

1. 130163 3. 213022 2. 65370 65
212003

Yu Ming¹ Zhang Wei² Cui Huaixiang³ Fang Chenfu³

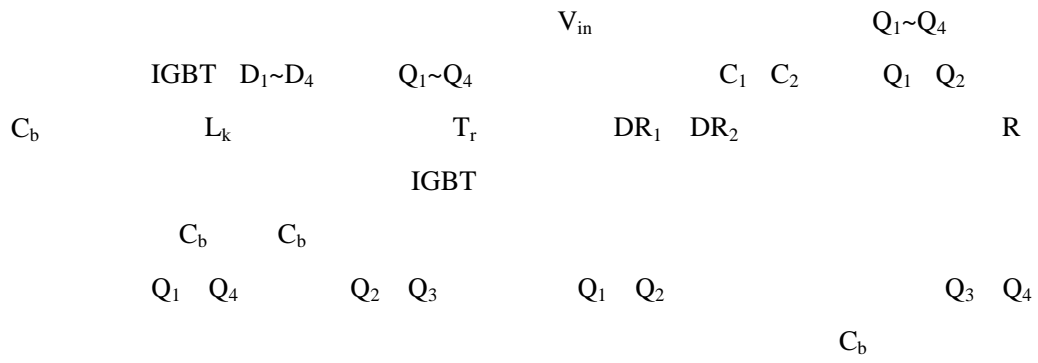
1. MacMic Science & Technology Co., Ltd Changzhou 213022. 2. Country Da tun 65370 Army Team 65 Changchun 130163. 3. Advanced Welding Technology Provincial key laboratory, Jiangsu University of science and Technology, Zhenjiang 212003

Abstract:

Keys: soft-switching resistance spot main circuit simulation

[1]

2



3

3.1

PWM

3.2

2KHz

ZCS

C_b

n_{min}

$$n_{\min} = \frac{NB_s L_e}{\mu I_f} \tag{1}$$

N

B_s

L_e

μ

I_f

ONL 644020

S_e=1.68cm²

L_e 1.63cm

B_s

1.25T

B_r=0.2T

μ 2 10⁴G_s/O_e

$$n_{\min} = \frac{NB_s L_e}{\mu I_f} = \frac{100 \times 1.25 \times 16.3 \times 10^{-2}}{2 \times 4\pi \times 10^{-3} \times 150} \approx 5.7 \quad (2)$$

n 6

$$L_s = \mu m^2 \frac{S_e}{l_e} = 2 \times 6^2 \times 4\pi \times 10^{-3} \frac{1.68 \times 10^{-2}}{16.3} \approx 9.32 \times 10^{-4} \text{ (H)} \quad (3)$$

3.3

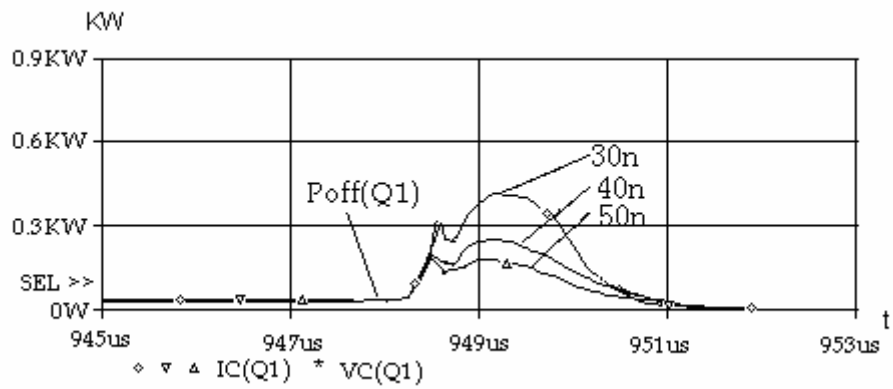
IGBT

[3]

Pspice

2

Poff Q1 IGBT Q1 50n



2

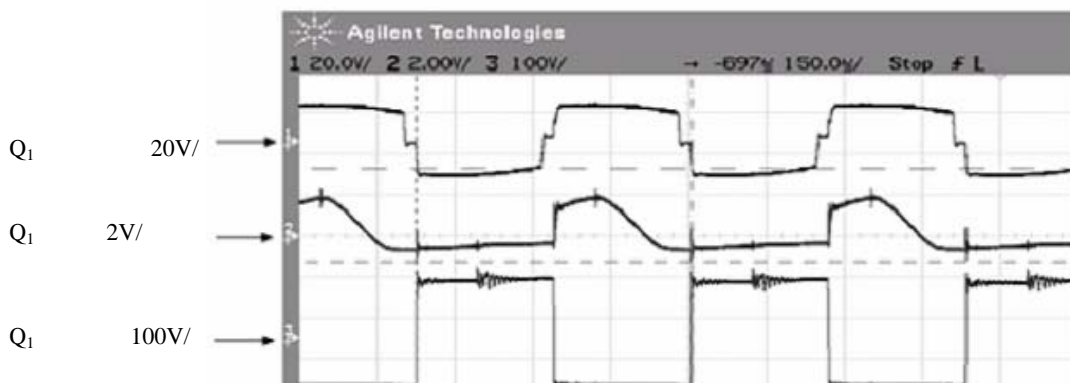
IGBT

4

2.7

Q1

Q1

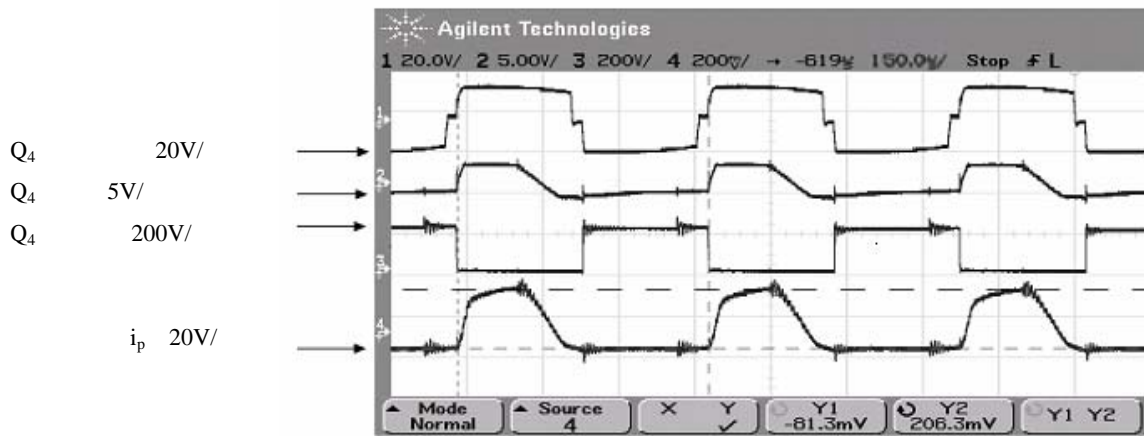


3 Q₁ Q₁
 Fig.3 driving signal of Q₁, V_{CE} of Q₁ and current waveform

2 4 2

2.8

IGBT Q₄ Q₄
 Q₄ Q₄



4 Q₄ Q₄
 Fig.4 driving signal of Q₄, V_{CE} of Q₄ and current waveform

[3] . DC/DC [M] 1999
[3] . TIG [J] 2004 34 11
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