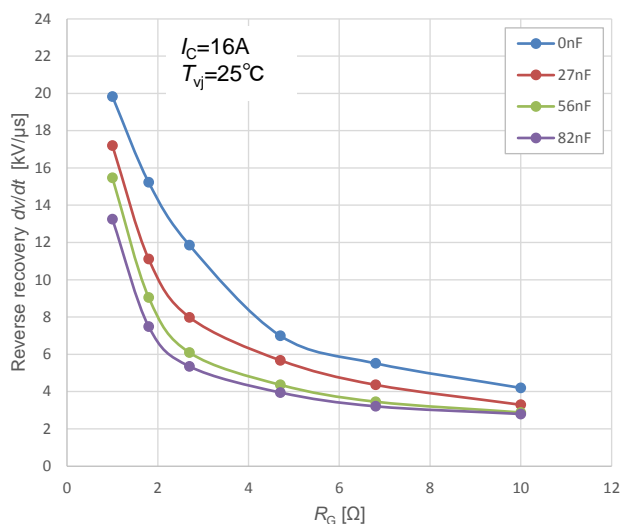


## FUJI IGBT Module 6MBI800XV-075V-01

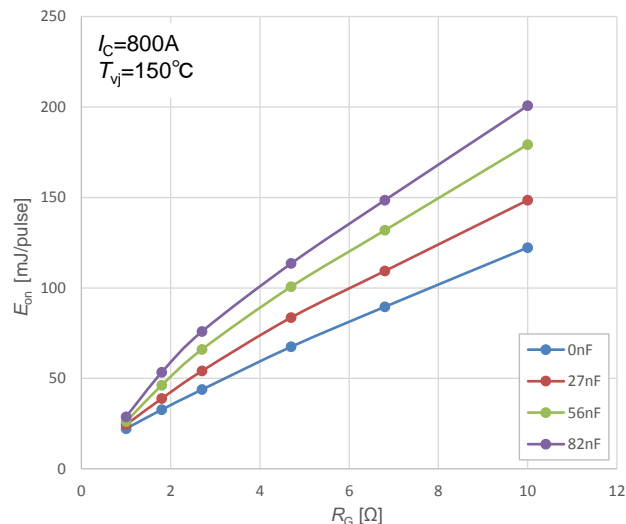
### Switching energy and Reverse recovery $dv/dt$ with combination of $R_G$ and $C_{GE}$

Measured module: 6MBI800XV-075-01

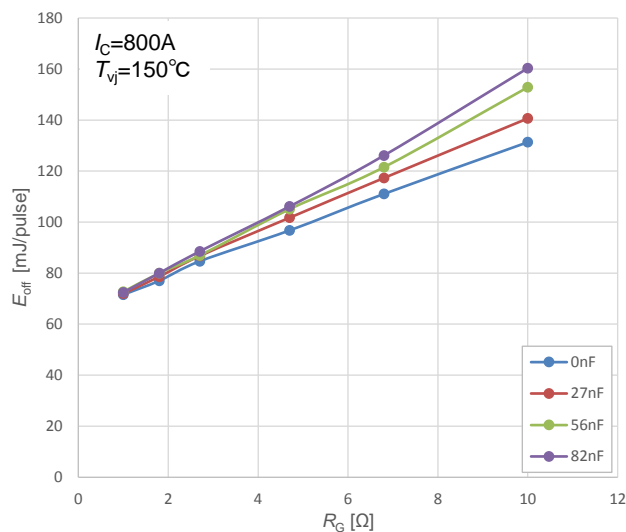
Measured conditions:  $V_{CC}=400V$ ,  $I_C=16A$  or  $800A$ ,  $V_{GE}=+15V/0V$ ,  $R_G=var.$ ,  $C_{GE}=0, 27, 56, 82nF$   
 $T_{vj}=25^\circ C$  or  $150^\circ C$



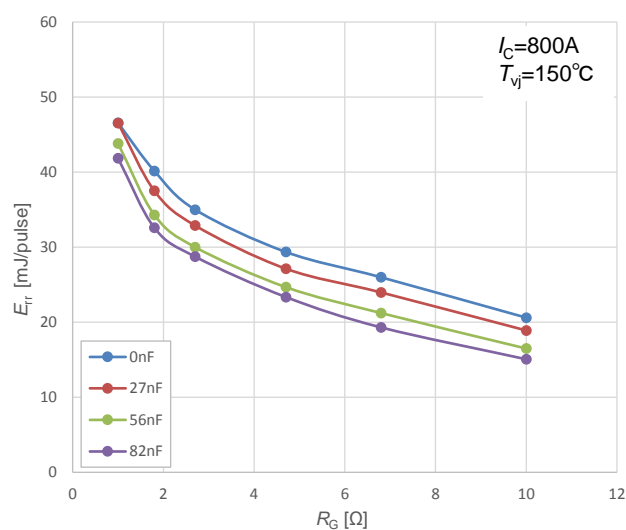
(a)  $R_G$  dependence of reverse recovery  $dv/dt$



