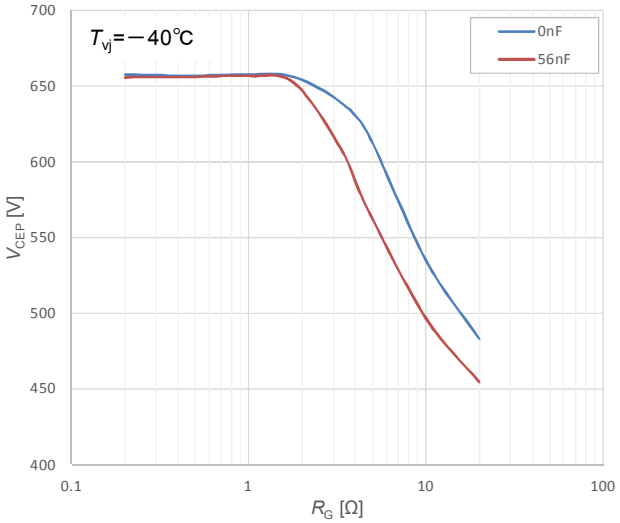
FUJI IGBT Module 6MBI800XV-075V-01

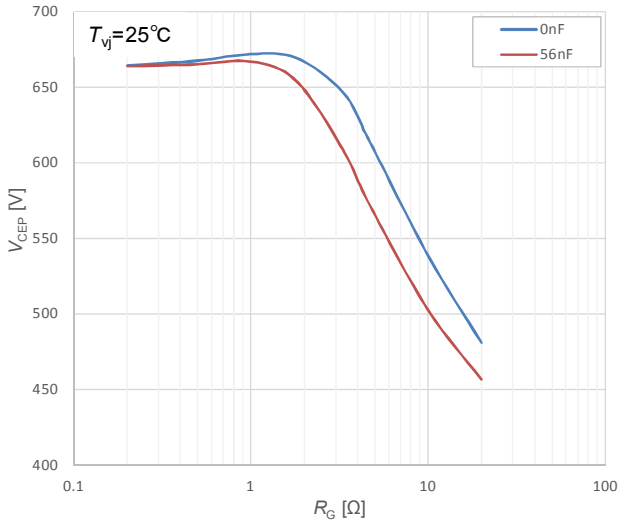
Gate resistance dependence of surge voltage

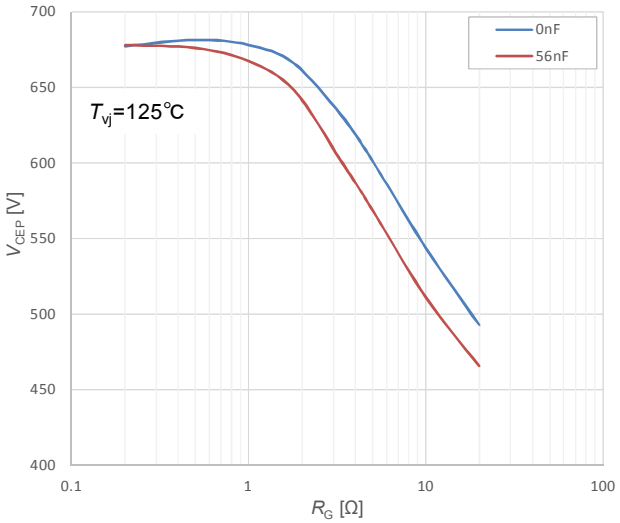
Measured module: 6MBI800XV-075-01

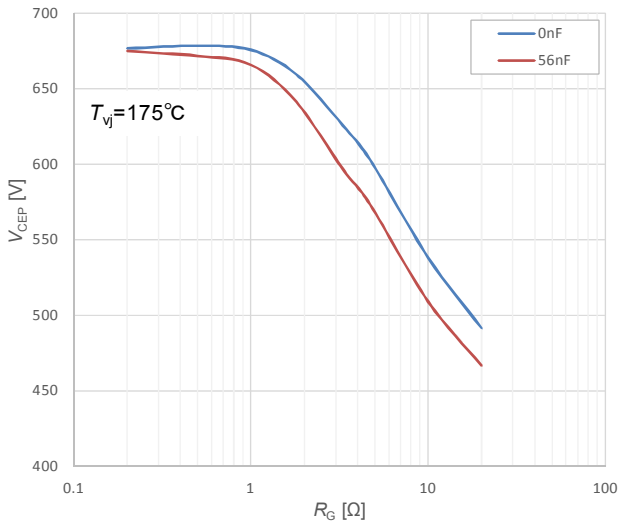
Measured conditions: V_{CC}=400V, I_C=800A, V_{GE}=+15V/0V, R_G=var., C_{GE}=0, 56nF

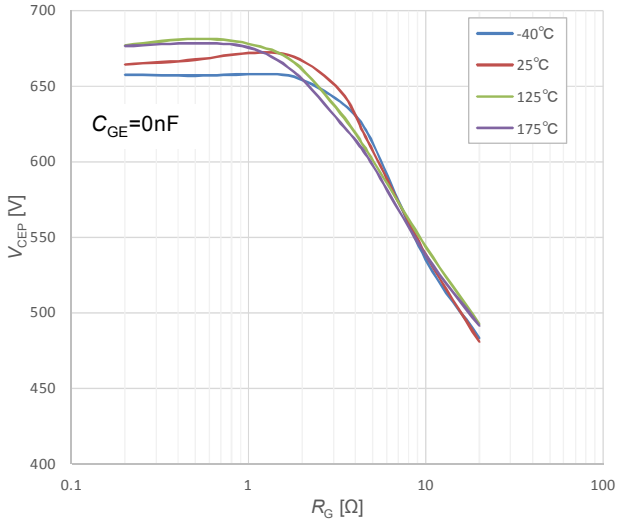
T_{vj}=−40, 25, 125, 175℃

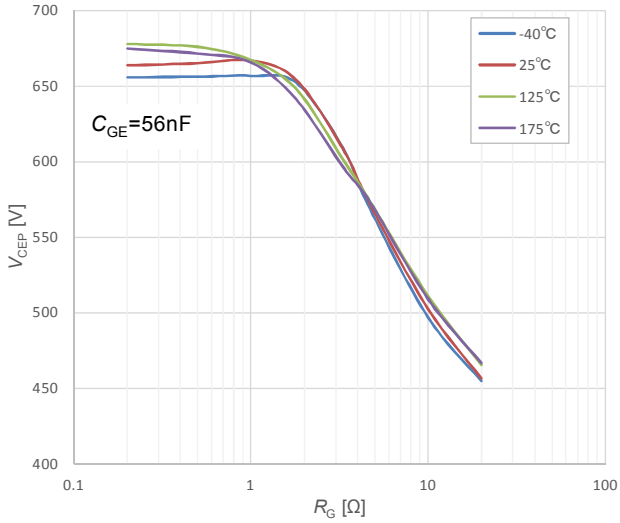












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2017/12

The surge voltage, especially at IGBT turn off, depends on the gate resistance. As showin in the figure above figure shows, the surge voltage is able to control with the gate resistance but the curveshave has peaks. Although detailed reasons for this relation are not described here, the background of such behaviors have already been analyzed and published. The primary reason of such behavior is the interaction of two silicon physcs in IGBT chip; 1) the carriers stored in the drift region and 2) Current throuhg MOS channel[1)].

1) Y. Onozawa et al., “Investigation of carrier streaming effect for the low spike fast IGBT turn-off”, Proc. ISPSD, pp173-176, 2006.

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