

# High Frequency Wire Wound Transformers

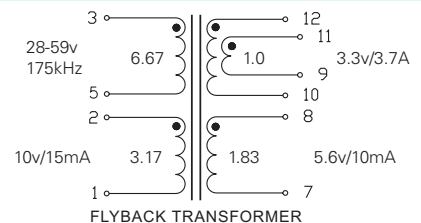
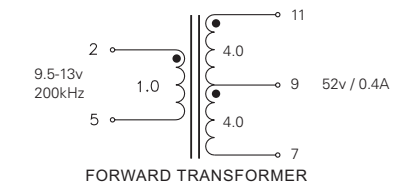
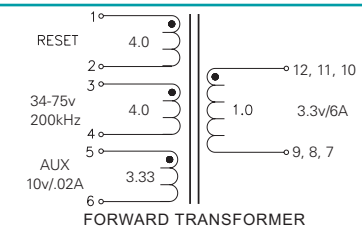
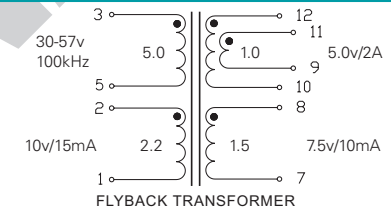
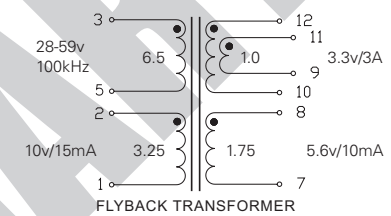
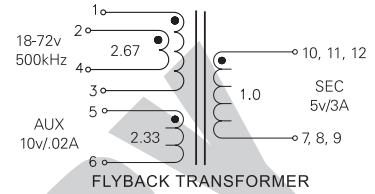
EFD15 Platforms - SMT



- Power Range:** Up to 40W
- Height:** 8.4mm Max
- Footprint:** 22.2mm x 17.2mm Max
- Topology:** Forward and Flyback

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

Part Number	Parameter	Value	Notes
PA0476NL	Pri. Inductance	(1,2-3,4)	9.85μH ±10%
	Lk. Inductance	(1,2-3,4) with (5,6,7,8,9,10,11,12) shorted	0.15μH MAX
	DCR	(1-3)	47mΩ MAX
		(2-4)	47mΩ MAX
		(5-6)	87mΩ MAX
		(12,11,10-7,8,9)	8mΩ MAX
	Hi-Pot	Pri-Sec	1500Vrms
K1 Factor	820.8		
PA0691NL	Pri. Inductance	(3-5)	170.3μH ±12%
	Lk. Inductance	(3-5) with (7,8,9,10,11,12) shorted	2.4μH MAX
	DCR	(3-5)	600mΩ MAX
		(2-1)	2000mΩ MAX
		(12,11-10,9)	20mΩ MAX
		(8-7)	720mΩ MAX
	Hi-Pot	Pri-Sec	1500Vrms
K1 Factor	2183.3		
PA1039NL	Pri. Inductance	(3-5)	157.5μH ±10%
	Lk. Inductance	(3-5) with (7,8,9,10,11,12) shorted	2μH MAX
	DCR	(3-5)	500mΩ MAX
		(2-1)	1300mΩ MAX
		(12,11-10,9)	25mΩ MAX
		(8-7)	760mΩ MAX
	Hi-Pot	Pri-Sec	1500Vrms
K1 Factor	2100.0		
PA1067NL	Pri. Inductance	(3-4)	113μH ±30%
	Lk. Inductance	(3-4) with (12,11,10,9,8,7) shorted	1μH MAX
	DCR	(1-2)	70mΩ MAX
		(3-4)	70mΩ MAX
		(5-6)	70mΩ MAX
		(12,11,10-9,8,7)	6mΩ MAX
	Hi-Pot	Pri-Sec	500Vrms
K1 Factor	55.6		
PA1169NL	Pri. Inductance	(2-5)	38.2μH ±30%
	Lk. Inductance	(2-5) with (11,9,7) shorted	0.5μH MAX
	DCR	(2-5)	27mΩ MAX
		(11-7)	850mΩ MAX
	Hi-Pot	Pri-Sec	1500Vrms
K1 Factor	95.2		
PA1275NL	Pri. Inductance	(3-5)	100.7μH ±10%
	Lk. Inductance	(3-5) with (7,8,9,10,11,12) shorted	2μH MAX
	DCR	(3-5)	485mΩ MAX
		(2-1)	1500mΩ MAX
		(12,11-10,9)	16mΩ MAX
		(8-7)	575mΩ MAX
	Hi-Pot	Pri-Sec	1800Vdc
K1 Factor	1678.3		



