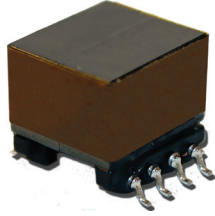






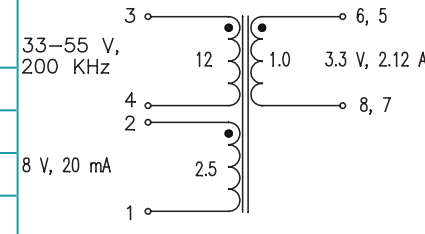
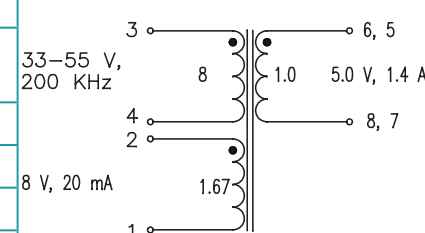
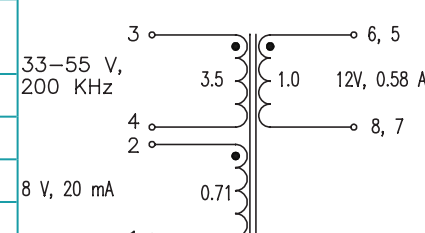
# High Frequency Wire Wound Transformers

EP10 Platforms - SMT



-  **Power Range:** up to 30W
-  **Height:** 11.45mm Max
-  **Footprint:** 15.24mm x 13.1mm Max
-  **Topology:** Forward and Flyback

## Electrical Specifications @ 25°C - Operating Temperature -40°C to +130°C<sup>5</sup>

Model	Parameter	Configuration	Value	Notes
PAT133NL	Pri. Inductance	(3-4)	253.4μH ± 10%	 <p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(3-4) with (8, 7, 6, 5) shorted	7.5μH MAX	
	DCR	(3-4)	420mΩ MAX	
		(6, 5-8, 7)	7.5mΩ MAX	
	Hi-Pot	Pri-Sec	1500Vrms	
	K1 Factor		4671.8	
PAT134NL	Pri. Inductance	(3-4)	253.4μH ±10%	 <p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(3-4) with (8, 7, 6, 5) shorted	7.5μH MAX	
	DCR	(3-4)	420mΩ MAX	
		(6, 5-8, 7)	16mΩ MAX	
	Hi-Pot	Pri-Sec	1500Vrms	
	K1 Factor		4671.8	
PAT135NL	Pri. Inductance	(3-4)	264.1μH ±10%	 <p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(3-4) with (8, 7, 6, 5) shorted	6 μH MAX	
	DCR	(3-4)	800mΩ MAX	
		(6, 5-8, 7)	45mΩ MAX	
	Hi-Pot	Pri-Sec	1500Vrms	
	K1 Factor		4769.7	

# High Frequency Wire Wound Transformers

EP10 Platforms - SMT



**Electrical Specifications @ 25°C - Operating Temperature -40°C to +130°C**

Part Number	Parameter	Configuration	Value	Notes
PA1253NL	Pri. Inductance	(3-4)	253.4 $\mu$ H $\pm$ 10%	<p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(3-4) with (8, 7, 6, 5) shorted	12 $\mu$ H MAX	
	DCR	(3-4)	420 m $\Omega$ MAX	
		(2-1)	335 m $\Omega$ MAX	
		(5-6)	9.5 m $\Omega$ MAX	
		(7-8)	7.2 m $\Omega$ MAX	
	Hi-Pot	Pri-Sec	1500Vrms	
KI Factor		4671.8		
PA1277NL	Pri. Inductance	(3-4)	20.4 $\mu$ H $\pm$ 10%	<p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(3-4) with (10, 9, 8, 7) shorted	1.5 $\mu$ H MAX	
	DCR	(3-4)	80 m $\Omega$ MAX	
		(6, 5-8, 7)	7.5 m $\Omega$ MAX	
		(2-1)	150 m $\Omega$ MAX	
	Hi-Pot	Pri-Sec	1500Vrms	
KI Factor		1002.9		
PA1282NL	Pri. Inductance	(3-4)	155 $\mu$ H $\pm$ 10%	<p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(3-4) with (8, 7, 6, 5) shorted	5 $\mu$ H MAX	
	DCR	(3-4)	530 m $\Omega$ MAX	
		(6, 5-8, 7)	31 m $\Omega$ MAX	
		(2-1)	900 m $\Omega$ MAX	
	Hi-Pot	Pri-Sec	1500Vrms	
KI Factor		3117.5		
PA1283NL	Pri. Inductance	(3-4)	155 $\mu$ H $\pm$ 10%	<p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(3-4) with (8, 7, 6, 5) shorted	5 $\mu$ H MAX	
	DCR	(3-4)	570 m $\Omega$ MAX	
		(6, 5-8, 7)	40 m $\Omega$ MAX	
		(2-1)	1000 m $\Omega$ MAX	
	Hi-Pot	Pri-Sec	1500 Vdc	
KI Factor		3117.5		

