

High Frequency Wire Wound Transformers

EFD15 Platforms - SMT

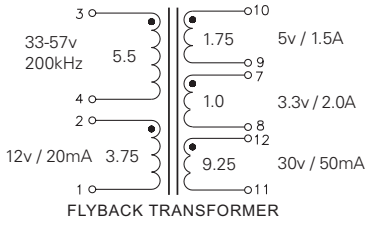
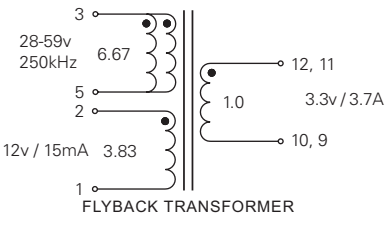
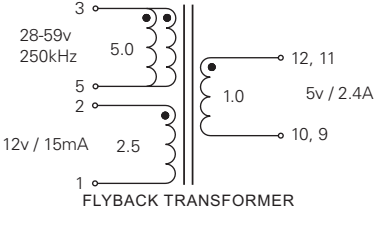
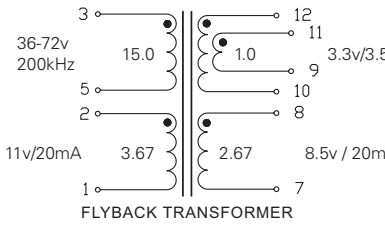
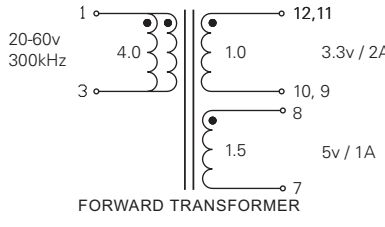
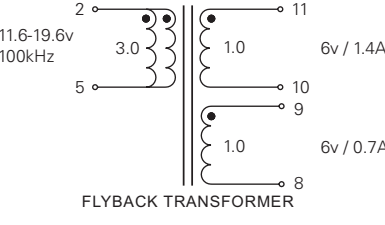


- Power Range:** Up to 40W
- Height:** 8.4mm Max
- Footprint:** 22.2mm x 17.2mm Max
- Topology:** Forward and Flyback

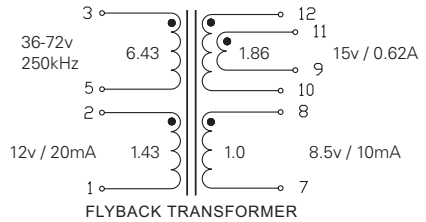
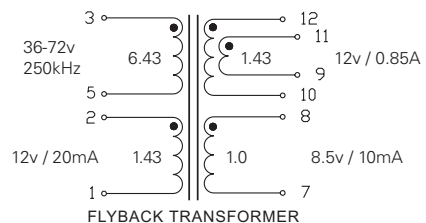
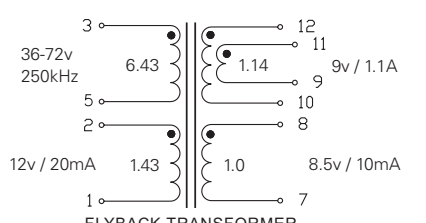
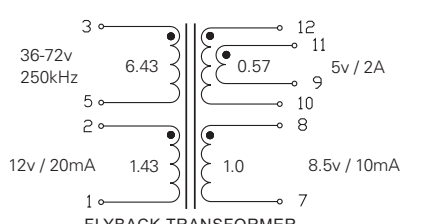
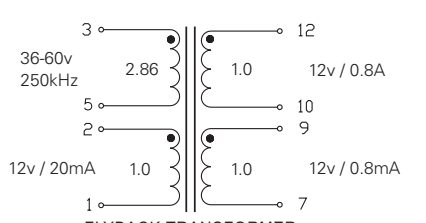
Electrical Specifications @ 25°C — Operating Temperature -40°C to 130°C⁵

