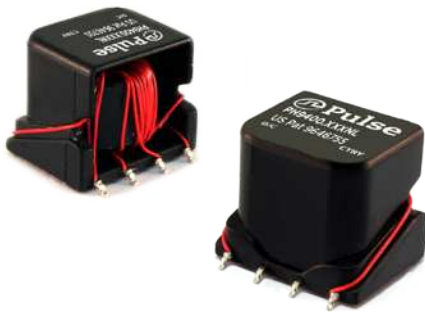








High Isolation Gate Drive Transformers

PH9400.XXXNL and PH9400.XXXANL - SMT



-  Basic and Reinforced Insulation
-  Sidecar package with 12mm creepage
-  Up to 5000Vrms gate to drive isolation
-  1000Vrms continuous isolation between windings
-  Up to 8W of Driver Power
-  **Patented:** US Patent 9,646,755

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

Part Number	Turns Ratio	ET (1-4) (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 600Vrms continuous isolation										
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 1000Vrms continuous isolation										
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:
Core Loss (W) = $5.1E-10 * (\text{Frequency in kHz})^{1.42} * (K1 * ET)^{2.5}$
Where ET = (V * Duty Cycle) / 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

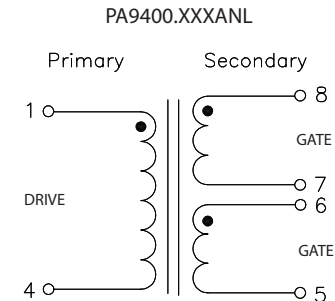
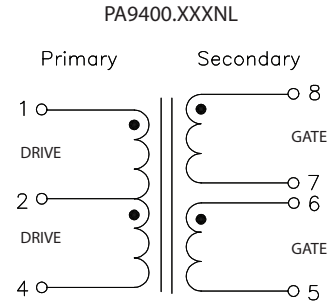
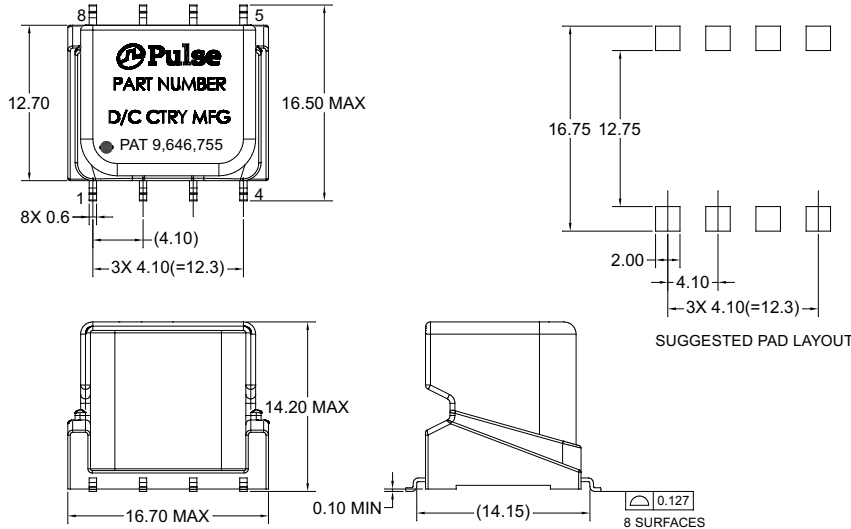
PH9400.XXXNL and PH9400.XXXANL - SMT



Mechanicals

Schematics

PH9400.XXXNL and PH9400.XXXANL



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

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

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