

Input:  $U_{in}=220VAC$ , 50HZ,

Output:  $U_{out}=19VDC$ ,  $I_o=4.74A$ , 辅助供电: 15V

$P_o=90W$

$f=56KHZ$ ,  $\eta=80\%$ ,  $D_{max}=0.45$

计算过程:

$U_{inmin}=1.2*0.8*U_{in}=211V$      $U_{inmax}=1.4*1.2*U_{in}=370V$

$T=1/f=17.85\mu s$

$T_{on}=D_{max}*T=8.03\mu s$ ;     $T_{off}=T-T_{on}=9.82\mu s$

$P_{in}=P_o/\eta=112.5W$

副边匝数:

设  $B=0.2$ , 磁芯  $pq3525Ae=170mm^2$

$N_s = (U_{out} + U_d) * T_{off} / (BA_e) = (19 + 0.6) * 9.82 / (0.2 * 170) = 5.66 \approx 6T$

反射电压:

$U_{or} = U_{inmin} * D_{max} / (1 - D_{max}) = 172.636V$

匝比:

$N = U_{or} / (U_{out} + U_d) = 172.636 / 19.6 = 8.8$

原边匝数:

$N_p = N * N_s = 6 * 8.8 \approx 53T$

辅助供电:  $N_p / (U_{or} / 10V) \approx 3T$