# High Frequency Wire Wound Transformers

EP10 Platforms - SMT



Electrical Specifications @ 25°C - Operating Temperature -40°C to +130°C				
PA1284NL	Pri. Inductance	(3-4)	155 $\mu$ H $\pm$ 10%	<p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(3-4) with (8, 7, 6, 5) shorted	5 $\mu$ H MAX	
	DCR	(3-4)	540 m $\Omega$ MAX	
		(6, 5-8, 7)	370 m $\Omega$ MAX	
		(2-1)	920 m $\Omega$ MAX	
	Hi-Pot	Pri-Sec	1500 Vrms	
	KI Factor	3117.5		
PA1370NL	Pri. Inductance	(3-4)	20.4 $\mu$ H $\pm$ 10%	<p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(3-4) with (8,5) shorted	1.5 $\mu$ H MAX	
	DCR	(3-4)	80 m $\Omega$ MAX	
		(5-8)	30 m $\Omega$ MAX	
		(2-1)	105 m $\Omega$ MAX	
	Hi-Pot	Pri-Sec	1500 Vrms	
	KI Factor	1002.9		
PA1721NL	Pri. Inductance	(3-4)	185 $\mu$ H $\pm$ 10%	<p>FORWARD TRANSFORMER</p>
	Lk. Inductance	(3-4) with (8, 7, 6, 5) shorted	10 $\mu$ H MAX	
	DCR	(3-4)	420 m $\Omega$ MAX	
		(6, 5-8, 7)	12 m $\Omega$ MAX	
		(2-1)	115 m $\Omega$ MAX	
	Hi-Pot	Pri-Sec	1500 Vrms	
	KI Factor	3410.8		
PA2362NL	Pri. Inductance	(3-4)	25.2 $\mu$ H $\pm$ 10%	<p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(3-4) with (1, 2, 8, 7, 6, 5) shorted	0.55 $\mu$ H MAX	
	DCR	(3-4)	135 m $\Omega$ MAX	
		(6, 5-8, 7)	11 m $\Omega$ MAX	
		(2-1)	115 m $\Omega$ MAX	
	Hi-Pot	Pri-Sec	1500 Vdc	
	KI Factor	1115.0		

# High Frequency Wire Wound Transformers

EP10 Platforms - SMT



Electrical Specifications @ 25°C - Operating Temperature -40°C to +130°C <sup>2</sup>				
PA2363NL	Pri. Inductance	(3-4)	25.2 $\mu$ H $\pm$ 10%	<p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(3-4) with (1, 2, 8, 7, 6, 5) shorted	0.85 $\mu$ H MAX	
	DCR	(3-4)	135 m $\Omega$ MAX	
		(6, 5-8, 7)	9 m $\Omega$ MAX	
		(2-1)	180 m $\Omega$ MAX	
	Hi-Pot	Pri-Sec	1500 Vrms	
K1 Factor	1115.0			
PA2364NL	Pri. Inductance	(3-4)	25.2 $\mu$ H $\pm$ 10%	<p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(3-4) with (1, 2, 8, 7, 6, 5) shorted	1 $\mu$ H MAX	
	DCR	(3-4)	145 m $\Omega$ MAX	
		(6, 5-8, 7)	7.5 m $\Omega$ MAX	
		(2-1)	110 m $\Omega$ MAX	
	Hi-Pot	Pri-Sec	1500 Vrms	
K1 Factor	1059.4			
PA2454NL	Pri. Inductance	(3-4)	24 $\mu$ H $\pm$ 10%	<p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(3-4) with (8, 7, 6, 5) shorted	0.75 $\mu$ H MAX	
	DCR	(3-4)	82 m $\Omega$ MAX	
		(6, 5-8, 7)	13 m $\Omega$ MAX	
		(2-1)	80 m $\Omega$ MAX	
	Hi-Pot	Pri-Sec	1500 Vrms	
K1 Factor	1179.9			
PA2455NL	Pri. Inductance	(3-4)	24 $\mu$ H $\pm$ 10%	<p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(1-4) with (8, 7, 6, 5) shorted	0.6 $\mu$ H MAX	
	DCR	(3-4)	90 m $\Omega$ MAX	
		(6, 5-8, 7)	23 m $\Omega$ MAX	
		(2-1)	130 m $\Omega$ MAX	
	Hi-Pot	Pri-Sec	1500 Vdc	
K1 Factor	1179.9			

