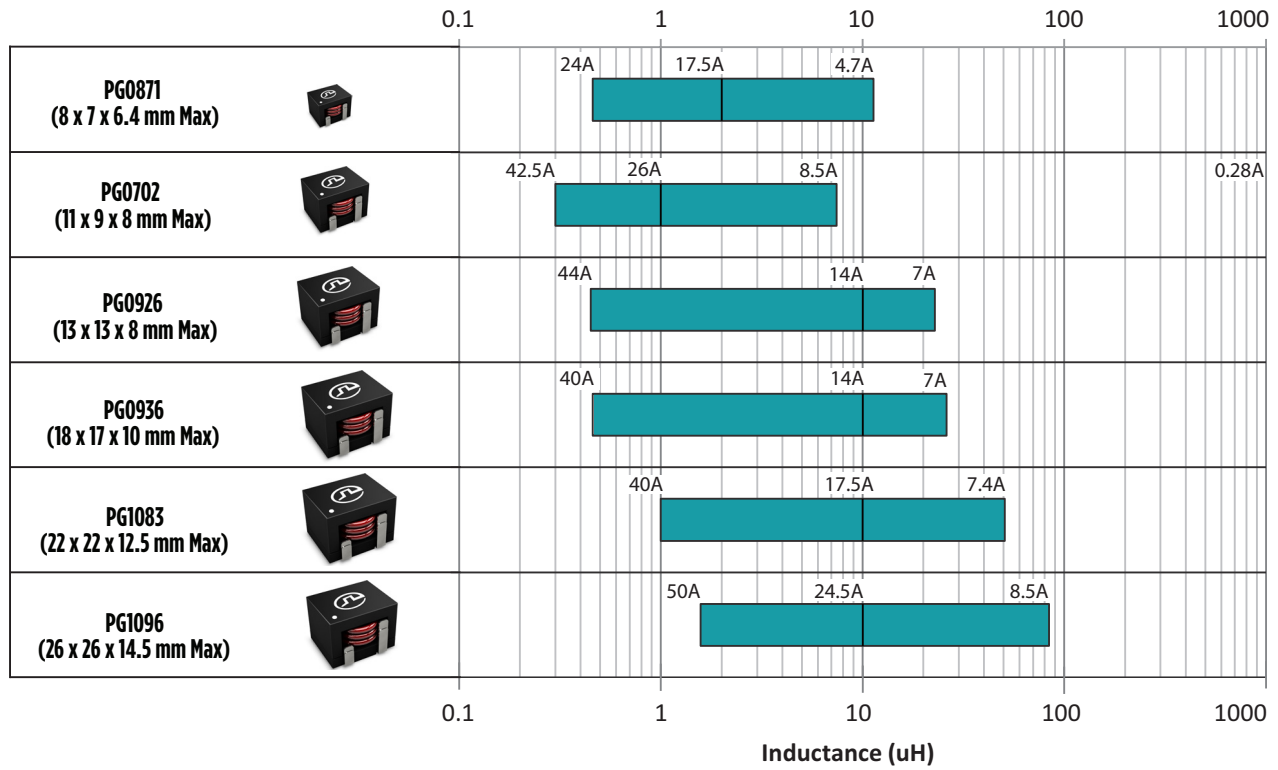
# POWER MAGNETICS

## PRODUCT OVERVIEW: SMT MOLDED POWDER INDUCTORS



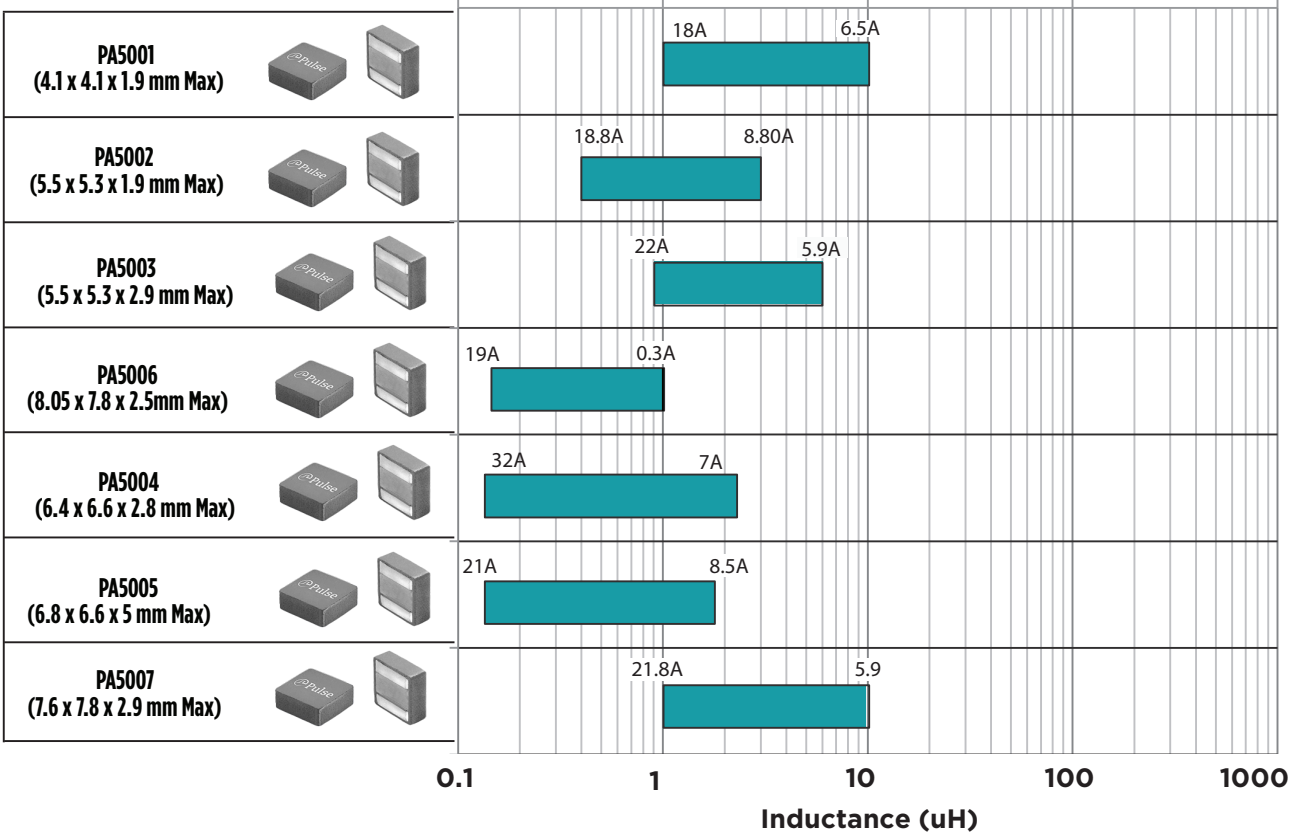
