High Isolation Power Transformers

EP7 Platform SMD

- *Push Pull Transformer*
- *Reinforced insulation for isolated power supply driver*
- *8mm creepage*
- *5KVrms isolation (600Vrms continuous)*
- *UL and TUV certified*

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

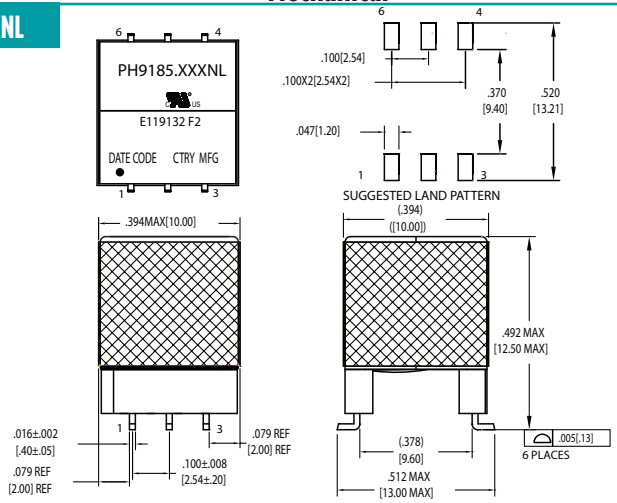
Part Number	Inductance (1-3) (µH ±45%)	Leakage Inductance (µH MAX)	DCR (1-3) (Ω MAX)	DCR (4-6) (Ω MAX)	ET MAX (1-3)[1] (V-µsec MAX)	CAP (pF MAX)	Turns Ratio (1:3) (6:4)	Isolated Voltage[2] (Vrms)
PH9185.011NL	750	1.2	0.50	0.55	66	10.0	1CT : 1CT	5000
PH9185.012NL	450	0.9	0.40	0.80	52	10.0	1CT : 2CT	
PH9185.013NL	200	0.6	0.35	0.95	36	8.0	1CT : 3CT	
PH9185.021NL	1800	3.0	0.75	0.45	100	10.0	2CT : 1CT	
PH9185.034NL	750	1.2	0.50	0.75	66	10.0	3CT : 4CT	
PH9185.038NL	310	0.9	0.44	1.00	44	8.0	3CT : 8CT	
PH9185.043NL	1260	1.5	0.70	0.56	89	12.0	4CT : 3CT	
PH9185.083NL	2350	6.0	0.90	0.40	110	8.0	8CT : 3CT	

Notes:

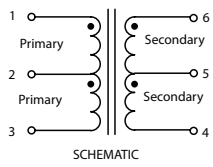
1. The ET Max is calculated to limit the core loss and temperature rise at 100KHz based on a bipolar flux swing of 180mT Peak.
2. For Push-Pull topology, where the voltage is applied across half the primary winding turns, the ET needs to be derated by 50% for the same flux swing.
3. The applied ET may need to be further derated for higher frequencies based on the temperature rise which results from the core and copper losses
   A. To calculate total copper loss (W), use the following formula:
   Copper Loss (W) = Irms_Primary^2 * DCR_Primary + Irms_Secondary^2*DCR_Secondary
   B. To calculate total core loss (W), use the following formula:
   Core Loss (W) = 4.40E-10 * (Frequency in kHz)$^{1.67}$ * (180 * [ET/ET Max])$^{2.53}$
   Where ET is the applied Volt Second, ET Max is the rated Volt Second for 180mT flux swing
   C. To calculate temperature rise, use the following formula: Temperature Rise (°C) = 90 * (Core Loss(W) + Copper Loss (W))
4. The AEC-Q200 temperature and humidity operational life testing was completed using a dielectric strength test of 5000Vdc.
5. Optional Tape & Reel packing can be ordered by adding a "**T**" suffix to the part number (i.e. PH9185.012NL becomes PH9185.012NL**T**). Pulse complies to industry standard tape and reel specification EIA481.
6. The "NL" suffix indicates an RoHS-compliant part number.
7. Continuous isolation voltage confirmed by 125°C/1000hrs accelerated aging with the bias voltage applied between primary and secondary windings.

