

DRIVER TRANSFORMER DESIGN

MAKE ALL WINDINGS 10 TURNS 32 SWG WIRE

PRIMARY SIDE BILFILAR WINDINGS MADE TOGETHER, NO INSULATION USED BETWEEN LAYERS

SECONDARY SIDE 4 WINDINGS 10 TURNS EACH - MARK START POSITION FOR POLARITY

MAIN TRANSFORMER DESIGN

WIRE FOR PRIMARY 32 SWG (CURRENT CAPACITY 200mA)

LETS DESIGN AT 110V AC

$V_{IN} = 110 * 1.414 = 155 \text{ VDC}$

$NP = (155 * 10^{10}) / (4 * 50000 * 104 * 1500) = 49.67 = 50 \text{ TURNS}$

$NS = (VS / VP) * NP = (40 / 155) * 50 = 12.90 = 13 \text{ TURNS}$

THEORITICAL TURNS CALCULATION

DUTY CYCLE MAX = 0.47

DUTY CYCLE MIN = 0.42

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

INPUT VOLTAGE = 240V AC MAX

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

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

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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 = $50 / 13 = 3.84$

$NP = (V_{IN} * 10^{10}) / (4 * F * A * B_{MAX})$ 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

RUPJIT CHOWDHURY

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