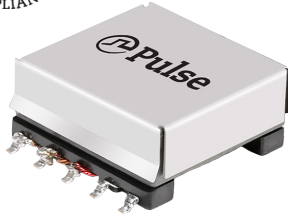
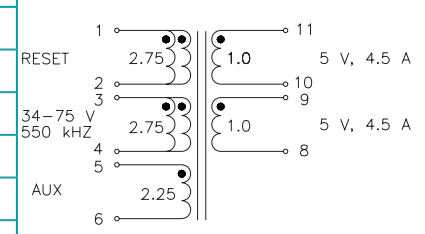
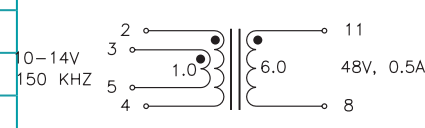
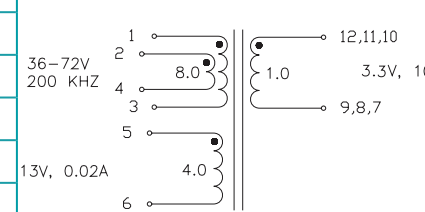
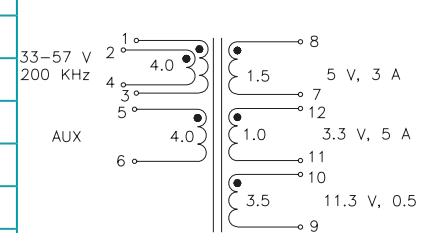


# High Frequency Wire Wound Transformers

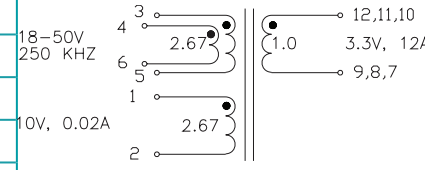
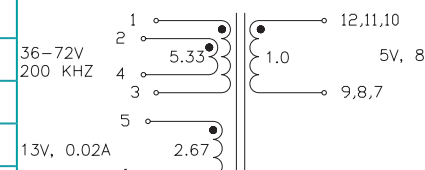
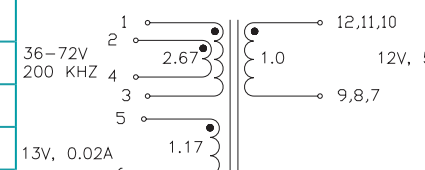
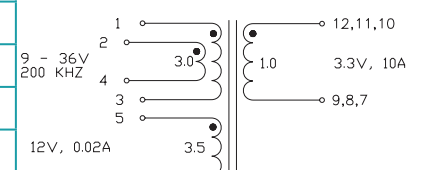
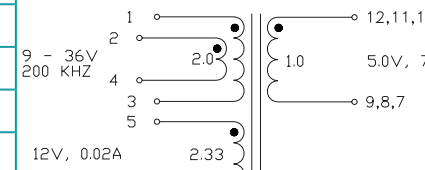


- Power Range:** up to 95W
- Height:** 11.4mm Max
- Footprint:** 29.2mm x 21.8mm Max
- Topology:** Forward and Flyback

