

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	200				Volts	Minimum AC Input Voltage
VACMAX	265				Volts	Maximum AC Input Voltage
FI	50				Hz	Minimum AC input Frequency
Fmin	70				KHz	Minimum OSC Frequency
VO	3.6				Volts	Output Voltage
IO	1.5				Amps	Output Current
eta	0.7					Efficiency Estimate
Z	1					Loss Allocation Factor
tC	3				mSec	Bridge Rectifier Conduction Time Estimate
CIN	6.8				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	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	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				5.4		Output Power
P				9.38		Total Power
VB	18				Volts	Driver Output Voltage
VD_B	1					
IB	0.02				A	Driver Output Current
IB_min	0.019				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				253	Volts	Minimum DC Input Voltage
VMAX				375	Volts	Maximum DC Input Voltage
IP				0.38	Amps	Peak Primary current
N12				0.07		
LP				1904	uHenries	Minimum Primary Inductance
LS				7.85	uHenries	
RS				1.8	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				0.35	mm	Gap Length NON GLASS BEAD Construction
NP				164	Turns	Number of Primary Turns
NS				11	Turns	Number of Secondary Turns
NB				13	Turns	
RB		<		781	OM	
PIV				25	Volts	
N1				34	Turns	Auxiliary Number of Turns
PIV1				77	Volts	Auxiliary Rectifier Maximum Peak Inverse Voltage

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N2				15 Turns	Auxiliary Number of Turns	
PIV2				34 Volts	Auxiliary Rectifier Maximum Peak Inverse Voltage	
N3				15 Turns	Auxiliary Number of Turns	
PIV3				34 Volts	Auxiliary Rectifier Maximum Peak Inverse Voltage	
Vc				3.5 Volts	稳压电容上电压	
Vz				3.8 Volts	稳压管电压	
Rp		>0.152 Wate		2.11 OM	电流检测（电流限制）电阻	
CURRENT WAVEFORM SHAPE PARAMETERS						
Iavgmax				0.03 Amps	Maximum Average Primary Current	
Iavgmin				0.02 Amps	Minimum Average Primary Current	
IRMS				0.16 Amps	Primary RMS Current	
IR				0.46 Amps	Primary Ripple Current	
ISP				6.00 Amps	Maximum Peak Secondary Current	
ISRMS				2.45 Amps	Secondary RMS current	
IRIPPLE				1.94 Amps	Output Capacitor RMS Ripple Current	
ISPMAX				6.52 Amps	Maximum Power Peak Secondary Current	
TRANSFORMER PARAMETERS						
L		5			Number of Primary Layers	
BM				2298 Gauss	Operating Flux Density at Max Current Limit	
BAC				1140 Gauss	AC Flux Density for Core Loss Curves (0.5 X Peak to Peak)	
ur				1654	Relative Permeability of Ungapped Core	
BWE				32.5 mm	Effective Bobbin Width	
OD				0.20 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				0.16 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				206 Cmils/Ar	Primary Winding Current Capacity (CMA > 200)	
CMS				505 Cmils	Secondary Bare Conductor minimum circular mils	
AWGS				23 AWG	Secondary Wire Gauge (Rounded up to next larger standard AWG value)	
DIAS				0.58 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				14.00 mm^2	绕组占窗口静面积	

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