

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	240			Volts		Maximum AC Input Voltage
Fmin	70			KHz		Minimum OSC Frequency
VO	5			Volts		Output Voltage
IO	0.7			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	1N5819					
VR	40			Volts		Diode Maximum Peak Repetitive Reverse Voltage
ID	2			Amps		Diode Average Forward Current
VD	0.6			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			3.5			Output Power
P			6.1			Total Power
VB	23			Volts		Driver Output Voltage
VD_B	0.1					
IB	0.015			A		Driver Output Current
IB_min	0.014375			A		
ENTER Other Parameters						
BP	2000			Gauss		Target Peak Flux Density at Maximum Current limit
Direct Switch Type	MJE13001					
Bvceo	450			Volts		
Imax	0.5			Amps		
Hfe	16					
Design Parameters						
VMIN			272	Volts		Minimum DC Input Voltage
VMAX			339	Volts		Maximum DC Input Voltage
IP			0.23	Amps		Peak Primary current
N12			0.08			
LP			3377	uHenries		<u>Minimum Primary Inductance</u>
LS			22.85714	uHenries		
RS			3	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			0.30	mm		Gap Length NON GLASS BEAD Construction
NP			203	Turns		Number of Primary Turns
NS			17	Turns		Number of Secondary Turns
NB			18	Turns		
RB		<	1434	OM		
PIV			28	Volts		
N1			38	Turns		Auxiliary Number of Turns
PIV1			64	Volts		Auxiliary Rectifier Maximum Peak Inverse Voltage

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N2				17	Turns	Auxiliary Number of Turns
PIV2				28	Volts	Auxiliary Rectifier Maximum Peak Inverse Voltage
N3				17	Turns	Auxiliary Number of Turns
PIV3				28	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		>0.0184 Wate		3.48	OM	电流检测（电流限制）电阻
CURRENT WAVEFORM SHAPE PARAMETERS						
Iavgmax				0.02	Amps	Maximum Average Primary Current
Iavgmin				0.01	Amps	Minimum Average Primary Current
IRMS				0.09	Amps	Primary RMS Current
IR				0.28	Amps	Primary Ripple Current
ISP				2.80	Amps	Maximum Peak Secondary Current
ISRMS				1.14	Amps	Secondary RMS current
IRIPPLE				0.90	Amps	Output Capacitor RMS Ripple Current
ISPMAX				3.05	Amps	Maximum Power Peak Secondary Current
TRANSFORMER PARAMETERS						
L		5				Number of Primary Layers
BM				1993	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				1654		Relative Permeability of Ungapped Core
BWE				32.5	mm	Effective Bobbin Width
OD				0.16	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				0.12	mm	Bare conductor diameter
AWG				37	AWG	Primary Wire Gauge (for low capacitance AWG<= 36 recommended)
CM				20	Cmils	Bare conductor effective area in circular mils
CMA				215	Cmils/A	Primary Winding Current Capacity (CMA > 200)
CMS				245	Cmils	Secondary Bare Conductor minimum circular mils
AWGS				26	AWG	Secondary Wire Gauge (Rounded up to next larger standard AWG value)
DIAS				0.41	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				11.66	mm^2	绕组占窗口静面积

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