# POWER MAGNETICS

## PRODUCT OVERVIEW: SMT ROUND WIRE COIL INDUCTORS



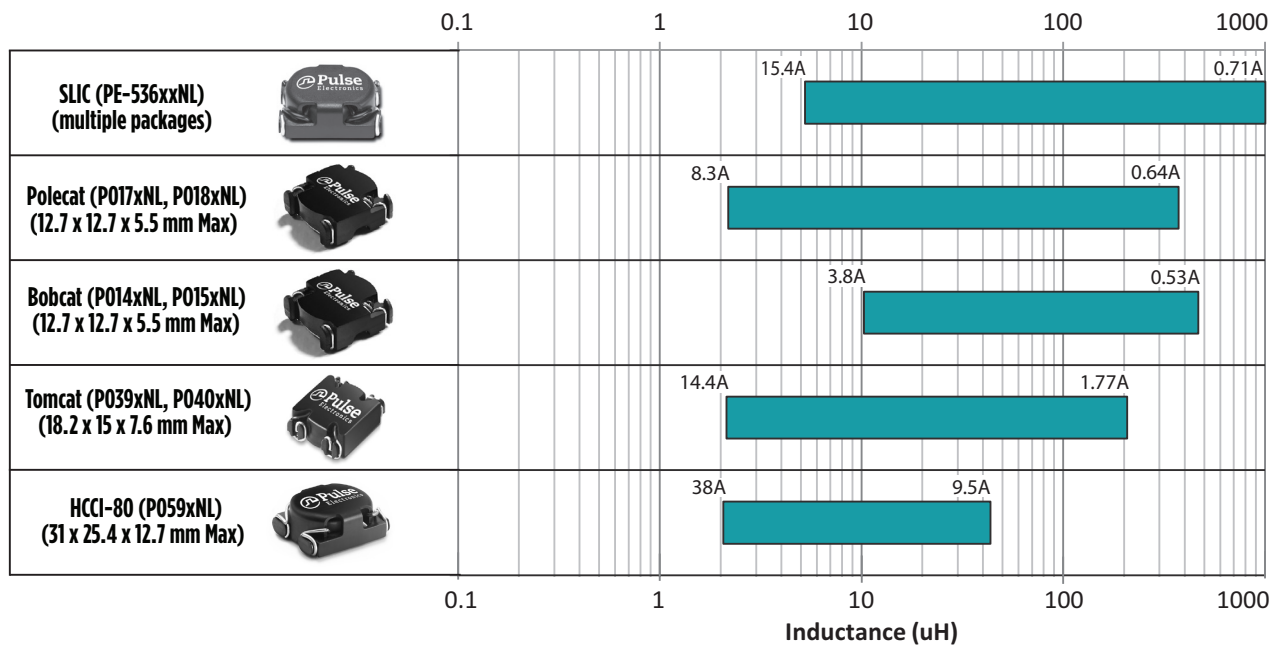
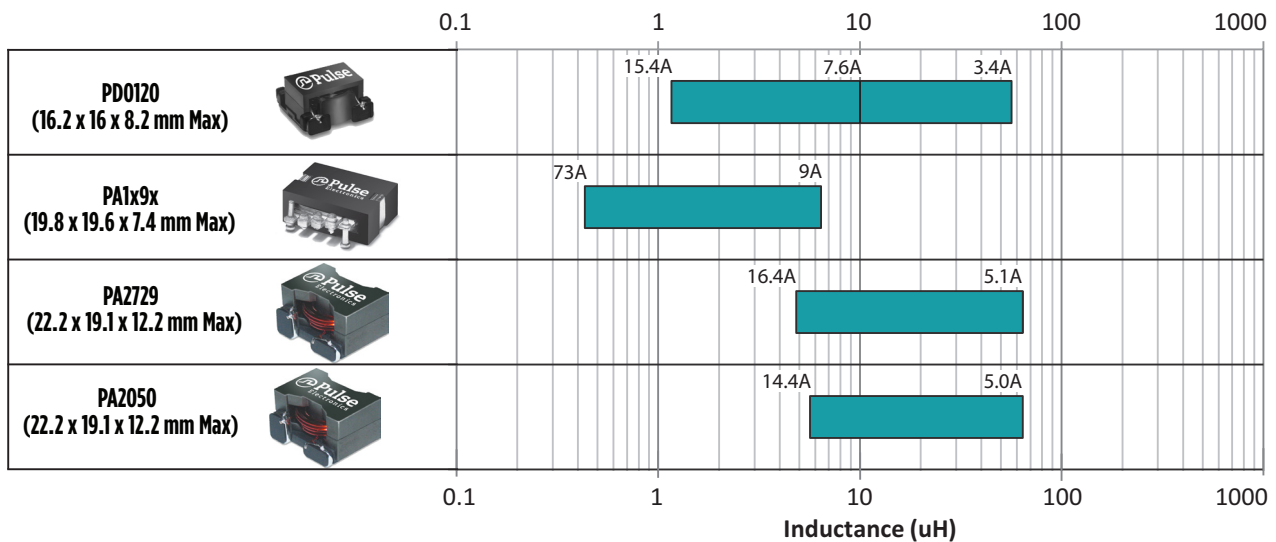
# POWER MAGNETICS