PA0476NL	Pri. Inductance	(1,2-3,4)	9.85μH ±10%	<p>FLYBACK TRANSFORMER</p>
	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%	<p>FLYBACK TRANSFORMER</p>
	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%	<p>FLYBACK TRANSFORMER</p> <p>(Note: Height of PA1039NL is 8.9mm Max)</p>
	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%	<p>FORWARD TRANSFORMER</p>
	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%	<p>FORWARD TRANSFORMER</p>
	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%	<p>FLYBACK TRANSFORMER</p>
	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			

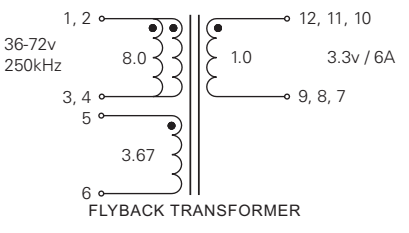
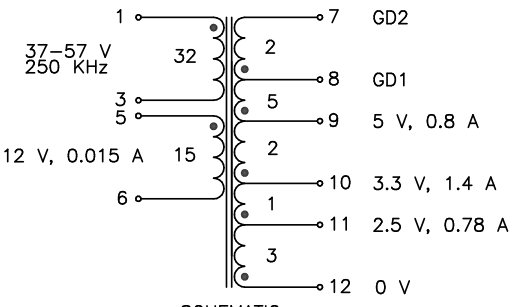
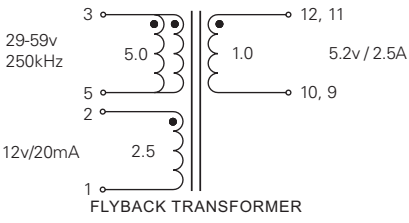
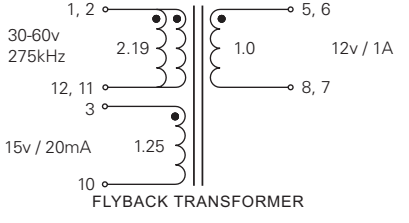
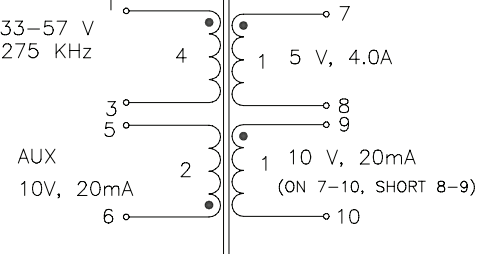
Electrical Specifications @ 25°C — Operating Temperature -40°C to 130°C⁵

PA1424NL	Pri. Inductance	(3-4)	62 μ H \pm 12%	 <p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(3-4) with (10,9,8,7) shorted	1 μ H MAX	
	DCR	(3-4)	250m Ω MAX	
		(10-9)	30m Ω MAX	
		(7-8)	20m Ω MAX	
		(2-1)	400m Ω MAX	
	Hi-Pot	Pri-Sec	1500Vrms	
K1 Factor	1878.8			
PA1627NL	Pri. Inductance	(3-5)	100.7 μ H \pm 12%	 <p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(3-5) with (7,8,9,10,11,12) shorted	3 μ H MAX	
	DCR	(3-5)	485m Ω MAX	
		(2-1)	1850m Ω MAX	
		(12,11-10,9)	16m Ω MAX	
	Hi-Pot	Pri-Sec	2150Vdc	
K1 Factor	1678.3			
PA1646NL	Pri. Inductance	(3-5)	100.7 μ H \pm 5%	 <p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(3-5) with (7,8,9,10,11,12) shorted	3 μ H MAX	
	DCR	(3-5)	485m Ω MAX	
		(2-1)	1150m Ω MAX	
		(12,11-10,9)	25m Ω MAX	
	Hi-Pot	Pri-Sec	1500Vrms	
K1 Factor	1678.3			
PA1706NL	Pri. Inductance	(3-5)	170.1 μ H \pm 12%	 <p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(3-5) with (12,11,10,9,8,7) shorted	3.5 μ H MAX	
	DCR	(3-5)	643m Ω MAX	
		(12,11-10,9)	6m Ω MAX	
		(8-7)	60m Ω MAX	
	(2-1)	123m Ω MAX		
Hi-Pot	Pri-Sec	1500Vrms		
K1 Factor	2520.0			
PA1741NL	Pri. Inductance	(1-3)	144 μ H \pm 10%	 <p>FORWARD TRANSFORMER</p>
	Lk. Inductance	(1-3) with (12,11,10,9,8,7) shorted	1 μ H MAX	
	DCR	(1-3)	150m Ω MAX	
		(12,11-10,9)	18m Ω MAX	
		(8-7)	60m Ω MAX	
	Hi-Pot	Pri-Sec	1800Vrms	
K1 Factor	27.8			
PA1745NL	Pri. Inductance	(2-5)	37.1 μ H \pm 10%	 <p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(2-5) with (8,9,10,11) shorted	1 μ H MAX	
	DCR	(2-5)	78m Ω MAX	
		(11-10)	34m Ω MAX	
		(8-7)	38m Ω MAX	
	Hi-Pot	Pri-Sec	600Vrms	
K1 Factor	1177.8			