# High Frequency Wire Wound Transformers

EP10 Platforms - SMT



Electrical Specifications @ 25°C - Operating Temperature -40°C to +130°C					
PA2456NL	Pri. Inductance	(3-4)	24 $\mu\text{H} \pm 10\%$		FLYBACK TRANSFORMER
	Lk. Inductance	(3,4) with (8, 7, 6, 5) shorted	0.6 $\mu\text{H}$ MAX		
	DCR	(3-4)	86 $\text{m}\Omega$ MAX		
		(6, 5-8, 7)	86 $\text{m}\Omega$ MAX		
		(2-1)	470 $\text{m}\Omega$ MAX		
	Hi-Pot	Pri-Sec	1500 Vrms		
KI Factor	1179.9				
PA2627NL	Pri. Inductance	(3-4)	50.5 $\mu\text{H} \pm 10\%$		FLYBACK TRANSFORMER
	Lk. Inductance	(3,4) with (8, 7, 6, 5) shorted	1.4 $\mu\text{H}$ MAX		
	DCR	(3-4)	420 $\text{m}\Omega$ MAX		
		(6, 5-8, 7)	47 $\text{m}\Omega$ MAX		
		(2-1)	174 $\text{m}\Omega$ MAX		
	Hi-Pot	Pri-Sec	1500 Vrms		
KI Factor	1241.4				
PA3948.001NL	Pri. Inductance	(4-1) with 3,2 shorted	40 $\mu\text{H} \pm 10\%$		FLYBACK TRANSFORMER
		(4-1) with 3,2 shorted	32 $\mu\text{H}$ Min at 1.88A		
	Lk. Inductance	(4-1) with (5, 6, 7, 8) shorted	1.45 $\mu\text{H}$ MAX		
	DCR	(3-4)	410 $\text{m}\Omega$ MAX		
		(6, 5-8, 7))	140 $\text{m}\Omega$ MAX		
		(2-1)	140 $\text{m}\Omega$ MAX		
Hi-Pot	Pri-Sec	1500 Vdc			
KI Factor	1241.4				
PA3948.002NL	Pri. Inductance	(4-1) with 3,2 shorted	40 $\mu\text{H} \pm 10\%$		FLYBACK TRANSFORMER
		(4-1) with 3,2 shorted	32 $\mu\text{H}$ Min at 1.88A		
	Lk. Inductance	(4-1) with (5, 6, 7, 8) shorted	1.45 $\mu\text{H}$ MAX		
	DCR	(4-1)	405 $\text{m}\Omega$ MAX		
		(8-6)	470 $\text{m}\Omega$ MAX		
		(7-5)	470 $\text{m}\Omega$ MAX		
Hi-Pot	Pri-Sec	1500 Vdc			
KI Factor	983.3				

# High Frequency Wire Wound Transformers

EP10 Platforms - SMT



## Electrical Specifications @ 25°C - Operating Temperature -40°C to +130°C<sup>2</sup>

Part Number	Parameter	Configuration	Value	Notes	Diagram
PA3948.003NL	Pri. Inductance	(4-1) with 3, 2 shorted	40 $\mu$ H $\pm$ 10%	8-36 V 200 KHz	
		(4-1) with 3, 2 shorted	32 $\mu$ H Min at 1.88A		
	Lk. Inductance	(4-1) with (5, 6, 7, 8) shorted	1.45 $\mu$ H MAX		
	DCR	(4-1)	405 m $\Omega$ MAX		
		(8-6)	470 m $\Omega$ MAX		
		(7-5)	470 m $\Omega$ MAX		
Hi-Pot	Pri-Sec	1500 Vrms			
K1 Factor		983.3			
FLYBACK TRANSFORMER					
PA3948.004NL	Pri. Inductance	(4-1) with 3, 2 shorted	40 $\mu$ H $\pm$ 10%	8-36 V 200 KHz	
		(4-1) with 3, 2 shorted	32 $\mu$ H Min at 1.88A		
	Lk. Inductance	(4-1) with (5, 6, 7, 8) shorted	1.45 $\mu$ H MAX		
	DCR	(4-1)	220 m $\Omega$ MAX		
		(8-6)	58 m $\Omega$ MAX		
		(7-5)	58 m $\Omega$ MAX		
Hi-Pot	Pri-Sec	1500 Vrms			
K1 Factor		983.3			
FLYBACK TRANSFORMER					
PA3948.005NL	Pri. Inductance	(4-1) with 3, 2 shorted	40 $\mu$ H $\pm$ 10%	8-36 V 200 KHz	
		(4-1) with 3, 2 shorted	32 $\mu$ H Min at 1.88A		
	Lk. Inductance	(4-1) with (5, 6, 7, 8) shorted	1.6 $\mu$ H MAX		
	DCR	(4-1)	220 m $\Omega$ MAX		
		(7-6)	1275 m $\Omega$ MAX		
	Hi-Pot	Pri-Sec	1500 Vrms		
K1 Factor		983.3			
FLYBACK TRANSFORMER					
PA3948.006NL	Pri. Inductance	(4-1) with 3, 2 shorted	40 $\mu$ H $\pm$ 10%	8-36 V 200 KHz	
		(4-1) with 3, 2 shorted	32 $\mu$ H Min at 1.88A		
	Lk. Inductance	(4-1) with (5, 6, 7, 8) shorted	1.65 $\mu$ H MAX		
	DCR	(4-1)	220 m $\Omega$ MAX		
		(7-6)	3350 m $\Omega$ MAX		
	Hi-Pot	Pri-Sec	1500 Vrms		
K1 Factor		983.3			
FLYBACK TRANSFORMER					

