

# High Isolation Gate Drive Transformers

PH9572.XXXNL and PH9572.XXXANL - SMT



- ④ Functional and Basic<sup>5</sup> insulation
- ④ 5mm creepage between gate windings (ANL)
- ④ Up to 2500Vrms gate to drive isolation
- ④ Up to 1000Vdc constant isolation between windings
- ④ Up to 6W of Driver Power

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

Part Number	Turns Ratio (8-1):(3-4):(6-5)	ET (1-8) (V * μsec MAX)	Core Loss Factor K1	Primary Inductance (1-8) (mH MIN)	Leakage Inductance (1-8) short (3,4,5,6) (μH MAX)	Parasitic Capacitance (1,8) to (3,4) =(1,8)to(5,6) (pF MAX)	Parasitic Capacitance (3,4)to(5,6) (pF MAX)	DCR Drive (Ohms Max)			Hi-Pot (Vrms)	
								DCR Drive (1-8)	DCR Gates (5-6)	DCR Gates (3-4)	Drive-Gates (1,8) TO (3,4,5,6)	Gate-Gate (3,4) TO (5,6)
<b>PH9572.XXXNL - Functional Insulation 500Vdc continuous isolation</b>												
PH9572.111NL	1:1:1	84.7	2.6	2.8	1.8	20	11	0.85	0.72	0.95	1500	
PH9572.122NL	1:2:2	42.4	5.2	0.7	0.45	20	11	0.42	0.72	0.95		
PH9572.233NL	2:3:3	56.5	3.9	1.26	0.85	20	11	0.6	0.72	0.95		
PH9572.322NL	3:2:2	84.7	2.6	2.8	1.5	20	11	0.85	0.48	0.65		
PH9572.211NL	2:1:1	84.7	2.6	2.8	1.6	20	11	0.80	0.48	0.55		
<b>PH9572.XXXANL - Basic Insulation 1000Vdc continuous isolation</b>												
PH9572.111ANL	1:1:1	84.7	2.6	2.8	1.8	12	8	1.7	1.5	2.0	2500	
PH9572.122ANL	1:2:2	42.4	5.2	0.7	0.6	11	7	0.9	1.5	1.9		
PH9572.233ANL	2:3:3	56.5	3.9	1.26	0.9	11	7	1.1	1.5	2.0		
PH9572.322ANL	3:2:2	84.7	2.6	2.8	1.8	11	7	1.6	1.0	1.3		
PH9572.211ANL	2:1:1	84.7	2.6	2.8	1.6	11	7	1.6	0.8	1.0		

- Notes:
- The max ET is calculated to limit the core loss and temperature rise at 100kHz based on a bipolar flux swing of 2200 gauss 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:  

$$\text{Copper Loss (W)} = I_{rms}^2 * (\text{DCR\_Drive} + (\# \text{ of Gates}) * \text{DCR\_Gates})$$
    - To calculate total core loss (mW), use the following formula:  

$$\text{Core Loss (mW)} = 2.64E-10 * (\text{Frequency in kHz})^{1.89} * (K1 * ET)^{2.1}$$
 Where  $ET = (V * \text{Duty Cycle}) / \text{Frequency}$
    - To calculate temperature rise, use the following formula:  

$$\text{Temperature Rise (°C)} = 140 * (\text{Core Loss(W)} + \text{Copper Loss (W)})$$
  - Continuous isolation voltage confirmed by partial discharge measurement.  
 PH9572.XXXNL: 500Vdc  
 PH9572.XXXANL: 1000Vdc
  - ANL versions, which use PFA insulated wire on both the drive and gate windings, are compliant with IEC 62368-1, IEC 61558-1, IEC 61010-1 & IEC 60601-1 for basic insulation.
  - 5mm creepage distance between ANL gate windings satisfies IEC62368-1 & IEC61558-1/-2-16 requirement for basic insulation with working voltage up to 500Vrms, OVC II, Pollution Degree 2 and altitude up to 2000 m. There is 2.5mm creepage between gate and drive windings.
  - Unless otherwise specified, all testing is made at 100kHz, 0.1V<sub>AC</sub>.
  - Optional Tape & Reel packaging can be ordered by adding a "T" suffix to the part number (i.e. PH9572.111NL becomes PH9572.111NLT). Pulse complies to industry standard tape and reel specification EIA481.

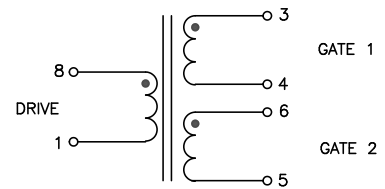
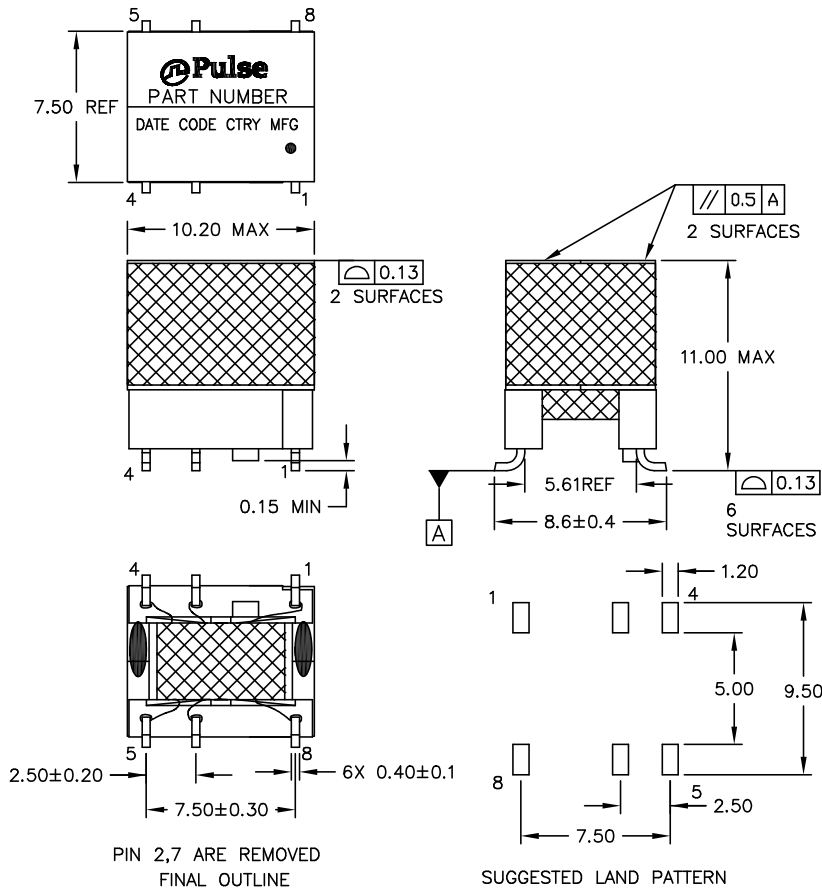
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## Mechanics

## Schematics

### PH9572.XXXNL and PH9572.XXXANL



**Weight** .....1.9 grams  
**Tape & Reel** .....300/reel  
**Tray** .....80/tray  
**Dimensions:** mm  
 Unless otherwise specified,  
 all tolerances are: ±0.25

### For More Information:

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