

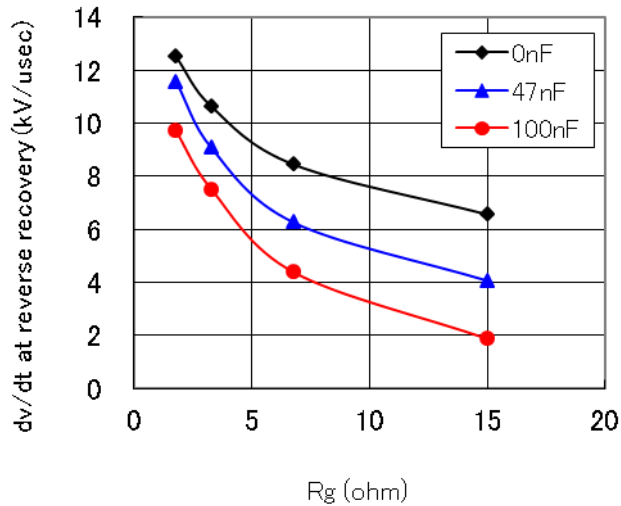
- Fuji IGBT Module V Series 1700V Family -

Switching energy and Reverse recovery dv/dt with combination of R_g and C_{ge}

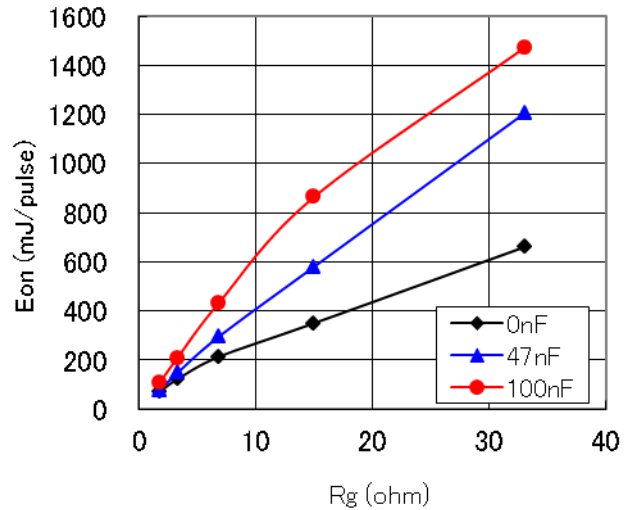
Type name : 2MBI550VN-170-50

Conditions : $V_{dc}=900V$, I_c , $I_f=550A$, $V_{ge}=\pm 15V$, $R_g=vari.$, $C_{ge}=0, 47, 100nF$

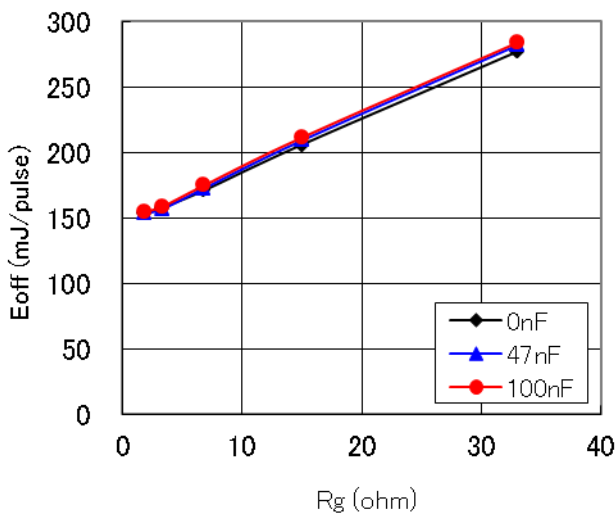
$T_j=25^\circ C$ or $125^\circ C$



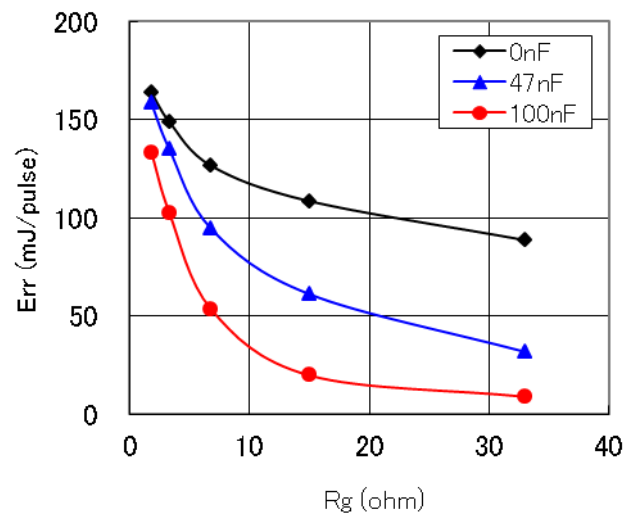
(a) R_g dependence of reverse recovery dv/dt