## PRODUCT OVERVIEW: SMT FLAT COIL INDUCTORS



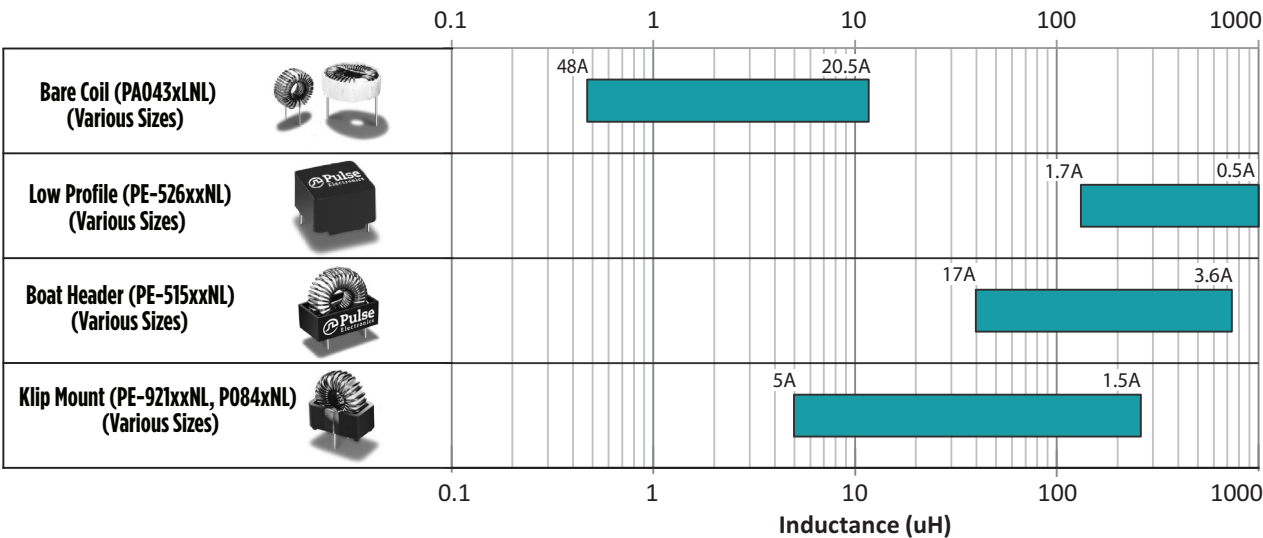
# POWER MAGNETICS

## PRODUCT OVERVIEW: SMT PLANAR AND WIRE WOUND COIL INDUCTORS



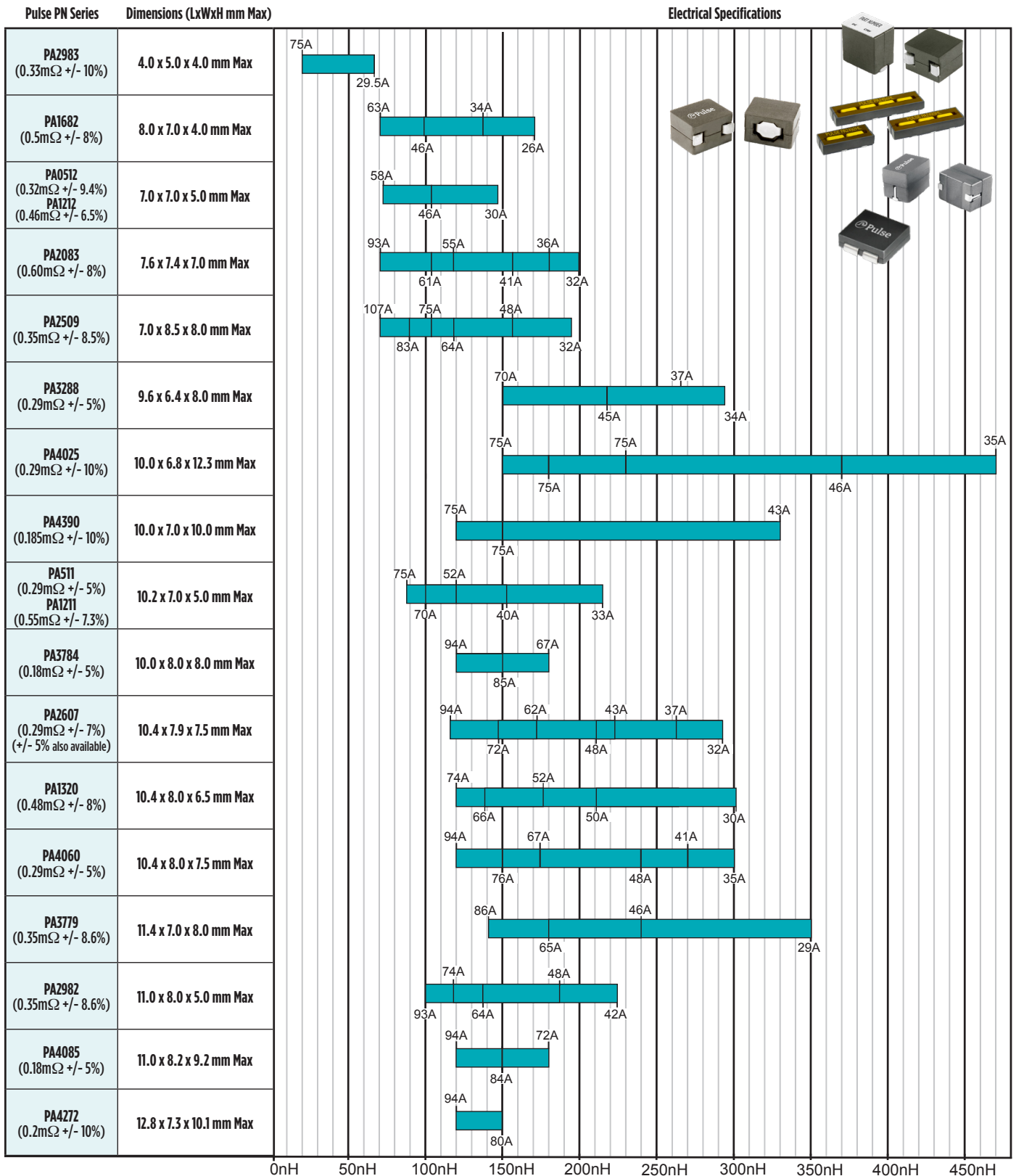
# POWER MAGNETICS

## PRODUCT OVERVIEW: SMT TOROID INDUCTORS



# POWER MAGNETICS

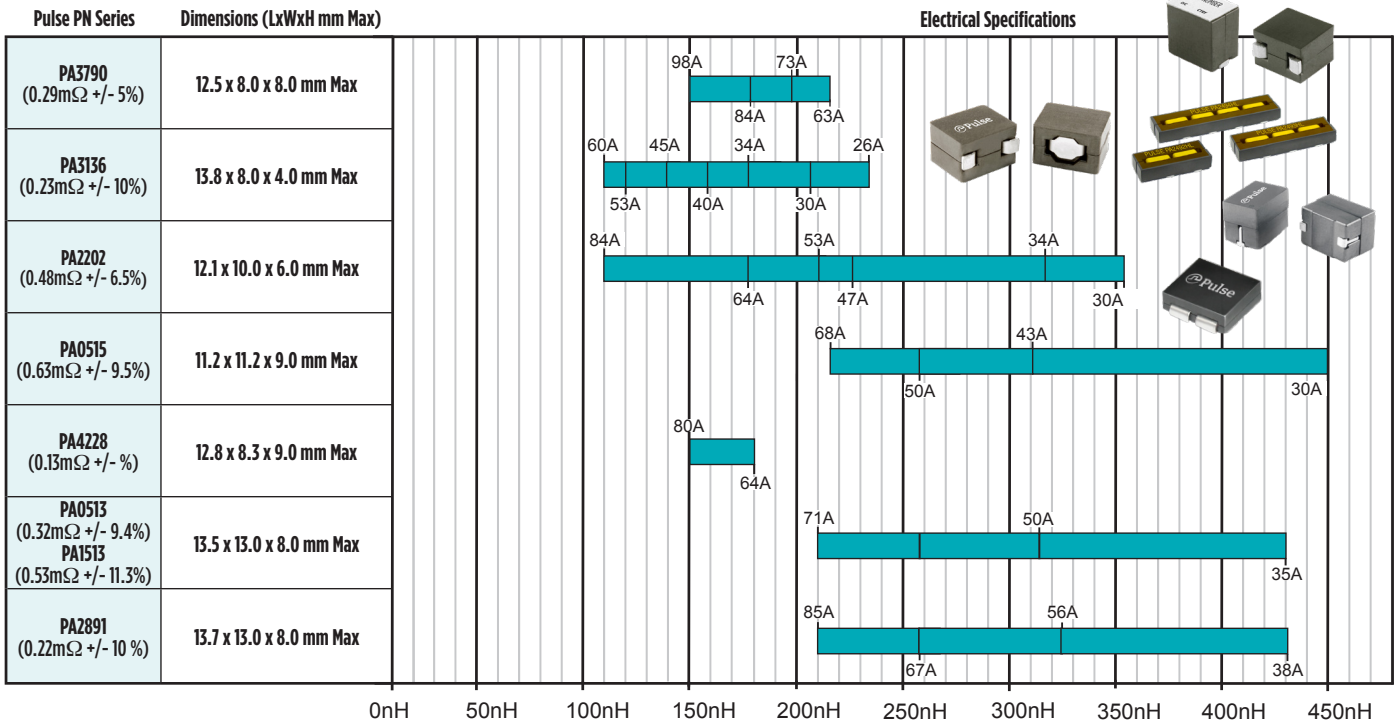
## PRODUCT OVERVIEW: THT INDUCTORS



The peak currents listed are at 25°C. The complete datasheet for a given series should be reviewed to determine peak currents at other ambient temperatures.

# POWER MAGNETICS

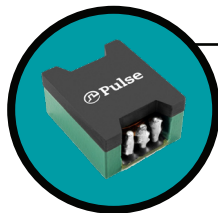
## PRODUCT OVERVIEW: SMT POWER BEAD INDUCTORS (CON'T)



The peak currents listed are at 25°C. The complete datasheet for a given series should be reviewed to determine peak currents at other ambient temperatures.