# High Frequency Wire Wound Transformers

EP10 Platforms - SMT

## 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:

$$B_{pk} \text{ (Gauss)} = K1\_Factor * I_{pk} \text{ (A)}$$

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:

$$\text{CoreLoss (W)} = 2.5E-14 * (\text{Freq\_kHz})^{1.63} * (\Delta B\_Gauss)^{2.63}$$

where  $\Delta B$  can be calculated as:

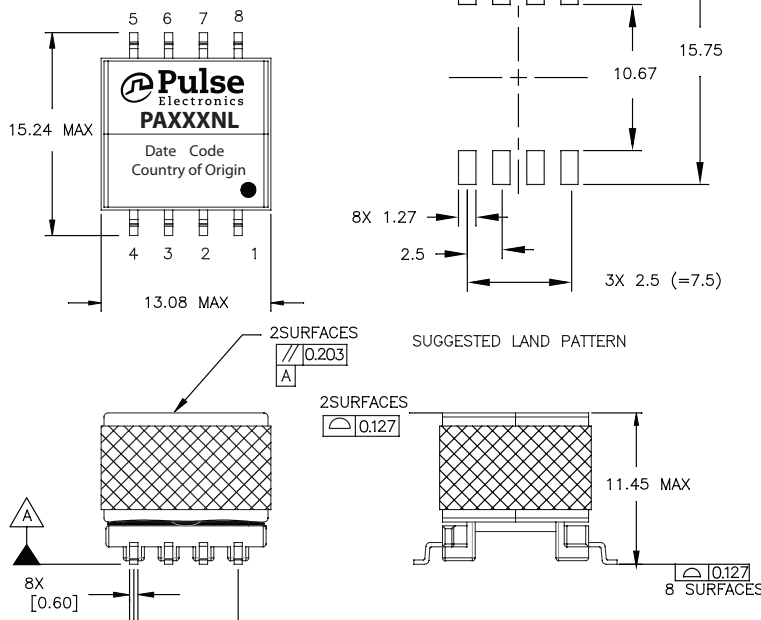
For Flyback Topology:  $\Delta B = K1\_Factor * (A)$

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

5. Optional Tape & Reel packaging can be ordered by adding a "T" suffix to the part number (i.e. PA1133NL becomes PA1133NLT). Pulse complies with industry standard tape and reel specification EIA481. The tape and reel for this product has a width (W=32mm), pitch (Po=24mm) an depth (Ko=11.6mm).

## Mechanical

PAXXXNL



## For More Information

**Pulse Worldwide Headquarters**  
12220 World Trade Drive  
San Diego, CA  
92128  
U.S.A.

**Pulse Europe**  
Einsteinstrasse 1  
D-71083 Herrenberg  
Germany

**Pulse China Headquarters**  
B402, Shenzhen Academy of  
Aerospace Technol-  
ogy Bldg.  
10th Kejinan Road  
High-Tech Zone  
Nanshan District  
Shenzhen, PR China  
518057  
Tel: 86 755 33966678  
Fax: 86 755 33966700

**Pulse North China**  
Room 2704/2705  
Super Ocean Finance  
Ctr.  
2067 Yan An Road  
West  
Shanghai 200336  
China  
Tel: 86 21 62787060  
Fax: 86 2162786973

**Pulse South Asia**  
135 Joo Seng Road  
#03-02  
PM Industrial Bldg.  
Singapore 368363  
Tel: 65 6287 8998  
Fax: 65 6287 8998

**Pulse North Asia**  
3F, No. 198  
Zhongyuan Road  
Zhongli City  
Taoyuan County 320  
Taiwan R. O. C.  
Tel: 886 3 4356768  
Fax: 886 3 4356823 (Pulse)  
Fax: 886 3 4356820 (FRE)

Tel: 858 674 8100  
Fax: 858 674 8262

Tel: 49 7032 78060  
Fax: 49 7032 7806 135

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, 2014. Pulse Electronics, Inc. All rights reserved.