RCC 反激式电路设计表

RCC Design_Rev1.02 Copyright Wuming Electric Inc. 2003	输入	信息	输出	单位	RCC Design_Rev1.02.xls: RCC Flyback Transformer Design Spreadsheet
ENTER APPLICATION VARIABLES					Customer
VACMIN	180			Volts	Minimum AC Input Voltage
VACMAX	265			Volts	Maximum AC Input Voltage
FI	50			Hz	Minimum AC input Frequency
Fmin	60			KHz	Minimum OSC Frequency
VO	6.2			Volts	Output Voltage
IO	0.5			Amps	Output Current
eta	0.6				Efficiency Estimate
Z	1				Loss Allocation Factor
tC	3			mSecon	Bridge Rectifier Conduction Time Estimate
CIN	2.2			uFarads	Input Filter Capacitor
D	0.2				
T			*16.6666667*	*uS*	Max Time of Cycle
Ton			*3.33333333*	*uS*	On time of Cycle
Toff			*13.3333333*	*uS*	Off time of Cycle
d	*2*			*A/mm^2*	副边线圈电流密度
ENTER Output Diode Parameters					
Output Diode	1N5822				
VR	60			Volts	Diode Maximum Peak Repetitive Reverse Voltage
ID	3			Amps	Diode Average Forward Current
VD	0.52			Volts	Diode Forward Voltage drop
Vo_1	**12**			Volts	Auxiliary Output Voltage
VD_1	**0.6**			Volts	Auxiliary Diode Forward Voltage Drop
Io_1				Amps	Auxiliary Output Current
Vo_2	**5**			Volts	secound Output Voltage
VD_2	**0.6**			Volts	secound Diode Forward Voltage Drop
Io_2				Amps	secound Output Current
Vo_3	**5**			Volts	thired Output Voltage
VD_3	**0.6**			Volts	thired Diode Forward Voltage Drop
Io_3				Amps	thired Output Current
PO			**3.1**		Output Power
P			**6.3**		Total Power
VB	20			Volts	Driver Output Voltage
VD_B	1				
IB	0.02			A	Driver Output Current
IB_min	0.018			A	
ENTER Other Parameters					
BP	2300			Gauss	Target Peak Flux Density at Maximum Current limit
Direct Switch Type	MJE13001				
Bvceo	520			Volts	
Imax	0.5			Amps	
Hfe	20				
Design Parameters					
VMIN			179	Volts	Minimum DC Input Voltage
VMAX			375	Volts	Maximum DC Input Voltage
IP			0.36	Amps	Peak Primary current
N12			0.15		
LP			1654	uHenries	**Minimum Primary Inductance**
LS			44.80	uHenries	
RS			**1.9**	OM	
ENTER TRANSFORMER CORE/CONSTRUCTION					
Core Type	ee16	*EE16*			
AE		*0.192*		cm^2	Core Effective Cross Sectional Area
LE		*3.5*		cm	Core Effective Path Length
AL		*1140*		nH/T^2	Ungapped Core Effective Inductance
BW		*8.5*		mm	Bobbin Physical Winding Width
M	1			mm	Safety Margin Width
Lg			0.27	mm	Gap Length NON GLASS BEAD Construction
NP			135	Turns	Number of Primary Turns
NS			21	Turns	Number of Secondary Turns
NB			16	Turns	
RB		<	881	OM	
PIV			58	Volts	
N1			**39**	Turns	Auxiliary Number of Turns
PIV1			109	Volts	Auxiliary Rectifier Maximum Peak Inverse Voltage

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N2			**18**	Turns	Auxiliary Number of Turns
PIV2			49	Volts	Auxiliary Rectifier Maximum Peak Inverse Voltage
N3			**18**	Turns	Auxiliary Number of Turns
PIV3			49	Volts	Auxiliary Rectifier Maximum Peak Inverse Voltage
Vc			**4.0**	Volts	稳压电容上电压
Vz			4.3	Volts	稳压管电压
Rp		>0.144 Wate	2.22	OM	电流检测（电流限制）电阻

CURRENT WAVEFORM SHAPE PARAMETERS			
IAVGmax	0.03	Amps	Maximum Average Primary Current
IAVGmin	0.01	Amps	Minimum Average Primary Current
IRMS	0.15	Amps	Primary RMS Current
IR	0.43	Amps	Primary Ripple Current
ISP	2.00	Amps	Maximum Peak Secondary Current
ISRMS	0.82	Amps	Secondary RMS current
IRIPPLE	0.65	Amps	Output Capacitor RMS Ripple Current
ISPMAX	2.55	Amps	Maximum Power Peak Secondary Current

TRANSFORMER PARAMETERS				
L	4			Number of Primary Layers
BM		**2298**	Gauss	Operating Flux Density at Max Current Limit
BAC		1136	Gauss	AC Flux Density for Core Loss Curves (0.5 X Peak to Peak)
ur		1654		Relative Permeability of Ungapped Core
BWE		26	mm	Effective Bobbin Width
OD		0.19	mm	Maximum Primary Wire Diameter including insulation
INS		0.04	mm	Taping between primary layers can be eliminated using "Class 0" (Asia), "Grade 2"(Europe) or "Heavy Nyleze" (USA) wire
DIA		0.15	mm	Bare conductor diameter
AWG		35	AWG	Primary Wire Gauge (for low capacitance AWG<= 36 recommended)
CM		32	Cmils	Bare conductor effective area in circular mils
CMA		**218**	Cmils/Ar	Primary Winding Current Capacity (CMA > 200)
CMS		178	Cmils	Secondary Bare Conductor minimum circular mils
AWGS		27	AWG	Secondary Wire Gauge (Rounded up to next larger standard AWG value)
DIAS		0.36	mm	Secondary Minimum Bare Conductor Diameter
DIA1			mm	第一副绕组线直径
DIA2			mm	第二副绕组线直径
DIA3			mm	第三副绕组线直径
Sc		**11.20**	mm^2	绕组占窗口静面积

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