Electrical Specifications @ 25°C — Operating Temperature -40°C to 130°C⁵

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

Electrical Specifications @ 25°C — Operating Temperature -40°C to 130°C⁵

PA2069NL	Pri. Inductance	(1,2-3,4)	40μH ±13%	 <p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(1,2-3,4) with (5,6,7,8,9,10,11,12) shorted	0.825μH MAX	
	DCR	(1,2-3,4)	130mΩ MAX	
		(5-6)	315mΩ MAX	
		(12,11,10-9,8,7)	3.5mΩ MAX	
	Hi-Pot	Pri-Sec	1650Vrms	
K1 Factor	1111.1			
PA2073NL	Pri. Inductance	(1-3)	131 μH ±8%	 <p>SCHEMATIC FLYBACK TRANSFORMER</p>
	Lk. Inductance	(1-3) with (12,11,10,9,8,7) shorted	1.5 μH MAX	
	DCR	(1-3)	600mΩ MAX	
		(5-6)	345mΩ MAX	
		(12-11)	15mΩ MAX	
		(11-10)	10mΩ MAX	
		(10-9)	15mΩ MAX	
		(9-8)	75mΩ MAX	
	(8-7)	35mΩ MAX		
Hi-Pot	Pri-Sec	1500Vrms		
K1 Factor	2729.2			
PA2196NL	Pri. Inductance	(3-5)	70μH ±10%	 <p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(3-5) with (7,8,9,10,11,12) shorted	1.2μH MAX	
	DCR	(3-5)	183mΩ MAX	
		(2-1)	1100mΩ MAX	
		(12,11-10,9)	14mΩ MAX	
Hi-Pot	Pri-Sec	1500Vrms		
K1 Factor	1555.6			
PA2265NL	Pri. Inductance	(1,2-12,11)	122.5μH ±10%	 <p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(1,2-12,11) with (5,6,8,7,3,10) shorted	2μH MAX	
	DCR	(1,2-12,11)	270mΩ MAX	
		(7,8,9-10,11,12)	63mΩ MAX	
		(5,6-8,7)	310mΩ MAX	
Hi-Pot	Pri-Sec	1500Vrms		
K1 Factor	2333.3			
PA3643NL	Pri. Inductance	(1-3)	40μH ±10%	 <p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(1-3) with (7,8,9,10) shorted	0.94μH MAX	
	DCR	(1-3)	95mΩ MAX	
		(7-8)	14mΩ MAX	
		(9-10)	45mΩ MAX	
		(6-5)	210mΩ MAX	
Hi-Pot	(1,3,5,6) to (7,8,9,10)	1500Vrms		
K1 Factor	1111.1			