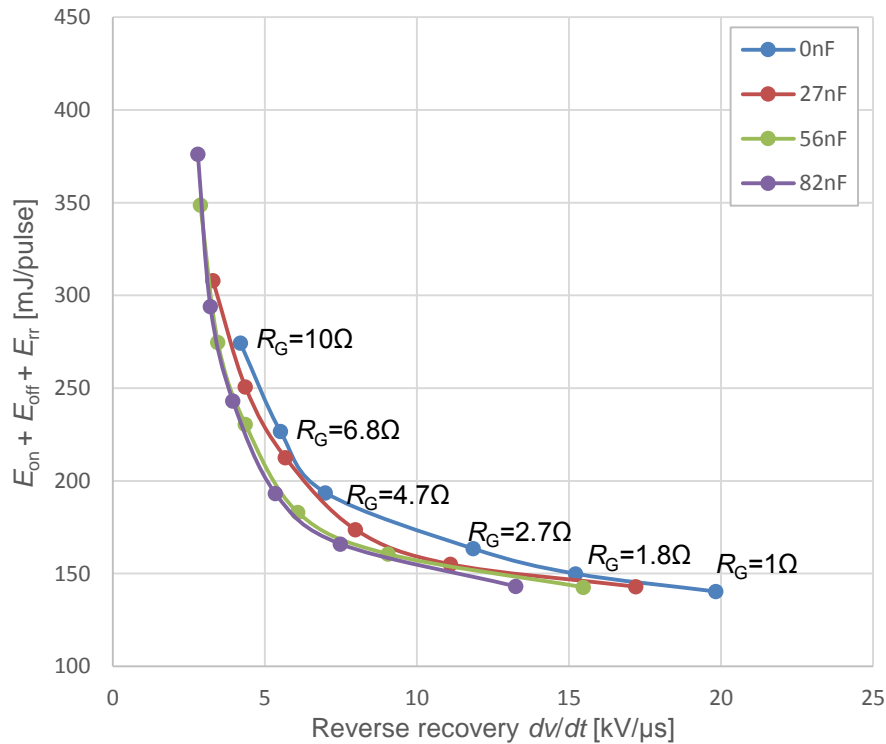
(b)  $R_G$  dependence of turn on loss



(c)  $R_G$  dependence of turn off loss



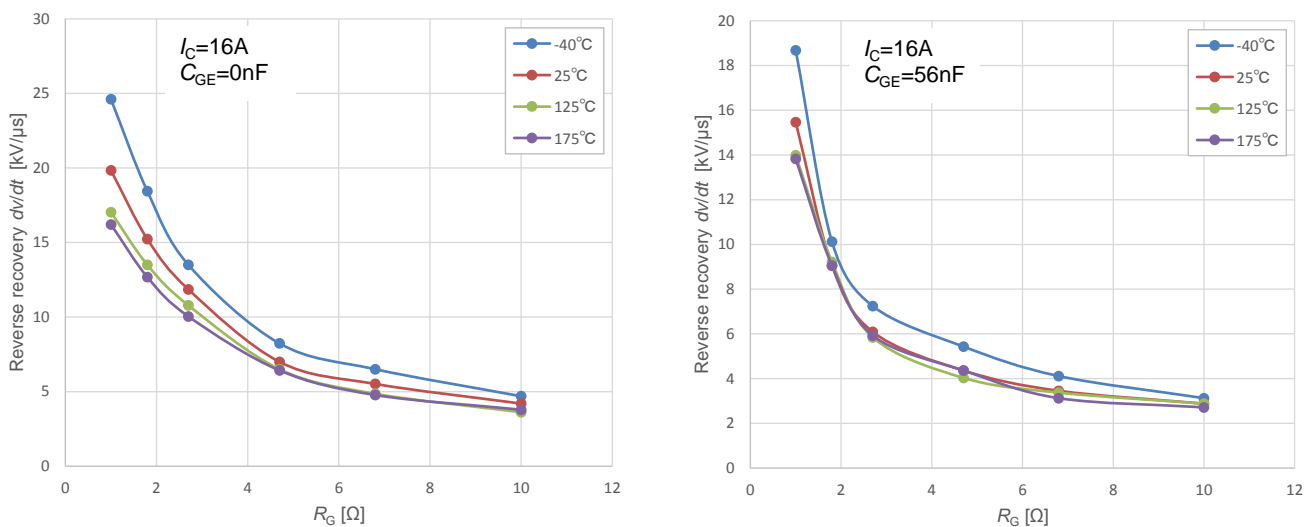
(d)  $R_G$  dependence of reverse recovery loss



(e)  $C_{GE}$  and  $R_G$  dependence for sum of switching loss and reverse recovery  $dv/dt$

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.

## Reference data



(f)  $R_G$  and  $T_{vj}$  dependence of reverse recovery  $dv/dt$

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