Electrical Specifications @ 25°C - Operating Temperature -40°C to +125°C				
<b>PA0273NL</b>	Pri. Inductance	(1, 2-3, 4)	307µH ±25%	<p>FORWARD TRANSFORMER</p>
	Lk. Inductance	(1, 2-3, 4) with (5, 6, 9, 10) shorted	0.35µH MAX	
	DCR	(1, 2-3, 4)	65mΩ MAX	
		(7, 8, 9-10, 11, 12)	27mΩ MAX	
		(5-6)	240mΩ MAX	
	Hi-Pot	Pri-Sec	1500Vrms	
K1 Factor	20.2			
<b>PA0751NL</b>	Pri. Inductance	(1, 2-3, 4)	110µH ±10%	<p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(1, 2-3, 4) with (12, 11, 10, 9, 8, 7) shorted	2µH MAX	
	DCR	(4-5)	85mΩ MAX	
		(12, 11, 10-9, 8, 7)	12mΩ MAX	
		(1-3)	300mΩ MAX	
	Hi-Pot	Pri-Sec	1500Vrms	
K1 Factor	1364.8			
<b>PA0769NL</b>	Pri. Inductance	(1, 2-5, 4)	89.2µH ±18%	<p>FORWARD TRANSFORMER</p>
	Lk. Inductance	(1, 2-3, 4) with (12, 11, 10, 9, 8, 7) shorted	1.5µH MAX	
	DCR	(1, 2-3,4)	50mΩ MAX	
		(12-11)	3.8mΩ MAX	
		(10-9)=(8-7)	35mΩ MAX	
		(5-6)	110mΩ MAX	
	Hi-Pot	Pri-Sec	1500Vdc	
K1 Factor	21.5			

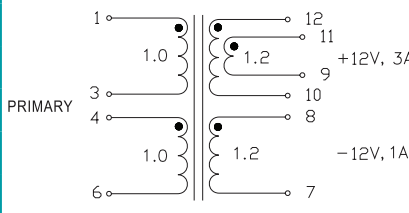
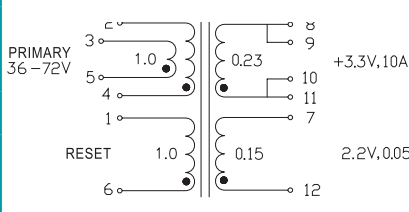
Electrical Specifications @ 25°C - Operating Temperature -40°C to +125°C					
PA1066NL	Pri. Inductance	(3-4)	137µH ±32%		
	Lk. Inductance	(3-4) with (11, 10, 9, 8) shorted	1.0µH MAX		
	DCR		(3-4)		35mΩ MAX
			(1-2)		199mΩ MAX
			(5-6)		100mΩ MAX
			(11-10)=(9-8)		17mΩ MAX
	Hi-Pot	Pri-Sec	500Vrms		
KI Factor	29.3				
FORWARD TRANSFORMER					
PA1366NL	Pri. Inductance	(2, 3-4, 5)	10µH ±10%		
	Lk. Inductance	(2, 3-4, 5) with (11, 8) shorted	0.3µH MAX		
	DCR		(2, 3-4, 5)		15.75mΩ MAX
			(11-8)		560mΩ MAX
	Hi-Pot	Pri-Sec	1500Vrms		
KI Factor	322.6				
FLYBACK TRANSFORMER					
PA1477NL	Pri. Inductance	(1, 2-3, 4)	38.3µH ±7%		
	Lk. Inductance	(1, 2-3, 4) with (12, 11, 10, 9, 8, 7) shorted	1.0µH MAX		
	DCR		(1-3)		72mΩ MAX
			(2-4)		85mΩ MAX
			(12, 11, 10-9, 8, 7)		2.5mΩ MAX
			(5-6)		230mΩ MAX
Hi-Pot	Pri-Sec	1800Vrms			
KI Factor	772.2				
FLYBACK TRANSFORMER					
PA1558NL	Pri. Inductance	(1, 2-3, 4)	11.5µH ±10%		
	Lk. Inductance	(1, 2-3, 4) with (12, 11, 10, 9, 8, 7) shorted	0.5µH MAX		
	DCR		(1, 2-3, 4)		28mΩ MAX
			(8-7)		12mΩ MAX
			(12-11)		5mΩ MAX
			(10-9)		62mΩ MAX
			(5-6)		190mΩ MAX
	Hi-Pot	Pri-Sec	1500Vrms		
KI Factor	463.7				
FLYBACK TRANSFORMER					