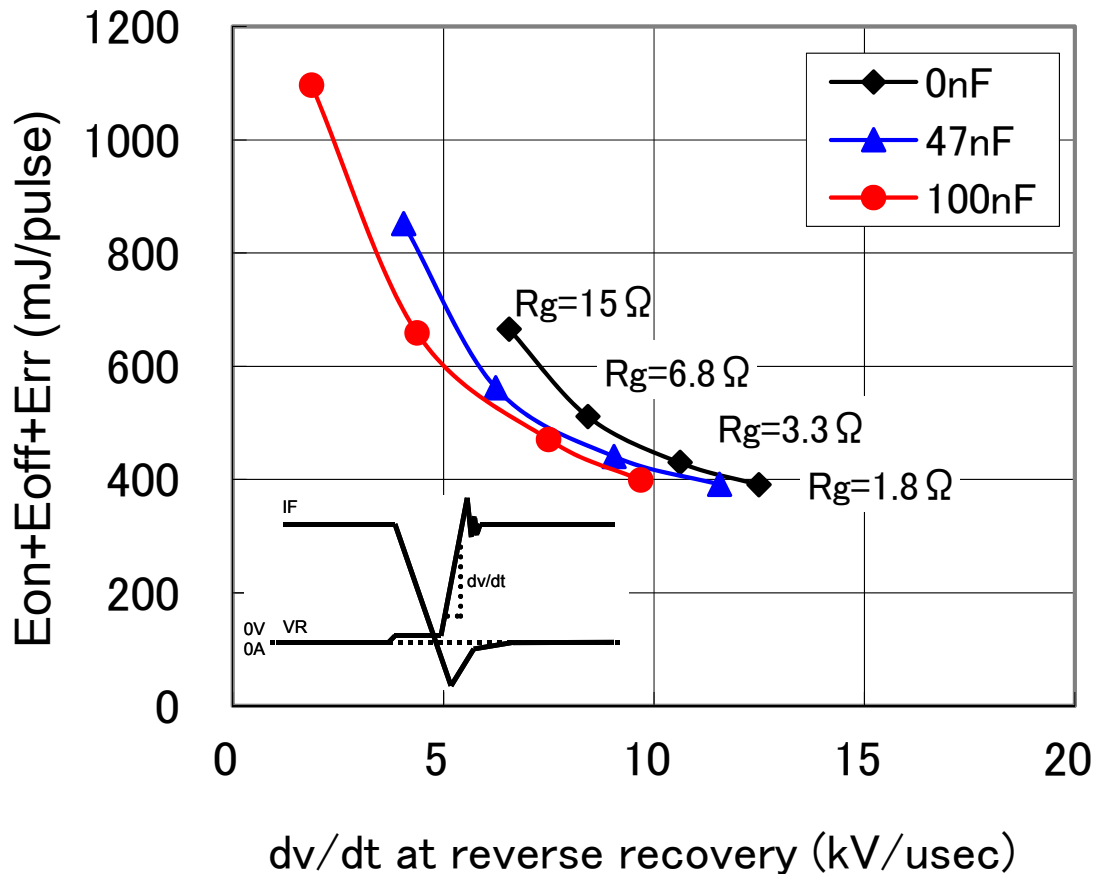
(b) R_g dependence of turn-on loss



(c) R_g dependence of turn-off loss



(d) R_g dependence of reverse recovery loss



Additional external capacitance between IGBT gate and emitter terminals has an effect of improving the trade off between reverse recovery dv/dt and total switching energy as shown in above chart. However, simply add C_{ge} slows down the IGBT significantly and it results penalty of increasing the switching loss. Therefore, the combination of extra- C_{ge} and reduction of the gate resistance (R_g) is recommended to achieve the highest performance of lower dv/dt as well as keep switching energy low. Typical C_{ge} and R_g values for initial guess are : $2x$ of C_{ies} in our datasheet and $1/2 R_g$ of your original design, however, experimental confirmation in practical application is recommended.