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PA1424NL	Pri. Inductance	(3-4)	62µH ±12%	<p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(3-4) with (10,9,8,7) shorted	1µH MAX	
	DCR	(3-4)	250mΩ MAX	
		(10-9)	30mΩ MAX	
		(7-8)	20mΩ MAX	
		(2-1)	400mΩ MAX	
	Hi-Pot	Pri-Sec	1500Vrms	
K1 Factor	1878.8			
PA1627NL	Pri. Inductance	(3-5)	100.7µH ±12%	<p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(3-5) with (7,8,9,10,11,12) shorted	3µH MAX	
	DCR	(3-5)	485mΩ MAX	
		(2-1)	1850mΩ MAX	
		(12,11-10,9)	16mΩ MAX	
	Hi-Pot	Pri-Sec	2150Vdc	
K1 Factor	1678.3			
PA1646NL	Pri. Inductance	(3-5)	100.7µH ±5%	<p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(3-5) with (7,8,9,10,11,12) shorted	3µH MAX	
	DCR	(3-5)	485mΩ MAX	
		(2-1)	1150mΩ MAX	
	Hi-Pot	Pri-Sec	1500Vrms	
K1 Factor	1678.3			
PA1706NL	Pri. Inductance	(3-5)	170.1µH ±12%	<p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(3-5) with (12,11,10,9,8,7) shorted	3.5µH MAX	
	DCR	(3-5)	643mΩ MAX	
		(12,11-10,9)	6mΩ MAX	
		(8-7)	60mΩ MAX	
	(2-1)	123mΩ MAX		
Hi-Pot	Pri-Sec	1500Vrms		
K1 Factor	2520.0			
PA1741NL	Pri. Inductance	(1-3)	144µH ±10%	<p>FORWARD TRANSFORMER</p>
	Lk. Inductance	(1-3) with (12,11,10,9,8,7) shorted	1µH MAX	
	DCR	(1-3)	150mΩ MAX	
		(12,11-10,9)	18mΩ MAX	
	(8-7)	60mΩ MAX		
Hi-Pot	Pri-Sec	1800Vrms		
K1 Factor	27.8			
PA1745NL	Pri. Inductance	(2-5)	37.1µH ±10%	<p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(2-5) with (8,9,10,11) shorted	1µH MAX	
	DCR	(2-5)	78mΩ MAX	
		(11-10)	34mΩ MAX	
	(8-7)	38mΩ MAX		
Hi-Pot	Pri-Sec	600Vrms		
K1 Factor	1177.8			

