

Flyback ACDC Transformer Design Tool 06-Mar-2020 Version 1.0 Neil Hao

	Neil Hao	
Parameter Settings Flyback Voltage VOR := 115		
The peak of AC Input minimum Voltage w	VOR := 115 Vhih 20 % margin	(1)
$VinMin := 85 \cdot 1.4 \cdot 0.8$	VinMin := 95.20	(2)
The peak of AC Input maximum Voltage w $VinMax := 265 \cdot 1.4 \cdot 1.2$		(2)
DC Output Voltage Vout := 3.3	VinMax := 445.20 $Vout := 3.3$	(3)
The maximum DC Output Current in A willowax := 0.22 · 1.2	ith 20 % margin in consideration of overload protection point	(4)
The Voltage Drop on the DC Output Diode	Iomax := 0.264	(5)
VF := 0.7	$VF \coloneqq 0.7$	(6)
Oscillator F requency in Hz fswmax := 132·10 ³		
	fswmax := 132000	(7)
Magnetic Flux Density (T) Bsat := 0.35	Bsat := 0.35	(8)
Effective magnetic cross section in mm ²	2000	(0)
Ae := 12.1	Ae := 12.1	(9)
Inductance factor in nH/turns ² , the ALcou ALvalue := 178.5	ıld be adjusted by using the Air Gap of core	
The ABSOLUTE maximum rating of DRAL	ALvalue := 178.5 IN Voltage	(10)
Vds := 700	Vds := 700	(11)
The ABSOLUTE maximum rating of Ippl not exceed 195 mA and not exceed 700 V Ippkmax := 195·0.8	k with 20 % margin. According to the LNK363's datasheet should	
Ls in uH which is measured by uing the pr	Ippkmax := 156.0 cototype	(12)
$Lsm := \frac{14.32}{9} \cdot 8$		
	Lsm := 12.72888889	(13)
Summary for Lp in uH, Np an	nd Ns in turns	
Np	9730.525816	(29)
•	9730.525816 233.4796558	(29) (30)
Np Ns	233.4796558 8.121031506	(30)
Np Ns	233.4796558	(30)
Np Ns More Parameters for VOR in	233.4796558 8.121031506	(30)
Np Ns More Parameters for VOR in turns	233.4796558 8.121031506 Voltage, Ls in uH, Ispk in A, Ippk in A, NI in A	(30)
Np Ns More Parameters for VOR in turns VOR	233.4796558 8.121031506 Voltage, Ls in uH, Ispk in A, Ippk in A, NI in A	(30)
Np Ns More Parameters for VOR in turns VOR NptoNs	233.4796558 8.121031506 Voltage, Ls in uH, Ispk in A, Ippk in A, NI in A 115 28.75000000	(30) (31) (32) (33)
Np Ns More Parameters for VOR in - turns VOR NptoNs DutyMax	233.4796558 8.121031506 Voltage, Ls in uH, Ispk in A, Ippk in A, NI in A 115 28.75000000 0.5470980019	(30) (31) (32) (33) (34)
Np Ns More Parameters for VOR in -turns VOR NptoNs DutyMax Ls·10 ⁶	233.4796558 8.121031506 Voltage, Ls in uH, Ispk in A, Ippk in A, NI in A 115 28.75000000 0.5470980019 11.77228076	(30) (31) (32) (33) (34) (35)
Np Ns More Parameters for VOR in turns VOR NptoNs DutyMax Ls·10 ⁶ Ispk	233.4796558 8.121031506 Voltage, Ls in uH, Ispk in A, Ippk in A, NI in A 115 28.75000000 0.5470980019 11.77228076 1.165815126	(30) (31) (32) (33) (34) (35) (36)
Np Ns More Parameters for VOR in turns VOR NptoNs DutyMax Ls·10 ⁶ Ispk Ippk NI Design Requirements 1. Flyback voltage VOR Vin(Max)+VOR should less than Vds. The Vds (The	233.4796558 8.121031506 Voltage, Ls in uH, Ispk in A, Ippk in A, NI in A 115 28.75000000 0.5470980019 11.77228076 1.165815126 0.04055009134 9.467621369	(30) (31) (32) (33) (34) (35) (36) (37)