## PRODUCT OVERVIEW: SMT POWER & ISOLATION TRANSFORMERS

Pulse offers custom transformer designs using standard cores and bobbins on the following SMT platforms. Refer to datasheets for below listed parts on Pulse website for further details. 10Kpcs annual demand typically required for custom development. Please contact the Pulse Power Business Unit for your specific needs where we can also offer a wide range of high efficiency magnetics for computing, data-communications and industrial applications.

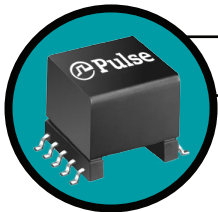
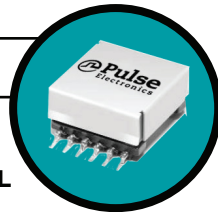


### Planar Platforms - ER19, ER25 and ER25 Plus

- ➔ Up to 800W Forward and Full Bridge
- ➔ 1500Vdc Galvanic Isolation
- ➔ PH0801NL, PH0910.003CNL, PH9278NL

### EFD Platforms - EFD15, EFD20, EFD25 and EFD30

- ➔ Up to 150W Forward and Flyback
- ➔ Functional and Basic Insulation
- ➔ PA1646NL, PA2398NL, PA2459NL, PA3524NL

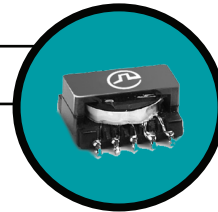


### EP Platforms - EP7, EP10, EP13 and EP13 Plus

- ➔ Up to 70W Forward and Flyback
- ➔ Up to 3x power of standard platform
- ➔ 7-PA5099.XXX & PA500.XXX, 10-PA5130.XXX & PA5131, 13 - PA3858.XXX & PA3836.XXX

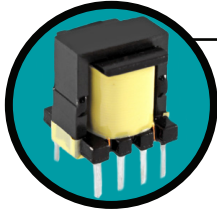
### ER Platforms - ER9.5, ER11 and ER14.5

- ➔ Up to 10W Push-Pull and Flyback
- ➔ Functional Insulation
- ➔ PA0663NL, PA1032NL, PA1026NL

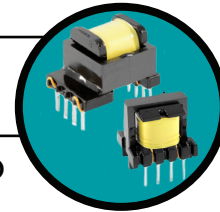


## PLATFORM OVERVIEW: THROUGH-HOLE POWER TRANSFORMERS

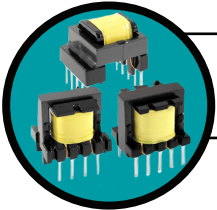
Pulse offers custom transformer designs using standard cores and bobbins on the following THT platforms. Refer to datasheets for below listed parts on Pulse website for further details.


