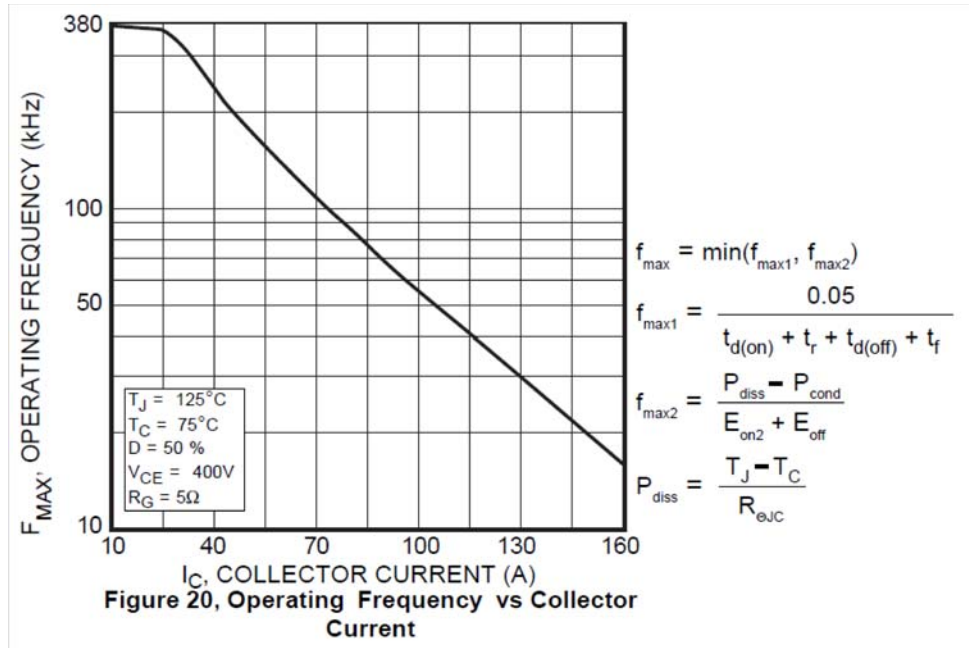


IGBT使用频率和电流的关系



$T_j := 125$ $T_c := 75$ $P_D := 1041$

$R_{\Theta JC} := 0.12$

$P_{diss} := \frac{T_j - T_c}{R_{\Theta JC}}$ $P_{diss} = 416.667$

$D := 0.5$ $I_c := 100$

$I_{crms} := I_c \cdot \sqrt{D}$ $V_{cesat} := 2.2$

$P_{cond} := I_{crms} \cdot V_{cesat}$ $P_{cond} = 155.563$

$E_{on} := 3000 \cdot 10^{-6}$ $E_{off} := 2500 \cdot 10^{-6}$

$t_{don} := 33 \cdot 10^{-9}$ $t_r := 40 \cdot 10^{-9}$

$t_{doff} := 140 \cdot 10^{-9}$ $t_f := 105 \cdot 10^{-9}$

$f_{max2} := \frac{P_{diss} - P_{cond}}{E_{on} + E_{off}}$ $f_{max1} := \frac{0.05}{t_{don} + t_r + t_{doff} + t_f}$

$f_{max2} = 4.747 \times 10^4$ $f_{max1} = 1.572 \times 10^5$

$$f_{\max} := \min(f_{\max 1}, f_{\max 2})$$

$$f_{\max} = 4.747 \times 10^4$$