

$$V_{in\_min} := 176V \quad P_{out} := 3300W \quad V_{in\_max} := 264V \quad V_{pfc} := 400V$$

$$f_p := 50Hz \quad f_s := 133kHz \quad \omega_p := 2\pi f_p \quad \eta := 0.97 \quad V_{in\_nor} := 220V$$

$$\omega_s := 2\pi f_s \quad T_s := \frac{1}{f_s} \quad T_p := \frac{1}{f_p} \quad L := 92\mu H \quad j := \sqrt{-1}$$

$$I_{in\_maxRMS} := \frac{P_{out}}{\eta \cdot V_{in\_min}} = 19.33A$$

$$I_{in\_max}(t) := \frac{P_{out}}{\eta \cdot V_{in\_min}} \cdot \sqrt{2} \cdot \sin(\omega_p \cdot t)$$

$$V_{ac\_min}(t) := \sqrt{2} \cdot V_{in\_min} \cdot \sin(\omega_p \cdot t) \quad D_{minIN}(t) := \frac{V_{pfc} - V_{ac\_min}(t)}{V_{pfc}}$$

$$N := \frac{f_s}{100Hz} \quad N = 1.33 \times 10^3 \quad n := 0, 1 \dots N - 1$$

$$D_n(n) := \frac{V_{pfc} - V_{in\_min} \cdot \sqrt{2} \cdot \sin\left[2\pi(n+1) \cdot \frac{T_s}{T_p}\right]}{V_{pfc}} \quad \text{占空比}$$

$$I_l(n) := \frac{P_{out}}{\eta \cdot V_{in\_min}} \cdot \sqrt{2} \cdot \sin[2 \cdot \pi \cdot 50Hz \cdot (n+1)T_s] \quad \text{电感电流}$$

$$I_{rms} := \sqrt{\frac{1}{N} \left[ \sum_{n=0}^{N-1} (I_l(n) \cdot D_n(n))^2 \right]} \quad \text{公式1} \quad \text{求RMS}$$

$$I_{rms} = 9.351A$$

$$I_{dmos\_max1}(t) := I_{in\_max}(t) \cdot \sqrt{D_{minIN}(t)} \quad \text{公式2}$$

$$I_{rms1} := \sqrt{\frac{\int_0^{0.01s} I_{dmos\_max1}(t)^2 dt}{0.01s}} = 13.277A \quad \text{公式3}$$

$$I_{dmos\_max2}(t) := I_{in\_max}(t) \cdot D_{minIN}(t) \quad \text{公式4}$$

$$I_{rms2} := \sqrt{\frac{\int_0^{0.01s} I_{dmos\_max2}(t)^2 dt}{0.01s}} = 9.351A \quad \text{公式5}$$

与用公式1求出来的结果相同