Np Ns More Parameters for VOR in turns VOR NptoNs DutyMax Ls:10 ⁶ Ispk Ippk NI Design Requirements 1. Flyback voltage VOR Vin(Max)+VOR should less than Vds. The Vds (The if Vds > (VinMax + VOR) then print(The design of the Vds) 2. Secondary winding inductance Ls and se	233.4796558 8.121031506 Voltage, Ls in uH, Ispk in A, Ippk in A, NI in A 115 28.75000000 0.5470980019 11.77228076 1.165815126 0.04055009134 9.467621369 e ABSOLUTE maximum rating of DRAIN Voltage) ould work! else print(ERROR!!!!The design failed!) end if The design could work! essen could work! sun should less than the Ls which had been calculated in the section 2 else print(ERROR!!!!The design failed!) end if	(30) (31) (32) (33) (34) (35) (36) (37) (38)
Np Ns More Parameters for VOR in turns VOR NptoNs DutyMax Ls·10 ⁶ Ispk Ippk NI Design Requirements 1. Flyback voltage VOR vin(Max)+VOR should less than Vds. The Vds (The if Vds > (VinMax + VOR) then print(The design collaboration of the collaboration of the collaboration of the print of the design could work! 3. Primary winding inductance Lp·(H) and The lppk should not exceed the ABSOLUTE maxim	233.4796558 8.121031506 Voltage, Ls in uH, Ispk in A, Ippk in A, NI in A 115 28.75000000 0.5470980019 11.77228076 1.165815126 0.04055009134 9.467621369 e ABSOLUTE maximum rating of DRAIN Voltage) rould work! else print(ERROR!!!!The design failed!) end if The design could work! econdary side maximum current Ispk .sm) should less than the Ls which had been calculated in the section 2)else print(ERROR!!!!The design failed!) end if The design could work! diprimary side maximum current Ippk-(A) uum rating of Ippk with 20 % margin.	(30) (31) (32) (33) (34) (35) (36) (37) (38)
More Parameters for VOR in turns VOR NptoNs DutyMax Ls·10 ⁶ Ispk Ippk NI Design Requirements 1. Flyback voltage VOR Vin(Max)+VOR should less than Vds. The Vds (The if Vds > (VinMax + VOR) then print(The design of the item of the interval of the print (The design of the interval of the inter	233.4796558 8.121031506 Voltage, Ls in uH, Ispk in A, Ippk in A, NI in A 115 28.75000000 0.5470980019 11.77228076 1.165815126 0.04055009134 9.467621369 e ABSOLUTE maximum rating of DRAIN Voltage) ould work!) else print (ERROR!!!!The design failed!) end if The design could work! econdary side maximum current Ispk .sm) should less than the Ls which had been calculated in the section 2) else print (ERROR!!!!The design failed!) end if The design could work! d primary side maximum current Ippk (A)	(30) (31) (32) (33) (34) (35) (36) (37) (38)
Np Ns More Parameters for VOR in turns VOR NptoNs DutyMax Ls·10 ⁶ Ispk Ippk NI Design Requirements 1. Flyback voltage VOR vin(Max)+VOR should less than Vds. The Vds (The if Vds > (VinMax + VOR) then print(The design collaboration of the collaboration of the collaboration of the print of the design could work! 3. Primary winding inductance Lp·(H) and The lppk should not exceed the ABSOLUTE maxim	233.4796558 8.121031506 Voltage, Ls in uH, Ispk in A, Ippk in A, NI in A 115 28.75000000 0.5470980019 11.77228076 1.165815126 0.04055009134 9.467621369 e ABSOLUTE maximum rating of DRAIN Voltage) ould work! yelse print (ERROR!!!!The design failed!) end if The design could work! econdary side maximum current Ispk .sm) should less than the Ls which had been calculated in the section 2) else print (ERROR!!!!The design failed!) end if The design could work! d primary side maximum current Ippk (A) um rating of Ippk with 20 % margin. iwork!) else print (ERROR!!!!The design failed!) end if The design could work!	(30) (31) (32) (33) (34) (35) (36) (37) (38) (39)