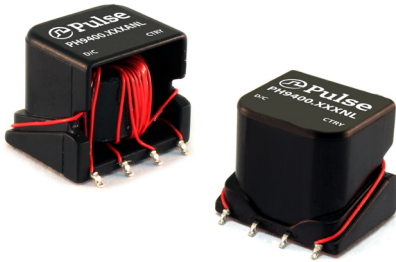


High Isolation Gate Drive Transformers

PH9400.XXXNL and PH9400.XXXANL - SMT



- Basic and Reinforced Insulation
- Patent Pending Sidecar package with 12mm creepage
- Up to 5000Vrms gate to drive isolation
- 600Vrms continuous isolation between windings

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

Part Number	Turns Ratio	ET (V * μsec MAX)	Core Loss Factor K1	Primary Inductance (1-4) (mH +/-35%)	Leakage Inductance Drive to Gate (μH MAX)	Parasitic Capacitance Drive to Gate (pF MAX)	DCR Drive (1-4) (Ω MAX)	DCR Gates (5-6) (7-8) (Ω MAX)	Hi-Pot	
									Drive-Gate (Vrms)	Gate-Gate (Vrms)
PH9400.XXXNL - Basic Insulation										
PH9400.111NL	1:1:1	315	0.67	4.5	5.0	60	1.8	2.5	4000	1500
PH9400.566NL	5:6:6	315	0.67	4.5	3.5	60	1.8	3.0	4000	1500
PH9400.122NL	1:2:2	250	0.84	2.88	3.5	60	1.5	4.2	4000	1500
PH9400.655NL	6:5:5	375	0.56	6.48	5.3	60	2.2	2.5	4000	1500
PH9400.211NL	2:1:1	375	0.56	6.48	8.0	60	2.2	1.6	4000	1500
PH9400.XXXANL - Reinforced Insulation										
PH9400.111ANL	1:1:1	160	1.32	1.21	2.5	45	0.9	0.9	5000	2000
PH9400.566ANL	5:6:6	155	1.36	1.12	3.0	45	0.9	1.0	5000	2000
PH9400.233ANL	2:3:3	125	1.68	0.72	2.0	45	0.7	1.0	5000	2000
PH9400.655ANL	6:5:5	185	1.14	1.62	3.0	45	1.0	0.9	5000	2000
PH9400.211ANL	2:1:1	185	1.14	1.62	3.5	45	1.0	0.55	5000	2000

- Notes:**
- The max ET is calculated to limit the core loss and temperature rise at 100kHz based on a bipolar flux swing of 2100Ga Peak. This value needs to be derated for higher frequencies using the temperature rise calculation.
 - The temperature rise of the component is calculated based on the total core loss and copper loss:
 - To calculate total copper loss (W), use the following formula:
Copper Loss (W) = $I_{rms}^2 * (DCR_Drive + (\# \text{ of Gates}) * DCR_Gates)$
 - To calculate total core loss (W), use the following formula:
Copper Loss (W) = $5.1E-10 * (\text{Frequency in kHz})^{1.42} * (K1 * ET)^{2.5}$
Where ET = $(V * \text{Duty Cycle}) / \text{Frequency}$
 - To calculate temperature rise, use the following formula:
Temperature Rise (C) = $71 * (\text{Core Loss(W)} + \text{Copper Loss (W)})$
 - Continuous isolation voltage confirmed by 125°C/1000hrs accelerated aging with the bias voltage applied between gate and drive windings.
 - ANL versions, which use triple insulated wire on both the drive and gate windings, are compliant with IEC 60950, IEC 61558, IEC 61010 & IEC 60601 for reinforced insulation. NL versions, which use triple insulated wire on just the drive winding, comply with basic insulation requirements.
 - 12mm package creepage distance satisfies IEC60950-1 & IEC61558-1/-2-16 reinforced insulation requirements for working voltage to 600Vrms max, OVC II, Pollution Degree 2 and altitude up to 2000m.
 - Unless otherwise specified, all testing is made at 100kHz, 0.1V_{AC}.
 - Optional Tape & Reel packaging can be ordered by adding a "T" suffix to the part number (i.e. PH9400.111NL becomes PH9400.111NLT). Pulse complies to industry standard tape and reel specification EIA481.

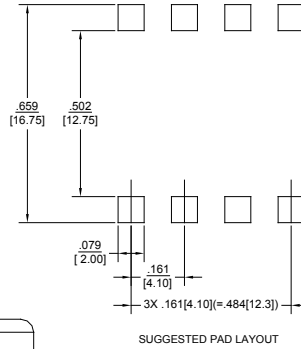
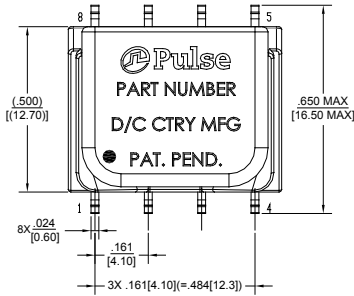
High Isolation Gate Drive Transformers

PH9400.XXXNL and PH9400.XXXANL - SMT

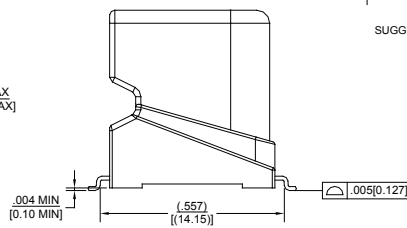
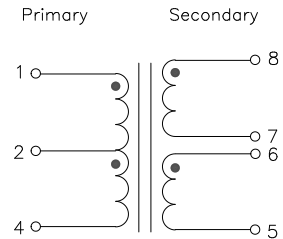
Mechanicals

Schematics

PH9400.XXXNL and PH9400.XXXANL



PH9400.XXXNL/PH9400.XXXANL



Weight2.5 grams
Tape & Reel150/Reel
Tray80/tray

Dimension: Inches
 mm
 Unless otherwise specified, all tolerances are $\pm \frac{.010}{0,25}$

For More Information

Pulse Worldwide Headquarters

12220 World Trade Drive
 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

B402, Shenzhen Academy of
 Aerospace Technology Bldg.
 10th Kejian 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)

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, 2016. Pulse Electronics, Inc. All rights reserved.