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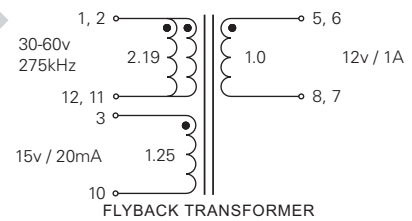
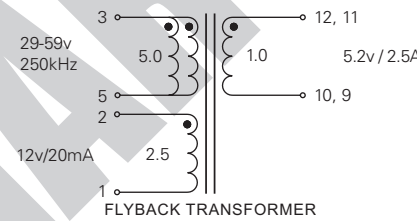
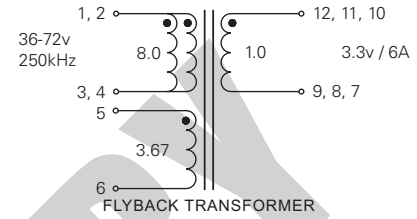
Part Number	Parameter	Value	Diagram	
PA1994NL	Pri. Inductance	(3-5)		
	Lk. Inductance	(3-5) with (7,8,9,10,11,12) shorted		
	DCR	(3-5)		170.1μH ±12%
		(2-1)		3.5μH MAX
		(12,11-10,9)		850mΩ MAX
		(8-7)		145mΩ MAX
	Hi-Pot	Pri-Sec		75mΩ MAX
		55mΩ MAX		
		1500Vrms		
	K1 Factor	2520.0		
PA1995NL	Pri. Inductance	(3-5)		
	Lk. Inductance	(3-5) with (7,8,9,10,11,12) shorted		
	DCR	(3-5)		170.1μH ±12%
		(2-1)		3.5μH MAX
		(12,11-10,9)		850mΩ MAX
		(8-7)		145mΩ MAX
	Hi-Pot	Pri-Sec		70mΩ MAX
		55mΩ MAX		
		1500Vrms		
	K1 Factor	2520.0		
PA1996NL	Pri. Inductance	(3-5)		
	Lk. Inductance	(3-5) with (7,8,9,10,11,12) shorted		
	DCR	(3-5)		170.1μH ±12%
		(2-1)		3.5μH MAX
		(12,11-10,9)		850mΩ MAX
		(8-7)		145mΩ MAX
	Hi-Pot	Pri-Sec		37mΩ MAX
		55mΩ MAX		
		1500Vrms		
	K1 Factor	2520.0		
PA1997NL	Pri. Inductance	(3-5)		
	Lk. Inductance	(3-5) with (7,8,9,10,11,12) shorted		
	DCR	(3-5)		170.1μH ±12%
		(2-1)		3.5μH MAX
		(12,11-10,9)		850mΩ MAX
		(8-7)		150mΩ MAX
	Hi-Pot	Pri-Sec		15mΩ MAX
		65mΩ MAX		
		1500Vrms		
	K1 Factor	2520.0		
PA2026NL	Pri. Inductance	(3-5)		
	Lk. Inductance	(3-5) with (7,9,10,12) shorted		
	DCR	(3-5)		25.2μH ±12%
		(12-10)		1μH MAX
		(9-7)		150mΩ MAX
		(2-1)		26mΩ MAX
	Hi-Pot	Pri-Sec		28mΩ MAX
		245mΩ MAX		
		1500Vrms		
	K1 Factor	840.0		

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Part Number	Parameter	Value	Notes
PA2069NL	Pri. Inductance	40µH ±13%	(1,2-3,4)
	Lk. Inductance	0.825µH MAX	(1,2-3,4) with (5,6,7,8,9,10,11,12) shorted
	DCR	130mΩ MAX	(1,2-3,4)
		315mΩ MAX	(5-6)
		3.5mΩ MAX	(12,11,10-9,8,7)
	Hi-Pot	1650Vrms	Pri-Sec
K1 Factor	1111.1		
PA2196NL	Pri. Inductance	70µH ±10%	(3-5)
	Lk. Inductance	1.2µH MAX	(3-5) with (7,8,9,10,11,12) shorted
	DCR	183mΩ MAX	(3-5)
		1100mΩ MAX	(2-1)
		14mΩ MAX	(12,11-10,9)
	Hi-Pot	1500Vrms	Pri-Sec
K1 Factor	1555.6		
PA2265NL	Pri. Inductance	122.5µH ±10%	(1,2-12,11)
	Lk. Inductance	2µH MAX	(1,2-12,11) with (5,6,8,7,3,10) shorted
	DCR	270mΩ MAX	(1,2-12,11)
		63mΩ MAX	(7,8,9-10,11,12)
		310mΩ MAX	(5,6-8,7)
	Hi-Pot	1500Vrms	Pri-Sec
K1 Factor	2333.3		



