

Isolation Power Transformers

Toroid Platform SMD



- Push Pull Converter Transformer
- Functional insulation for isolated power supply driver
- 2.5KVrms isolation (380Vrms continuous)

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

| Part Number | Inductance (1-3) (μH ±35%) | Leakage Inductance (1-3) with (4-6) shorted (μH MAX) | Capacitance (1, 2, 3) to (4, 5, 6) (pF MAX) | DCR (1-3) (Ω MAX) | DCR (4-6) (Ω MAX) | ET MAX (1-3) ¹ (V-μsec Max) | Turns Ratio (1:3) (6:4) | Isolated Voltage ² (Vrms) |
|--------------|----------------------------|--|---|-------------------|-------------------|--|-------------------------|--------------------------------------|
| PH9085.011NL | 1020 | 0.8 | 30 | 0.60 | 0.65 | 22 | 1CT : 1CT | 2500 |
| PH9085.012NL | 1020 | 0.6 | 40 | 0.85 | 1.60 | 22 | 1CT : 2CT | |
| PH9085.021NL | 1160 | 1.6 | 20 | 0.60 | 0.35 | 23.6 | 2CT : 1CT | |
| PH9085.034NL | 1020 | 0.6 | 40 | 0.60 | 0.75 | 22 | 3CT : 4CT | |
| PH9085.035NL | 1020 | 0.6 | 40 | 0.80 | 1.20 | 22 | 3CT : 5CT | |
| PH9085.038NL | 1020 | 0.7 | 40 | 0.85 | 2.00 | 22 | 3CT : 8CT | |
| PH9085.043NL | 1160 | 0.8 | 30 | 0.60 | 0.50 | 23.6 | 4CT : 3CT | |
| PH9085.083NL | 1160 | 2.0 | 15 | 0.60 | 0.30 | 23.6 | 8CT : 3CT | |
| PH9085.089NL | 1160 | 0.6 | 40 | 0.60 | 0.70 | 23.6 | 8CT : 9CT | |

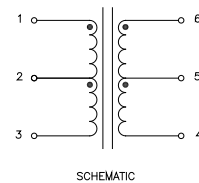
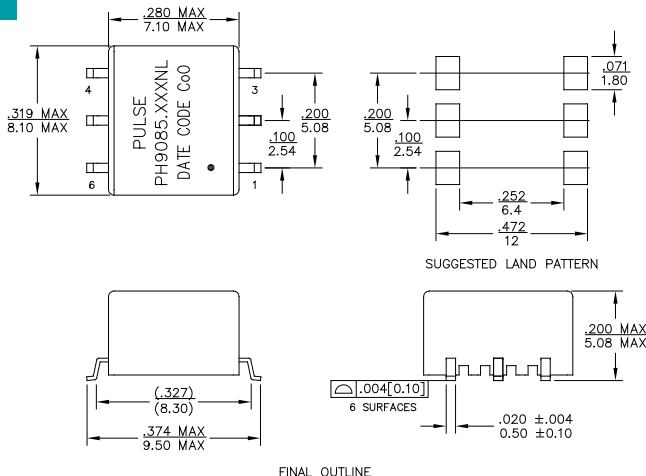
Notes:

- The ET Max is calculated to limit the core loss and temperature rise at 100kHz based on a bipolar flux swing of 210mT Peak.
 - A. To calculate total copper loss (W), use the following formula:
Copper Loss (W) = I_{rms_Primary}² * DCR_Primary + I_{rms_Secondary}² * DCR_Secondary
 - B. To calculate total core loss (W), use the following formula:
Core Loss (W) = 7.70E-13 * (Frequency in kHz)^{2.45} * (210 * [ET/ET Max])^{2.5}
- 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.
- 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
 - C. To calculate temperature rise, use the following formula: Temperature Rise (°C) = 340 * (Core Loss(W) + Copper Loss (W))
- The AEC-Q200 temperature and humidity operational life testing was completed using a dielectric strength test of 2750Vdc.
- Continuous isolation voltage confirmed by 125°C/1000hrs accelerated aging with the bias voltage applied between primary and secondary windings.

Mechanical

Schematic

PH9085.XXXNL



Weight0.365grams
Tape & Reel700/reel
Tray55/tray

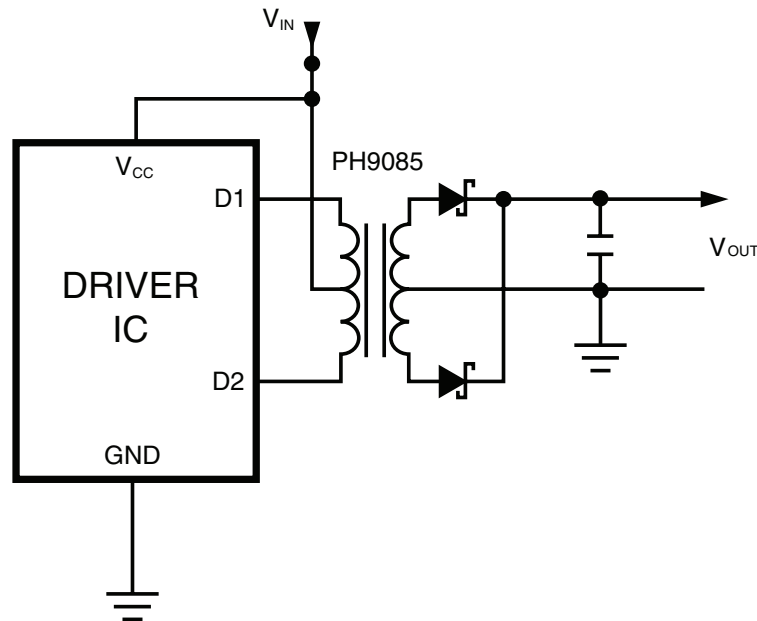
Dimensions: Inches
mm

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

Application

PH9085.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 2W) 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.

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