## Electrical Specifications @ 25°C - Operating Temperature -40°C to +125°C

Model	Parameter	Value	Notes
PA1692NL	Pri. Inductance	(3, 4-5, 6)	73μH ±30%
	Lk. Inductance	(3, 4-5, 6) with (12, 11, 10, 9, 8, 7) shorted	1.0μH MAX
	DCR	(3, 4-5, 6)	10.2mΩ MAX
		(12, 11, 10-9, 8, 7)	5mΩ MAX
		(1-2)	115mΩ MAX
	Hi-Pot	Pri-Sec	1500Vdc
KI Factor	40.3		
			 <p>FLYBACK TRANSFORMER</p>
PA1735NL	Pri. Inductance	(1, 2-3, 4)	28.5μH ±5%
	Lk. Inductance	(1, 2-3, 4) with (12, 11, 10, 9, 8, 7) shorted	1μH MAX
	DCR	(1, 2-3, 4)	39.0mΩ MAX
		(12, 11, 10-9, 8, 7)	3.5mΩ MAX
		(5-6)	230mΩ MAX
	Hi-Pot	Pri-Sec	1800Vrms
KI Factor	574.6		
			 <p>FLYBACK TRANSFORMER</p>
PA1736NL	Pri. Inductance	(1, 2-3, 4)	20.5μH ±5%
	Lk. Inductance	(1, 2-3, 4) with (12, 11, 10, 9, 8, 7) shorted	1μH MAX
	DCR	(1, 2-3, 4)	39.0mΩ MAX
		(12, 11, 10-9, 8, 7)	8.5mΩ MAX
		(5-6)	230mΩ MAX
	Hi-Pot	Pri-Sec	1500Vrms
KI Factor	413.3		
			 <p>FLYBACK TRANSFORMER</p>
PA1835NL	Pri. Inductance	(1, 2-3, 4)	4.5μH ±5%
	Lk. Inductance	(1, 2-3, 4) with (12, 11, 10, 9, 8, 7) shorted	0.25μH MAX
	DCR	(1, 2-3, 4)	9.5mΩ MAX
		(12, 11, 10-9, 8, 7)	3mΩ MAX
		(5-6)	130mΩ MAX
	Hi-Pot	Pri-Sec	1800Vrms
KI Factor	241.9		
			 <p>FLYBACK TRANSFORMER</p>
PA1836NL	Pri. Inductance	(1, 2-3, 4)	4.5μH ±5%
	Lk. Inductance	(1, 2-3, 4) with (12, 11, 10, 9, 8, 7) shorted	0.2μH MAX
	DCR	(1, 2, 3, 4)	9.5mΩ MAX
		(12, 11, 10-9, 8, 7)	5mΩ MAX
		(5-6)	130mΩ MAX
	Hi-Pot	Pri-Sec	1800Vrms
KI Factor	241.9		
			 <p>FLYBACK TRANSFORMER</p>