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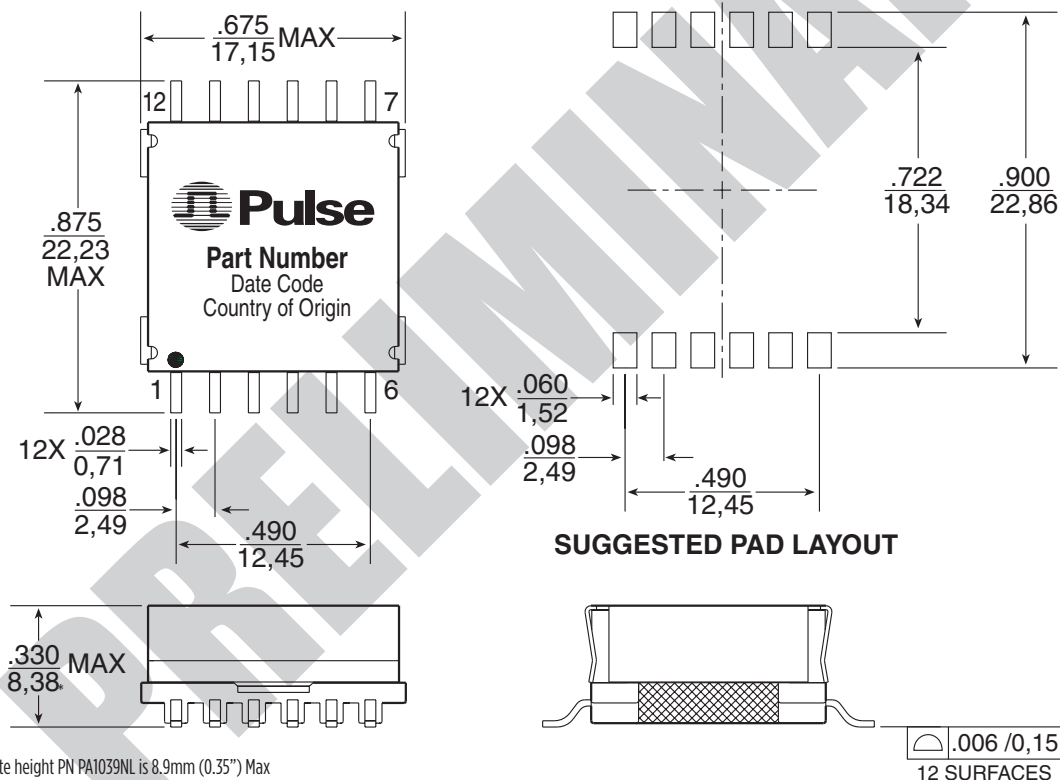
## Notes

- The temperature of the component (ambient plus temperature rise) must be within the stated operating temperature range.
- 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.
- 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 flux density use the following formula:  

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

$$CoreLoss (W) = 4.6E-14 * (Freq\_kHz)^{1.63} * (\Delta B\_Gauss)^{2.63}$$
 where  $\Delta B$  can be calculated as:  
 For Flyback Topology:  $\Delta B = K1\_Factor * \Delta(A)$   
 For Forward Topology:  $\Delta B = K1\_Factor * Volt-\mu sec$
- Optional Tape & Reel packaging can be ordered by adding a "T" suffix to the part number (i.e. PA0476NL becomes PA0476NLT). 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) and depth (Ko=11.78mm).
- 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



\* Please note height PN PA1039NL is 8.9mm (0.35") Max

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