

To	Customer	From	Sieyuan Electric Co.,Ltd.
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Doc. No.	G17043K_T002_Rev00	Fax	/
Subject	Explanation of CT parameter		
Urgent <input type="checkbox"/>	For Approval <input type="checkbox"/>	For Information <input checked="" type="checkbox"/>	For Reply <input type="checkbox"/>

Dear sir/madam,

Regarding the Time Constant( $T_s$ ) of CT in this project, the theoretical calculation process has been shown as bellow:

For 400/1A,

$$B = 1.55T$$

$$l_{\delta} = 0.0004m, \quad l_{Fe} = 0.7414m$$

$$l_c = l_{\delta} + l_{Fe} = 0.7418m$$

$$A_c = 0.001688 m^2$$

$$R_{ct} = 1.9 \Omega$$

According to the "B-H curve",  $H = 1.5A/cm$ ,

$$\mu_{Fe} = \frac{B}{H} = \frac{1.55}{1.5 \times 100} = 0.01033 H/m$$

$$\begin{aligned} \mu_{ef} &= \frac{\mu_0 \mu_{Fe} l_c}{\mu_0 l_{Fe} + \mu_{Fe} l_{\delta}} \\ &= \frac{0.4\pi \times 10^{-6} \times 0.01033 \times 0.7418}{0.4\pi \times 10^{-6} \times 0.7414 + 0.01033 \times 0.0004} = 0.0019017 H/m \end{aligned}$$

$$\begin{aligned} L_2 &= N_{2N}^2 \frac{\mu_{ef} A_c}{l_c} \\ &= 400^2 \times \frac{0.0019017 \times 16.878 \times 10^{-4}}{0.7418} = 0.6923 H \end{aligned}$$

$$R_2 = R_b + R_{ct} = 11.9 \Omega$$

$$T_s = \frac{L_2}{R_2} = \frac{0.6923}{11.9} = 0.0582 \text{ s}$$

The above content is for reference only. The final data shall be subject to the routine test report after manufacturing.

Yours sincerely,

Robin WANG

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Sieyuan Electric Co., Ltd.

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