**EE10 Platform - 8 Pins, THT, Vertical**

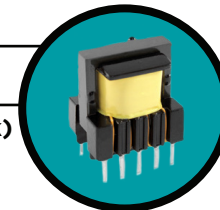
- Typical Power Level: 5W (100kHz, Flyback)
- Size: 11.0 x 11.0 x 12.0 mm Max
- Custom part numbers available


**EE13 Platform - 9 Pins, THT, Horizontal, Offset  
- 10 Pins, THT, Vertical, Offset**

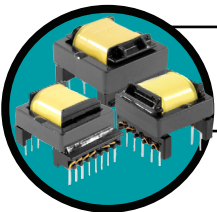
- Typical Power Level: 10W (100kHz, Flyback)
- Size: 19.5 x 13.5 x 15.0 mm Max
- PA2718NL


**EE16 Platform - 10 Pins, THT, Horizontal, Offset  
- 10 Pins, THT, Vertical**

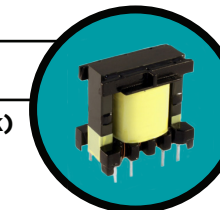
- Typical Power Level: 15W (100kHz, Flyback)
- Size: 18.2 x 13.8 x 17.5 mm Max
- PA3050NL, PA2621NL


**EE19 Platform - 10 Pins, THT, Vertical**

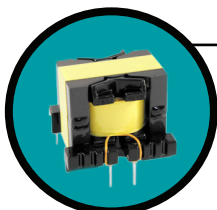
- Typical Power Level: 20W (100kHz, Flyback)
- Size: 21.0 x 16.50 x 24.0 mm Max
- Custom part numbers available


**EF20 Platform - 8 Pins and 10 Pins, THT, Horizontal  
- 14 Pins, THT, Horizontal, Offset**

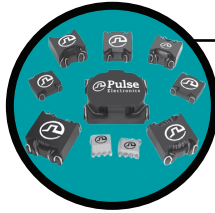
- Typical Power Level: 25W (100kHz, Flyback)
- Size: 21.6 x 21.6 x 15.8 mm Max
- PA2872NL, PA2959NL, PA2979NL


**EF25 Platform - 10 Pins, THT, Vertical**

- Typical Power Level: 40W (100kHz, Flyback)
- Size: 28.5 x 18.8 x 30.5 mm Max
- PA2380NL, PA2942NL


**PQ2016 Platform - 14 Pins, THT, Vertical**

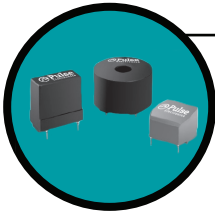
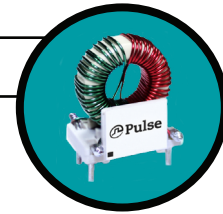
- Typical Power Level: 40W (100kHz, Flyback)
- Size: 23.5 x 23.5 x 18.7 mm Max
- Custom part numbers available


**SMT Common Mode Chokes**

- 9.1 x 8.9 x 3.8 mm to 31.0 x 25.4 x 12.7 mm Max
- 0.5Arms (13.2mH) to 14Arms (0.20mH)
- Hi-pot Voltage: 1500Vrms
- P0502NL, PA2741NL, PE-53912NL

**THT PA3747.xxxNL Series**

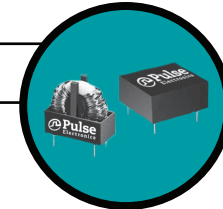
- 19.3x18.2x22.9 mm Max
- 0.75A to 5.0A
- Hi-pot Voltage: 1500Vrms
- PA3747.105NL


**THT PE-961xxNL Series**

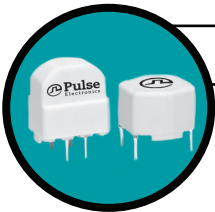
- 33.0x18.3x34.0 mm to 43.2x43.2x26.2 mm Max
- 0.5Arms (33mH) to 15Arms(1mH)
- Hi-pot Voltage: 2500Vrms
- PE-96161NL

**THT PE-62xxxNL Series**

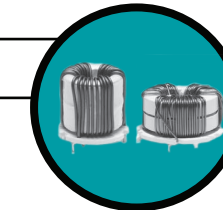
- 29.2x14.2x10.2 mm to 38.1x20.3x32.5 mm Max
- 1.8Arms (10mH) to 7.5Arms (2mH)
- Hi-pot Voltage: 2500Vrms
- PE-62891NL

