                                        TS350r1
                                        T1
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Designer Brian Cornell
Program Cadit
Circuit Transformer Design
Design by
Design for TS350r1
File name: ts350-rm14-dc_xfrm-r2

Input data

Program name------------------------------ = TS350r1
Circuit symbol---------------------------- = T1
Input voltage----------------------------- = 11.000 volts
The operating waveform-------------------- = Square Wave
The input circuit configuration----------- = Single Winding

Output nomenclature of the 1st secondary--- = HV
Output voltage of the 1st secondary-------- = 170.000 volts
Output current of the 1st secondary-------- = 3.040 amps
Output circuit of the 1st secondary-------- = Single Winding

Output nomenclature of the 2nd secondary--- = AUX
Output voltage of the 2nd secondary-------- = 16.500 volts
Output current of the 2nd secondary-------- = 0.300 amps
Output circuit of the 2nd secondary-------- = Single Winding

Efficiency-------------------------------- = 95.00 %
Regulation-------------------------------- = 2.00 %
Frequency--------------------------------- = 50000.0 hertz
Flux density------------------------------ = 0.1500 tesla
Total load power-------------------------- = 521.75 watts
Total apparent power---------------------- = 1070.96 watts
Core geometry----------------------------- = 0.02564561 cm 5TH
Magnetic material------------------------- = EPCOS N41-2700u

Core data

Core configuration------------------------ = RM Core
Core or file number----------------------- = B65887-RM14
Magnetic path length---------------------- = 7.0000 cm
Window height----------------------------- = 2.0800 cm
Core weight------------------------------- = 74.00 grams
Copper weight ---------------------------- = 37.00 grams
Mean length turn-------------------------- = 7.1466 cm
Iron area--------------------------------- = 2.0000 cm sq

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Window area------------------------------- = 1.4560 cm sq
Area product------------------------------ = 2.912000000 cm 4TH
Core geometry----------------------------- = 0.32597000 cm 5TH
Surface area------------------------------ = 66.2592 cm sq
Core permeability------------------------- = 2700
Millihenry per 1000 turns----------------- = 6000
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Calculations

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Transformer total window utilization KU---- = 0.227
Transformer current density--------------- = 383 amps per cm sq

Volts per turn---------------------------- = 5.50
Turns per volt---------------------------- = 0.18


Primary turns----------------------------- = 2 Single Winding
Primary wire size------------------------- = 20 AWG
Primary wire diameter--------------------- = 0.8189 millimeters
Primary wire strands---------------------- = 10
Primary window utilization---------------- = 0.085
Primary current density------------------- = 972  amps per cm sq
Primary rms current----------------------- = 49.928 amps
Primary resistance------------------------ = 0.000 ohms
Primary copper loss----------------------- = 1.196 watts
Primary copper weight--------------------- = 6.52 grams

The 1st output nomenclature is------------ = HV
The 1st secondary voltage----------------- = 176.0 volts
The 1st secondary turns------------------- = 32 Single Winding
The 1st secondary wire size--------------- = 20 AWG
The 1st secondary wire diameter----------- = 0.8189 millimeters
The 1st secondary no. of strands---------- = 1
The 1st secondary rms current------------- = 3.040 amps
The 1st secondary resistance-------------- = 0.077 ohms
The 1st secondary copper loss------------- = 0.710 watts
The 1st secondary current density--------- = 592 amps per cm sq
The 1st sec window utilization------------ = 0.136
The 1st secondary copper weight----------- = 10.44 grams

The 2nd output nomenclature is------------ = AUX
The 2nd secondary voltage----------------- = 16.5 volts
The 2nd secondary turns------------------- = 3 Single Winding
The 2nd secondary wire size--------------- = 24 AWG
The 2nd secondary wire diameter----------- = 0.5168 millimeters
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The 2nd secondary no. of strands----------- = 1
The 2nd secondary rms current-------------- = 0.300 amps
The 2nd secondary resistance--------------- = 0.018 ohms
The 2nd secondary copper loss-------------- = 0.002 watts
The 2nd secondary current density---------- = 147 amps per cm sq
The 2nd sec window utilization------------- = 0.005
The 2nd secondary copper weight------------ = 0.39 grams

Total secondary copper loss---------------- = 0.711 watts
Watts per kilogram------------------------- = 16.732
Calculated flux density-------------------- = 0.138 tesla
Core loss---------------------------------- = 1.238 watts
Total copper loss-------------------------- = 1.908 watts
Total loss--------------------------------- = 3.146 watts
Transformer efficiency--------------------- = 99.401 %
Transformer regulation--------------------- = 0.366 %
Watt density------------------------------- = 0.047 W/cm sq
Temperature rise--------------------------- = 36.31 Degrees C
Design goal temperature rise-------------- = 40.0 Degrees C


Program By Kg Magnetics Inc.
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