附件 5

:

201552030124	2015
201549060103	2015
201549060126	2015
201569030220	2015

(/)

“ ”

1

2015 1

4 2016 1 -2016 12 20 5 2017 9 -2019 6 167
1 1 2 3 4 5 10kV 2 1 2

3 10kV

4

5

3.

1

2

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1

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2

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3　　，

，　　4

35kV 66kV

10kV

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1

2 **10kV**

1

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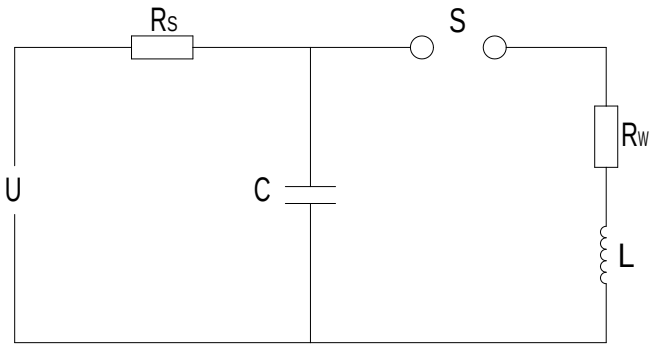

1

1 U 220kV R_S ,S C

,L

, ,

, ,

$$= 1/2\pi\sqrt{LC}$$

, , , ,

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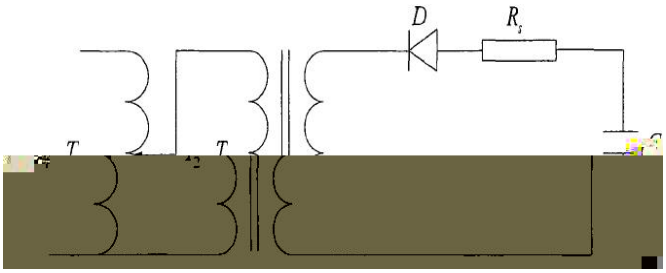
, ,

2 **10kV**

T_1 T_2

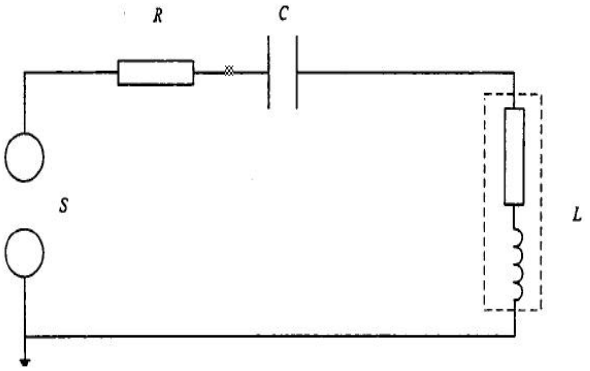
R_S

2



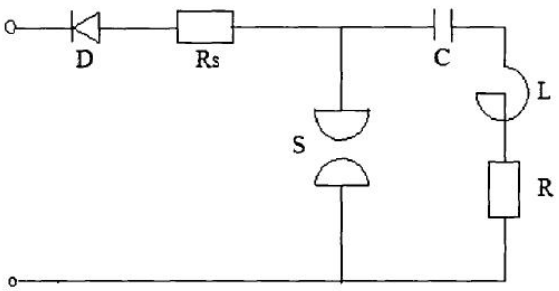
2

3



3

4



4

4 D Rs S C L

R

i

$$= C \text{——} = -\frac{0}{\omega\ L}\ ^{-\alpha}\ \sin(\omega\ )$$

, U_c U_{c0} U_c

U_L :

$$_L = L \text{—} = \frac{\omega_0}{\omega}\qquad ^{-\alpha}\ \sin(\omega\ -\theta)$$

$$\alpha = \frac{RL}{2\pi}, \omega_0 = \frac{1}{\sqrt{LC}}, \omega\ = \sqrt{\omega_0^2 - \alpha^2}$$

C

$$C = \frac{1}{(2\pi\ )^2 L}$$

100KHz , 6~35kV

L 0.1~20mH , C=3nF R 0.2~100

$$\approx \frac{\frac{1}{\omega}}{\sqrt{R_0^2 + (\frac{1}{\omega C})^2}}\qquad \sin\omega$$

, 99% , 5ms

,

$$\frac{\frac{1}{\omega C}}{\sqrt{R^2 + (\frac{1}{\omega C})^2}} \geq 0.99$$

10kV

3

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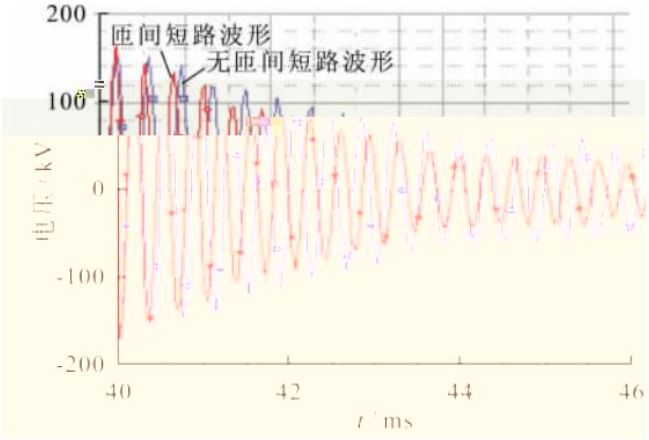
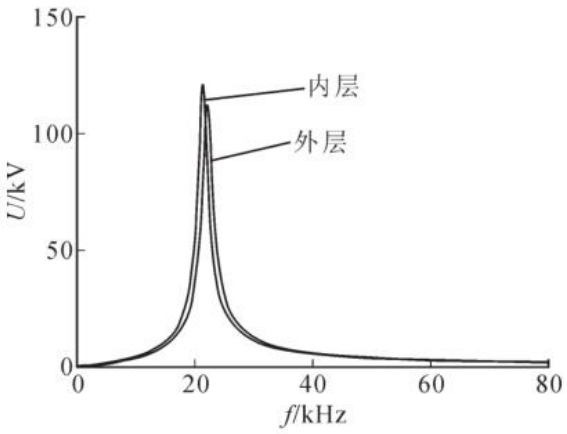

匝间短路波形
无匝间短路波形
200
100
0
-100
-200
40
42
44
46
t / ms

5


150
100
50
0
U/kV
内层
外层
0
20
40
60
80
f/kHz

6

5

6

4

10kV

2.

1

2 10kV

1 2018 4 -2018 5

2 2018 6 -2018 7

3 2018 8 -2018 11

4 2018 12 -2019 2 10kV

5 2019 3
2019 4 -2019 6

2018.4.26