

DRIVER TRANSFORMER DESIGN

MAKE ALL WINDINGS 10 TURNS 32 SWG WIRE

BILFILAR WINDINGS MADE TOGETHER, NO INSULATION USED BETWEEN LAYERS

MAIN TRANSFORMER DESIGN

WIRE FOR PRIMARY 32 SWG (CURRENT CAPACITY 200mA)

LETS DESIGN AT 110V AC

$V_{IN} = 90 \times 1.414 = 127.26 \text{ VDC}$

$NP = (127 \times 10^4) / (4 \times 50000 \times 228 \times 1500) = 18.57 = 19 \text{ TURNS}$

$NS = (VS/VP) \times NP = (40/127) \times 18.56 = 5.98 = 6 \text{ TURNS}$

THEORITICAL TURNS CALCULATION

DUTY CYCLE MAX = 0.47

DUTY CYCLE MIN = 0.42

NOMINAL INPUT VOLTAGE = $V_{IN} \text{ MIN} \times \text{DUTY CYCLE MAX}$

INPUT VOLTAGE = 240V AC MAX

$V_{IN} \text{ DC MAX} = 240 \times 1.414 = 339.36 \text{ V} = 340 \text{ V}$

$\text{NOMINAL INPUT VOLTAGE} = 340 \times 0.42 = 142.8 = 143 \text{ V}$

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THEORITICAL TURNS RATIO = $\text{NOMINAL INPUT VOLTAGE} / \text{OUTPUT VOLTAGE (BOTH IN DC)}$

THEORITICAL TURNS RATIO = $143 / 40 = 3.575$

CALCULATED TURNS RATIO = $19 / 6 = 3.16$

$NP = (V_{IN} \times 10^4) / (4 \times F \times A \times B_{MAX})$ TURNS
NP= NO. OF PRIMARY TURNS
 V_{IN} = PRIMARY VOLTAGE
F = FREQUENCY OF OPERATION (HZ)
A = CORE AREA (SQ. MM)
 B_{MAX} = 1500 GAUSS FOR FERRITE

BIFILAR WINDING

SHIVALIK AUTOMATION

TRANSFORMER DESIGN

Designer's name

Rev 1.0

28/03/2026

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