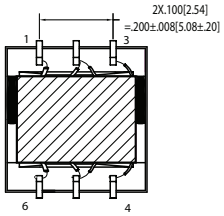
Mechanical

PH9185.XXXNL



Schematic





Weight 2.6grams
Tape & Reel 150/reel
Tray 80/tray

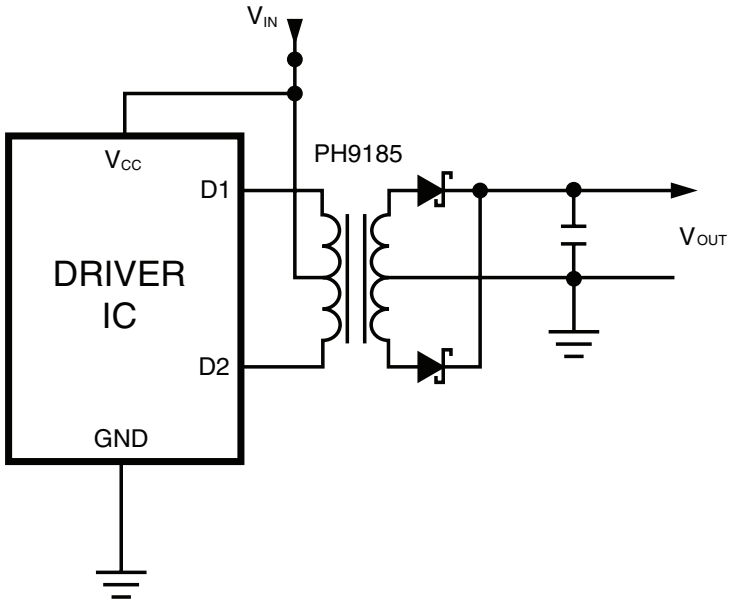
Dimensions: Inches / mm

Unless otherwise specified, all tolerances are ± .010 / 0,25

Application

PH9185.XXXNL is a series of high isolation power supply transformer drivers. Intended to operate in a fixed duty cycle Push Pull topology, it is a part of a low cost solution for delivering lower power (up to 3W) from a low voltage source. A typical implementation would be an isolated RS-485/RS-232 power supply driver circuit, the design is compatible with the MAXIM™ MAX253 IC.

A schematic diagram for the Push Pull converter topology is given below.



For a fixed 50% duty cycle mode of operation, the output voltage is simply determined by the input voltage and turns ratio. So, with the available turns ratios, a variety of output voltages can be selected.

This transformer design has been certified by UL to comply with UL60950-1 2nd edition, and CAN/CSA C22.2 NO. 60950-1-07 2nd edition; and by TUV to comply with EN61558-1 and EN61558-2-16 with reinforced insulation for a working voltage up to 400Vac 8mm creepage and 5000Vrms isolation voltage is guaranteed to meet this requirement. The design also complies with the Pulse's class F insulation system. PH9185.013NL was not included in the original UL/TUV certification but is complaint. Cost reduced versions without UL/TUV certification available, please contact Pulse Electronics for more information.

MAXIM is a registered trademark of Maxim Integrated Products.

For More Information

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

Tel: 858 674 8100
Fax: 858 674 8262

Pulse Europe
Pulse Electronics GmbH
Am Rottland 12
58540 Meinerzhagen
Germany

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

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

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
3 Fraser Street
0428 DUO Tower
Singapore 189352

Tel: 65 6287 8998
Fax: 65 6280 0080

Pulse North Asia
1F., No.111 Xiyuan Rd
Zhongli City
Taoyuan City 32057
Taiwan (R.O.C)

Tel: 886 3 4356768
Fax: 886 3 4356820

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Pulse:

PH9185.011NL PH9185.011NLT PH9185.012NL PH9185.012NLT PH9185.013NL PH9185.013NLT PH9185.021NL PH9185.021NLT PH9185.034NL PH9185.034NLT PH9185.038NL PH9185.038NLT PH9185.043NL PH9185.043NLT PH9185.083NL PH9185.083NLT