

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	170			Volts	Minimum AC Input Voltage	
VACMAX	265			Volts	Maximum AC Input Voltage	
Fmin	70			KHz	Minimum OSC Frequency	
VO	12			Volts	Output Voltage	
IO	0.1			Amps	Output Current	
eta	0.7				Efficiency Estimate	
Z	1				Loss Allocation Factor	
tC	3			mSec	Bridge Rectifier Conduction Time Estimate	
CIN	4.7			uFarads	Input Filter Capacitor	
D	0.2					
T			14.2857143	uS	Max Time of Cycle	
Ton			2.85714286	uS	On time of Cycle	
Toff			11.4285714	uS	Off time of Cycle	
d	2			A/mm^2	副边线圈电流密度	
ENTER Output Diode Parameters						
Output Diode	HER102					
VR	100			Volts	Diode Maximum Peak Repetitive Reverse Voltage	
ID	1			Amps	Diode Average Forward Current	
VD	0.8			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	second Output Voltage	
VD_2	0.6			Volts	second Diode Forward Voltage Drop	
Io_2				Amps	second Output Current	
Vo_3	5			Volts	third Output Voltage	
VD_3	0.6			Volts	third Diode Forward Voltage Drop	
Io_3				Amps	third Output Current	
PO			1.2		Output Power	
P			2.03		Total Power	
VB	23			Volts	Driver Output Voltage	
VD_B	0.1					
IB	0.006			A	Driver Output Current	
IB_min	0.005625			A		
ENTER Other Parameters						
BP	2000			Gauss	Target Peak Flux Density at Maximum Current limit	
Direct Switch Type	MJE13001					
Bvceo	470			Volts		
Imax	0.5			Amps		
Hfe	16					
Design Parameters						
VMIN			234	Volts	Minimum DC Input Voltage	
VMAX			375	Volts	Maximum DC Input Voltage	
IP			0.09	Amps	Peak Primary current	
N12			0.22			
LP			7430	uHenrie	<u>Minimum Primary Inductance</u>	
LS			365.7143	uHenrie		
RS			7.8	OM		
ENTER TRANSFORMER CORE/CONSTRUCTION						
Core Type	ee13	EE13				
AE		0.171		cm^2	Core Effective Cross Sectional Area	
LE		3.02		cm	Core Effective Path Length	
AL		1130		nH/T^2	Ungapped Core Effective Inductance	
BW		7.4		mm	Bobbin Physical Winding Width	
M	1			mm	Safety Margin Width	
Lg			0.12	mm	Gap Length NON GLASS BEAD Construction	
NP			196	Turns	Number of Primary Turns	
NS			43	Turns	Number of Secondary Turns	
NB			20	Turns		
RB		<	3583	OM		
PIV			82	Volts		
N1			42	Turns	Auxiliary Number of Turns	

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
PIV1				81	Volts	Auxiliary Rectifier Maximum Peak Inverse Voltage
N2				19	Turns	Auxiliary Number of Turns
PIV2				36	Volts	Auxiliary Rectifier Maximum Peak Inverse Voltage
N3				19	Turns	Auxiliary Number of Turns
PIV3				36	Volts	Auxiliary Rectifier Maximum Peak Inverse Voltage
Vc				4.8	Volts	稳压电容上电压
Vz				5.1	Volts	稳压管电压
Rp		>0.0072	Wate	8.89	OM	电流检测（电流限制）电阻

CURRENT WAVEFORM SHAPE PARAMETERS						
IAVGmax				0.01	Amps	Maximum Average Primary Current
IAVGmin				0.00	Amps	Minimum Average Primary Current
IRMS				0.04	Amps	Primary RMS Current
IR				0.11	Amps	Primary Ripple Current
ISP				0.40	Amps	Maximum Peak Secondary Current
ISRMS				0.16	Amps	Secondary RMS current
IRIPPLE				0.13	Amps	Output Capacitor RMS Ripple Current
ISPMAX				0.43	Amps	Maximum Power Peak Secondary Current

TRANSFORMER PARAMETERS						
L		4				Number of Primary Layers
BM				1995	Gauss	Operating Flux Density at Max Current Limit
BAC				989	Gauss	AC Flux Density for Core Loss Curves (0.5 X Peak to Peak)
ur				1588		Relative Permeability of Ungapped Core
BWE				21.6	mm	Effective Bobbin Width
OD				0.11	mm	Maximum Primary Wire Diameter including insulation
INS				0.03	mm	Taping between primary layers can be eliminated using "Class 0" (Asia), "Grade 2" (Europe) or "Heavy Nyleze" (USA) wire
DIA				0.08	mm	Bare conductor diameter
AWG				40	AWG	Primary Wire Gauge (for low capacitance AWG<= 36 recommended)
CM				10	Cmils	Bare conductor effective area in circular mils
CMA				274	Cmils/A	Primary Winding Current Capacity (CMA > 200)
CMS				45	Cmils	Secondary Bare Conductor minimum circular mils
AWGS				33	AWG	Secondary Wire Gauge (Rounded up to next larger standard AWG value)
DIAS				0.18	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				6.31	mm^2	绕组占窗口静面积

RCC 电路

