Mini Evaluation Board with DCDC (buck) : AEM10941

Please follow the next steps when using the AEM10941 mini evaluation board with DCDC (buck)

Step 1 : MPP configuration (DS page 12)
Step 2 : System configuration (DS page 11)
Step 3 : LDO outputs configuration (DS page 9)
Step 4 : Cold-start configuration (DS page 12)
Step 5 : Balun for dual-cells supercapacitor (DS page 10)
Step 6 : Primary battery configuration (DS page 12)
Step 7 : Connect the storage element
Step 8 : Connect the primary battery
Step 9 : Connect the loads
Step 10 : Connect the source
Step 11 : Status

For more information : support@e-peas.com
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1. SELMPP1-0 MPPT Ratio (%)

<table>
<thead>
<tr>
<th>Configuration</th>
<th>MPPT Ratio (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-0</td>
<td>70</td>
</tr>
<tr>
<td>0-1</td>
<td>75</td>
</tr>
<tr>
<td>1-0</td>
<td>85</td>
</tr>
<tr>
<td>1-1</td>
<td>90</td>
</tr>
</tbody>
</table>

2. CFG2-1-0 Storage element type

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Storage element type</th>
</tr>
</thead>
<tbody>
<tr>
<td>H-H-H</td>
<td>Li-ion battery</td>
</tr>
<tr>
<td>H-H-L</td>
<td>Solid state Battery</td>
</tr>
<tr>
<td>H-L-H</td>
<td>Li-ion / NiMH battery</td>
</tr>
<tr>
<td>H-L-L</td>
<td>Single cell supercapacitor</td>
</tr>
<tr>
<td>L-H-H</td>
<td>Dual cell supercapacitor</td>
</tr>
<tr>
<td>L-H-L</td>
<td>Dual cell supercapacitor</td>
</tr>
<tr>
<td>L-L-H</td>
<td>LifePo4</td>
</tr>
<tr>
<td>L-L-L</td>
<td>Custom mode</td>
</tr>
</tbody>
</table>

Please see DS page 11 « Custom mode » and use the R1 – R6 resistors

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3.

<table>
<thead>
<tr>
<th>ENLV</th>
<th>ENHV</th>
<th>LVOUT</th>
<th>HVOUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Enabled</td>
<td>Enabled</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>Enabled</td>
<td>Disabled</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>Disabled</td>
<td>Enabled</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>Disabled</td>
<td>Disabled</td>
</tr>
</tbody>
</table>

LDO outputs configuration (DS page 9)

4.

Solder resistor « 0R R25 » if not used else :

\[
100 \, \text{k}\Omega \leq RC = R9 + R10 \leq 10 \, \text{M}\Omega \\
CS = \text{coldstart voltage} (> 380\text{mV}) \\
R9 = \frac{0.38}{CS} \times RC \\
R10 = RC - R9
\]

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5. If dual-cell supercapacitor:
   BAL connected to the node between the supercapacitors
   BAL = ToCN

If not:
   BAL = GND

6. Solder resistor « OR R26 » if no primary battery
   else
   \[
   100 \, \text{k}\Omega \leq RP = R7 + R8 \leq 500 \, \text{k}\Omega
   \]
   \[
   V_{PRIM\_MIN} = \text{minimum voltage on PRIM}
   \]
   \[
   R7 = \left( \frac{V_{PRIM\_MIN}}{4} \times RP \right) / 2.2 \, \text{V}
   \]
   \[
   R8 = RP - R7
   \]

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If no primary battery, please connect PRIM to GND

Primary Battery

Source

8.

7.

Storage Element

Circuit

9.

U2 DCDC = TPS62821
R28 (=R1) and R31 (=R2) define output voltage as described table 3 page 11.
By default, DCDC output voltage is defined at 3.3 V.
C4 = Cff in datasheet.
L1 = 470nH.

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11. **AEM Status**

11.

**STATUS0** = Asserted when the LDOs can be enabled

**STATUS1** = Asserted if the battery voltage falls under Vovdis

**STATUS2** = Asserted when the AEM performs the MPP tracking

*For more information: [support@e-peas.com]*
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www.e-peas.com

Or contact us at

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