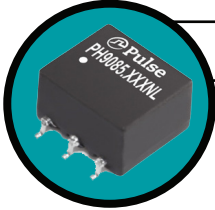

**THT FE 2X Series**

- 17.9x17.9x12.9 mm to 43.4x42.4x25.4 mm Max
- 0.4Arms (47mH) to 8Arms (3.3mH)
- Hi-pot Voltage: 1500Vrms
- FE2X03-3-2NL


**THT FE 3X Series**

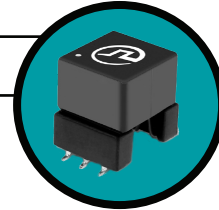
- 17.9x17.9x12.9 mm to 43.4x42.4x25.4 mm Max
- 0.4Arms (47mH) to 8Arms (3.3mH)
- Hi-pot Voltage: 1500Vrms
- FE3X050-10-7NL





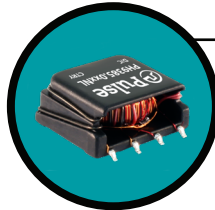
**Functional Insulation Toroid Isolation Platform**

- 2500Vrms Isolation, Class B insulation
- Communications interface applications
- PH9085



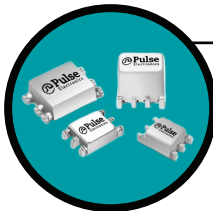
**Reinforced Insulation EP7 Isolation Platform**

- TUV Certified to EN60950, Class F insulation
- 8mm creepage/5000Vrms Isolation
- PH9185



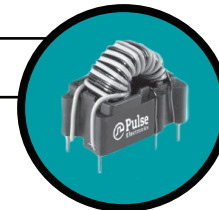
**Extended Creepage Sidecar Isolation Platform**

- 12mm Creepage in 7mm and 14mm heights
- 5000Vrms Isolation
- PH9385 and PA3965



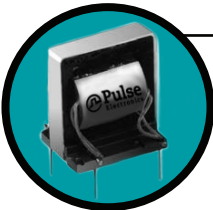
**SMT Gate Drive Transformers**

- 8.6mm x 6.7x2.5mm to 11.8mm x 8.8x4.0mm Max
- Functional and Basic Insulation
- Multiple Winding Configurations and Sizes
- Hi-pot Voltage: 1500Vrms
- PE-68386NL, PA2001NL



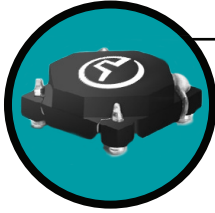
**THT P058xxNL Series**

- 20.6mm x 12.2mm x 19.1 mm Max
- UL, C-UL, and TUV Approved Components
- Turns Ratio: 1:1:1 and 1:1:1:1:1
- Hi-pot Voltage: 4250Vrms
- P0584NL



**THT PE-6388xNL Series**

- 27.7mm x 27.4mm x 30.5mm Max
- VDE Approved
- Multiple Winding Configurations
- Hi-pot Voltage: 3750Vrms
- PE-63885NL

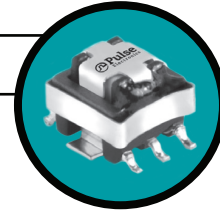


### SMT PA0368.xxxNL Series

- ➔ 8.4mm x 8.4mm x 3.3mm Max
- ➔ Turns Ratio: 1:50 up to 1:125
- ➔ RMS current: 4Arms
- ➔ Hi-pot Voltage: 500Vrms

### SMT PA1005.xxxNL Series

- ➔ 8.4mm x 7.2mm x 5.1mm Max
- ➔ Turns Ratio: 1:20 up to 1:125
- ➔ RMS current: 20Arms
- ➔ Hi-pot Voltage: 500Vrms  
(higher current version of P82xNL series)

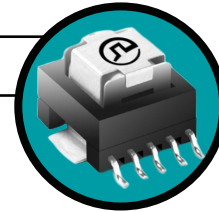


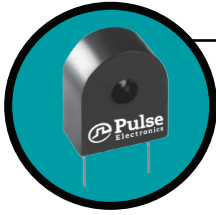
### SMT PE-68xxxNL Series

- ➔ 18.2mm x 15.0mm x 7.6mm Max
- ➔ Turns Ratio: 1:1:50 up to 1:1:200
- ➔ RMS current: 15Arms
- ➔ Hi-pot Voltage: 500Vrms

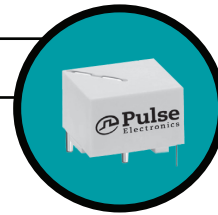
### SMT PB002xNL Series

- ➔ 19.9mm x 14.5mm x 10.0mm Max
- ➔ Turns Ratio: 1:50 up to 1:200
- ➔ RMS current: 35Arms
- ➔ Hi-pot Voltage: 500Vrms