Electrical Specifications @ 25°C - Operating Temperature -40°C to +125°C				
PA1837NL	Pri. Inductance	(1, 2-3, 4)	4.5μH ±5%	<p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(1, 2-3, 4) with (12, 11, 10, 9, 8, 7) shorted	0.2μH MAX	
	DCR	(1, 2, 3, 4)	9.5mΩ MAX	
		(12, 11, 10-9, 8, 7)	23mΩ MAX	
		(5-6)	130mΩ MAX	
	Hi-Pot	Pri-Sec	1800Vdc	
	KI Factor	241.9		
PA2047NL	Pri. Inductance	(1-3)	7.2μH ±5%	<p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(1-3) with (11, 10-9, 7) shorted	0.3μH MAX	
	DCR	(1-3)	52mΩ MAX	
		(11, 10-9, 7)	12mΩ MAX	
		(5-6)	240mΩ MAX	
	Hi-Pot	Pri-Sec	1500Vrms	
KI Factor	290.3			
PA2053NL	Pri. Inductance	(1, 2-5, 6)	292.0μH ±32%	<p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(1, 2-5, 6) with (12, 11, 10, 9, 8, 7) shorted	1.3μH MAX	
	DCR	(1, 2-5, 6)	78.0mΩ MAX	
		(7, 8-9, 10)	12mΩ MAX	
		(11-12)	43mΩ MAX	
	Hi-Pot	Pri-Sec	1500Vrms	
KI Factor	20.2			
PA2291NL	Pri. Inductance	(1-4)	57.6μH ±12%	<p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(1-4) with (all windings) shorted	0.5μH MAX	
	DCR	(1-4)	65mΩ MAX	
		(3-2)	155mΩ MAX	
		(6-5)	145mΩ MAX	
		(7, 8-9, 10)	4mΩ MAX	
		(11-12)	55mΩ MAX	
	Hi-Pot	Pri-Sec	1500Vdc	
KI Factor	26.9			
PA2398NL	Pri. Inductance	(1,2-3,4)	100μH ±12%	<p>FORWARD TRANSFORMER</p>
	Lk. Inductance	(1, 2-3, 4) with (5, 6, 9, 10) shorted	0.45μH MAX	
	DCR	(1, 2-3, 4)	72mΩ MAX	
		(7, 8, 9-10, 11, 12)	15mΩ MAX	
		(5-6)	680mΩ MAX	
	Hi-Pot	Pri-Sec	1500Vrms	
	16.1			

## Electrical Specifications @ 25°C - Operating Temperature -40°C to +125°C

Electrical Specifications @ 25°C - Operating Temperature -40°C to +125°C					
<b>PB2041NL</b>	Pri. Inductance	(1-6) with (3-4) shorted	491μH ±35%	 <p>FORWARD TRANSFORMER</p>	
	Lk. Inductance	(1-6) with (all windings) shorted	1μH MAX		
	DCR		(1-3)		36.1mΩ MAX
			(4-6)		45.6mΩ MAX
			(8-7)		86.4mΩ MAX
			(11-9)		86.4mΩ MAX
			(12-10)		47.8mΩ MAX
	Hi-Pot	Pri-Sec	1500Vrms		
KI Factor	16.1				
<b>PB2089NL</b>	Pri. Inductance	(5, 4-3, 2)	112.0μH MAX	 <p>FORWARD TRANSFORMER</p>	
	Lk. Inductance	(5, 4-3, 2) with (all windings) shorted	1μH MAX		
	DCR		(5-3)		55mΩ MAX
			(4-2)		67.7mΩ MAX
			(10, 11-8, 9)		5.5mΩ MAX
			(12-7)		123mΩ MAX
			(6-1)		923mΩ MAX
	Hi-Pot	Pri-Sec	1500Vdc		
KI Factor	24.8				

**Notes:**

1. The temperature of the component (ambient plus temperature rise) must be within the stated operating temperature range.
2. The above transformers and inductors have been tested and approved by Pulse’s power IC partners and are sited in the appropriate datasheet or evaluation board documentation at these companies. To determine which IC and IC partners are matched with the above Pulse part numbers please consult the IC Cross Reference on the Pulse website.
3. For flyback topology applications, it is necessary to ensure that the transformer will not saturate in the application. The peak flux density (Bpk) should remain below 2700Gauss. To calculate the peak density, use the following formula:  

$$Bpk \text{ (Gauss)} = K1\_Factor * Ipk \text{ (A)}$$
4. In high volt-sec applications, it is important to calculate the core loss of the transformer. Approximate transformer core loss can be calculated as:

$$CoreLoss \text{ (W)} = 1.32E-13 * (Freq\_kHz)^{1.63} * (\Delta B\_Gauss)^{2.63}$$

where  $\Delta B$  can be calculated as:

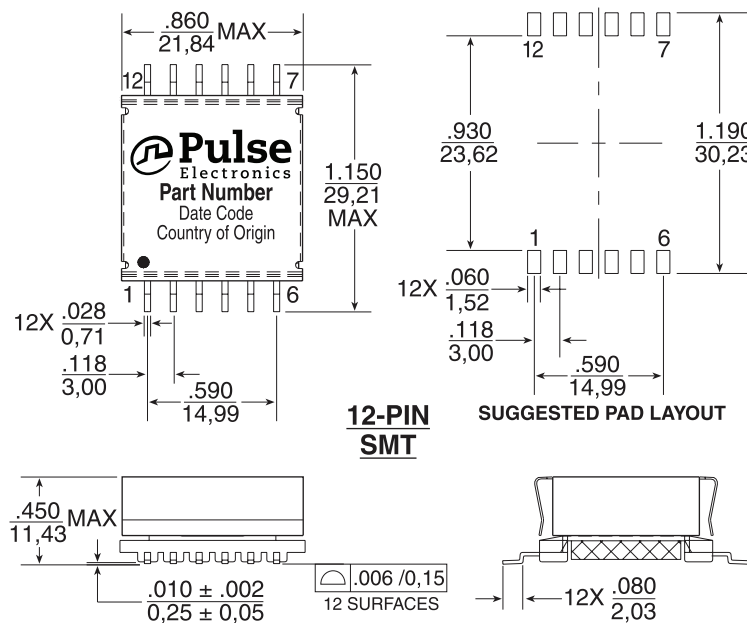
For Flyback Topology:  $\Delta B = K1\_Factor * (A)$

For Forward Topology:  $\Delta B = K1\_Factor * Volt\text{-}\mu\text{sec}$

5. Optional Tape & Reel packaging can be ordered by adding a “T” suffix to the part number (i.e. PA0273NL becomes PA0273NL**T**). Pulse complies with industry standard tape and reel specification EIA481. The tape and reel for this product has a width (W=44mm), pitch (Po=32mm) an depth (Ko=11.78mm).
6. The “NL” suffix indicates an RoHS-compliant part number. Non-NL suffixed parts are not necessarily RoHS compliant, but are electrically and mechanically equivalent to NL versions. If a part number does not have the “NL” suffix, but an RoHS compliant version is required, please contact Pulse for availability.

**Mechanical**

**PAXXXXNL / PBXXXXNL**



**For More Information**

**Pulse Worldwide Headquarters**

15255 Innovation Drive Ste 100  
San Diego, CA 92128  
U.S.A.

**Pulse Europe**

Pulse Electronics GmbH  
Am Rottland 12  
58540 Meinerzhagen  
Germany

**Pulse China Headquarters**

Pulse Electronics (ShenZhen) CO., LTD  
D708, Shenzhen Academy of  
Aerospace Technology,  
The 10th Keji South Road,  
Nanshan District, Shenzhen, P.R.  
China 518057

**Pulse North China**

Room 2704/2705  
Super Ocean Finance Ctr.  
2067 Yan An Road West  
Shanghai 200336  
China

**Pulse South Asia**

3 Fraser Street  
0428 DUO Tower  
Singapore 189352

**Pulse North Asia**

1F, No.111  
Xiyuan Road  
Zhongli District  
Taoyuan City 32057  
Taiwan (R.O.C)

Tel: 858 674 8100  
Fax: 858 674 8262

Tel: 49 2354 777 100  
Fax: 49 2354 777 168

Tel: 86 755 33966678  
Fax: 86 755 33966700

Tel: 86 21 62787060  
Fax: 86 2162786973

Tel: 65 6287 8998  
Fax: 65 6280 0080

Tel: 886 3 4356768  
Fax: 886 3 4356820

Performance warranty of products offered on this data sheet is limited to the parameters specified. Data is subject to change without notice. Other brand and product names mentioned herein may be trademarks or registered trademarks of their respective owners. © Copyright, 2019. Pulse Electronics, Inc. All rights reserved.