

Course: Power Electronics  
Name: .....  
Time: 10 mins

Quiz 2

Date: 1395/01/28

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For a power diode, the reverse recovery time is  $3.9 \mu s$  and the rate of diode-current decay is  $50 \frac{A}{\mu s}$ . For a softness factor of 0.3, calculate the peak inverse current and the storage charge.

$$\begin{cases} t_{rr} = t_a + t_b = 3.9 \mu s \\ S.F. = \frac{t_b}{t_a} = 0.3 \end{cases} \Rightarrow t_a = 3 \mu s$$

$$I_{RR} = t_a \frac{di}{dt} = 3 \times 50 = 150 A$$

$$Q_{RR} = \frac{1}{2} I_{RR} t_{RR} = \frac{1}{2} \times 150 \times 3.9 = 292.5$$