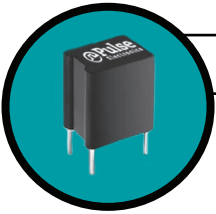



**THT PE-51xxxNL Series**

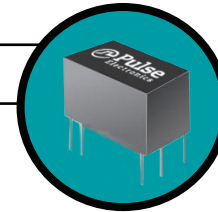
- 17.1mm x 9.9mm x 20.4mm Max
- VDE recognized component
- Turns Ratio: 50T to 200T CT
- RMS current: 20Arms
- Hi-pot Voltage: 3000Vrms  
(available also as FIS1x1 Series)
- PE-51688NL, FIS101NL


**THT FIS 1x5NL Series**

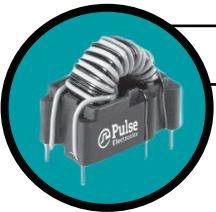
- 17.6mm x 15.0mm x 12.0mm Max
- Turns Ratio: 1:50 up to 1:500
- RMS current: 25Arms
- Hi-pot Voltage: 4000Vrms
- FIS105NL


**THT PE-67xxxNL Series**

- 19.1mm x 14.4mm x 19.1mm Max
- Turns Ratio: 1:50 up to 1:300
- RMS current: 35Arms
- Hi-pot Voltage: 500Vrms
- PE-67050NL


**THT PE-6xxxxNL Series**

- 22.9mm x 17.8mm x 17.8mm Max
- VDE Approved
- Turns Ratio: 1:50 up to 1:300
- RMS current: 20Arms
- Hi-pot Voltage: 3000Vrms
- PE-63586NL


**THT P058xNL Series**

- 20.6mm x 14.7mm x 19.1mm Max
- UL/C-UL recognized component
- Turns Ratio: 1:1:50 up to 1:1:200
- RMS current: 35Arms
- Hi-pot Voltage: 3000Vrms
- P0581NL

## POWER MAGNETICS

### PRODUCT OVERVIEW: CURRENT SENSE MAGNETICS (SIDEWINDER FOR 50/60HZ AC)

The Pulse Sidewinder® products are the ultimate evolution of the Rogowski Coil principle for AC current sensing applications. Pulse' patent pending winding technique has been engineered to provide highly linear output voltage over a very wide dynamic range from 1.0 to 1000 Amperes (A), making them especially suited for applications such as distributed power generation, renewable energy and storage, load balancing, power monitoring, advanced metering infrastructure (AMI), circuit breaker panels, and smart meters.



**PA3202NL**

**PA3206NL**











**PA3207NL**

**PA3208NL**

**PA3209NL**

**PA3828NL**



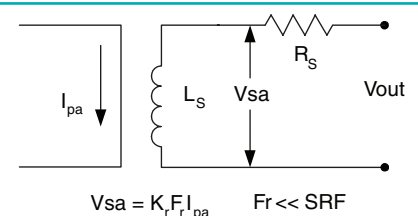
-  50/60 Hz, Single Phase, AC Current Sensor
-  Dynamic Range from 0.1 to 1000 Amps
-  For ANSI C12.20 Smart Meters
-  For IEC 62053-22 Smart Meters
-  Phase error < 0.05 degree
-  Bandwidth 300KHz
-  Immune to external AC magnetic fields
-  Immune to DC current & DC magnetic field
-  Very low temperature coefficient
-  Patent pending

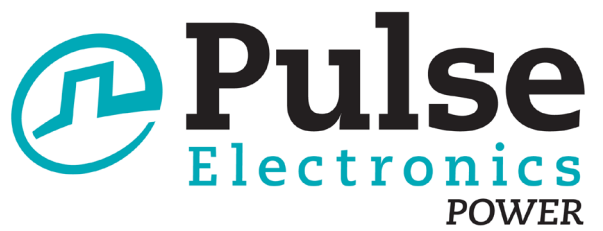
Go to [www.pulseelectronics.com/SIDEWINDER](http://www.pulseelectronics.com/SIDEWINDER)

For more information, including product data sheets, Sidewinder Overview, Sidewinder Reliability Report, IC Cross Reference List, and Metering Application Notes.

Part Number	Accuracy Class <sup>3</sup>	K <sub>r</sub> <sup>4</sup> (μΩ/Hz typ)	Electrical Specifications at 25°C Temp Range -40°C to 130°C	
			Actual Secondary Output Voltage (V <sub>sa</sub> )	
			@ 60 Hz (μV/A) <sup>1</sup>	Current Range
PA3202NL	0.2	8.33	500	200
PA3206NL	0.2	7.66	460	100
PA3207NL	0.2	7.66	460	200
PA3208NL	0.2	7.66	460	100
PA3209NL	0.2	7.66	460	1000
PA3828NL	1.0	6.12	372	100

#### Low Frequency Equivalent Circuit





## **POWER** MAGNETICS

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SEPTEMBER 2018 SHORT FORM CATALOG

[www.Power.PulseElectronics.com](http://www.Power.PulseElectronics.com)