The data below shows turn off spike voltage in dependency of the gate resistance ($R_G$).

*SW mode A* T1,T4 IGBT switching

*SW mode B* T2,T3 RB-IGBT switching

![Graph showing spike voltage vs. $R_G$](image)

- $R_{G(off)}=0.56\Omega$
  - This value is a standard value of SW mode A.

- $R_{G(off)}=12\Omega$
  - This value is a standard value of SW mode B.
Measured module: 4MBI900VB-120R1-50 (RB-IGBT=900V)
Measured condition: Tj=RT, Vcc=500V, Ic=900A, VGE=15V/-15V, RG=var.

The data below shows reverse recovery spike voltage in dependency of the gate resistance (RG).

[SW mode A] T2,T3 RB-IGBT recovery
[SW mode B] T1,T4 FWD recovery

![Graph showing reverse recovery spike voltage vs. gate resistance]

- RG(on)=1.8Ω
  This is a standard value of SW mode B.

- RG(on)=3.3Ω
  This value is a standard value of SW mode A.
Appendix

Circuit diagram

Switching modes

<table>
<thead>
<tr>
<th>SW mode</th>
<th>Load L</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>M-U</td>
<td>SW</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td>M-U</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>SW</td>
</tr>
<tr>
<td>B</td>
<td>U-N</td>
<td>OFF</td>
<td>SW</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td>P-U</td>
<td>OFF</td>
<td>ON</td>
<td>SW</td>
<td>OFF</td>
</tr>
</tbody>
</table>

SW: Connect to drive circuit and input gate signal
ON: Bias voltage of gate  +15V
OFF: Reverse bias voltage of gate  -15V
Vcc1=2 × Vcc
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