Electrical Specifications @ 25°C — Operating Temperature -40°C to 130°C⁵

Part Number	Parameter	Winding	Value	Diagram
PA4570NL	Pri. Inductance	(1-3)	120µH ±13%	<p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(1-3) with (7,8,9,10,11,12) shorted	2.5µH MAX	
	DCR	(1-3)	280µH MAX	
		(5-6)	190µH MAX	
		(10-9)=(11-8)=(12-7)	20µH MAX	
	Hi-Pot	(1,3,5,6)	1500 Vrms	
K1 Factor	2222.2			
PG1432NL	Pri. Inductance	(2-3)	100µH ±13%	<p>FORWARD TRANSFORMER</p>
	Lk. Inductance	(2-3) with (7,8,9,10,11,12)	0.9µH MAX	
	DCR	(2-3)	75µH MAX	
		(5-6)	220µH MAX	
		(10,11,12-7,8,9)	6.5µH MAX	
	Hi-Pot	Pri-Sec	1500 Vrms	
K1 Factor	39.2			
PG1711NL	Pri. Inductance	(3-4)	1650µH ±15%	<p>FLYBACK TRANSFORMER</p>
	Lk. Inductance	(3-4) with (1,2,7,8,11,12) shorted	12µH MAX	
	DCR	(3-4)	3200µH MAX	
		(7-8)	150µH MAX	
		(11,12)	5000µH MAX	
		(1,2)	2600µH MAX	
Hi-Pot	Pri-Sec	1500 Vrms		
K1 Factor				

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:

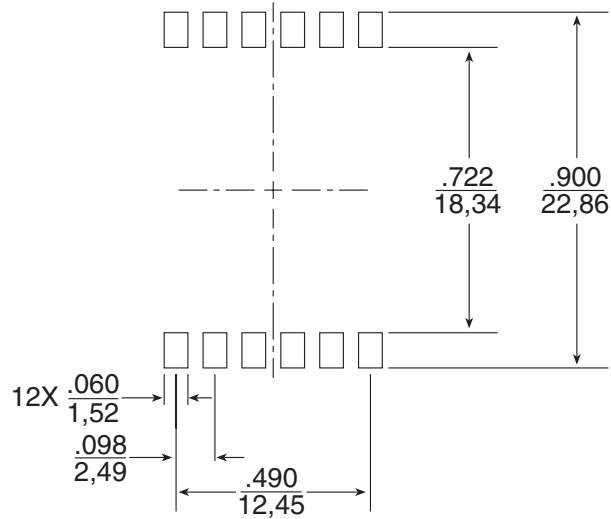
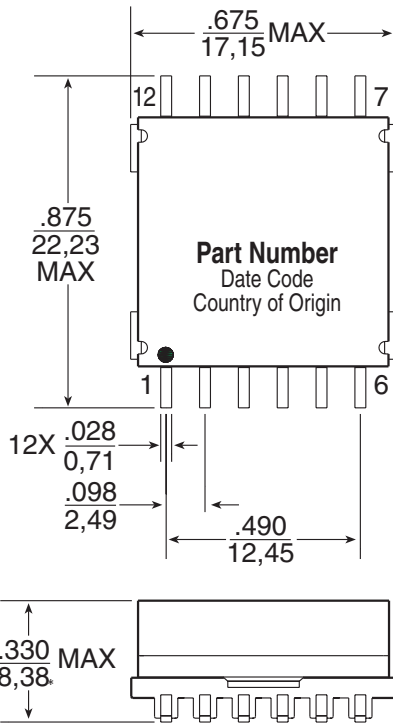
$$B_{pk} \text{ (Gauss)} = K1_Factor * I_{pk} \text{ (A)}$$
- In high volt-µsec applications, it is important to calculate the core loss of the transformer. Approximate transformer core loss can be calculated as:

$$CoreLoss \text{ (W)} = 4.6E-14 * (Freq_kHz)^{1.63} * (\Delta B_Gauss)^{2.63}$$
 where ΔB can be calculated as:
 For Flyback Topology: $\Delta B = K1_Factor * \Delta(A)$
 For Forward Topology: $\Delta B = K1_Factor * Volt\text{-}\mu\text{sec}$
- 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.

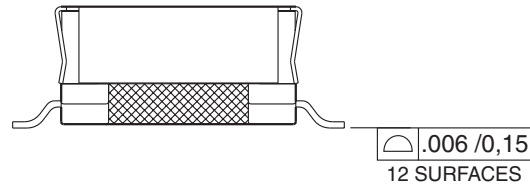
High Frequency Wire Wound Transformers

EFD15 Platforms - SMT

Mechanical



SUGGESTED PAD LAYOUT



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

For More Information:

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