AEM10900 Evaluation Board User Guide

Description

The AEM10900 evaluation kit (EVK) is a printed circuit board (PCB) featuring all the required components to operate the AEM10900 integrated circuit (IC) in QFN28 package.

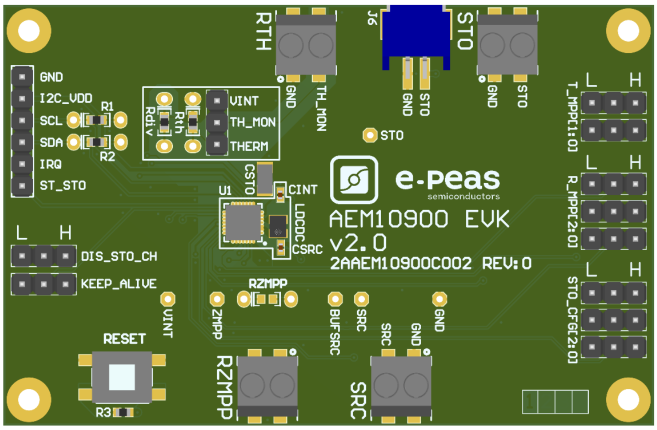
The AEM10900 evaluation board allows users to test the e-peas IC and analyze its performances in a laboratory-like setting or in product mock-ups.

It allows easy connections to an energy harvester (e.g. a single element PV cell) and a storage element. It also provides all the configuration access to set the device in any of the modes described in the datasheet. The control and status signals are available on standard pin headers or through an I²C bus communication, allowing users to override preconfigured board settings through host MCU and evaluate the IC performances.

The AEM10900 EVK is a plug and play, intuitive and efficient tool to optimize the AEM10900 configuration, allowing users to design a highly efficient subsystem for the desired target application. Component replacement and operating mode switching is convenient and easy.

More detailed information about AEM10900 features can be found in the datasheet.

Appearance



Features

Two-way screw terminals

- Source of energy (DC).
- ZMPP configuration.
- Energy storage element (battery).
- Thermistor used for thermal monitoring.

2-pin "Shrouded Header"

- Alternative connector for the storage element.

3-pin headers

- Maximum power point ratio (R_MPP) configuration.
- Maximum power point timing (T_MPP) configuration.
- Energy storage element threshold configuration.
- Mode configuration.
- Thermal monitoring configuration.

6-pin header

- I²C communication pins.
- Storage status

Applications

Wearable Electronics	Keyboards
Remote Control Units	Electronic Shelf Labels
Smart Buildings	Indoor Sensors

Evaluation Kit Information

Part Number	Dimensions
2AAEM10900C002 REV:0	76 mm x 49 mm

Device Information

Part Number	Package	Body size
10AEM10900C0001	QFN 28-pin	4x4mm

1. Connections Diagram

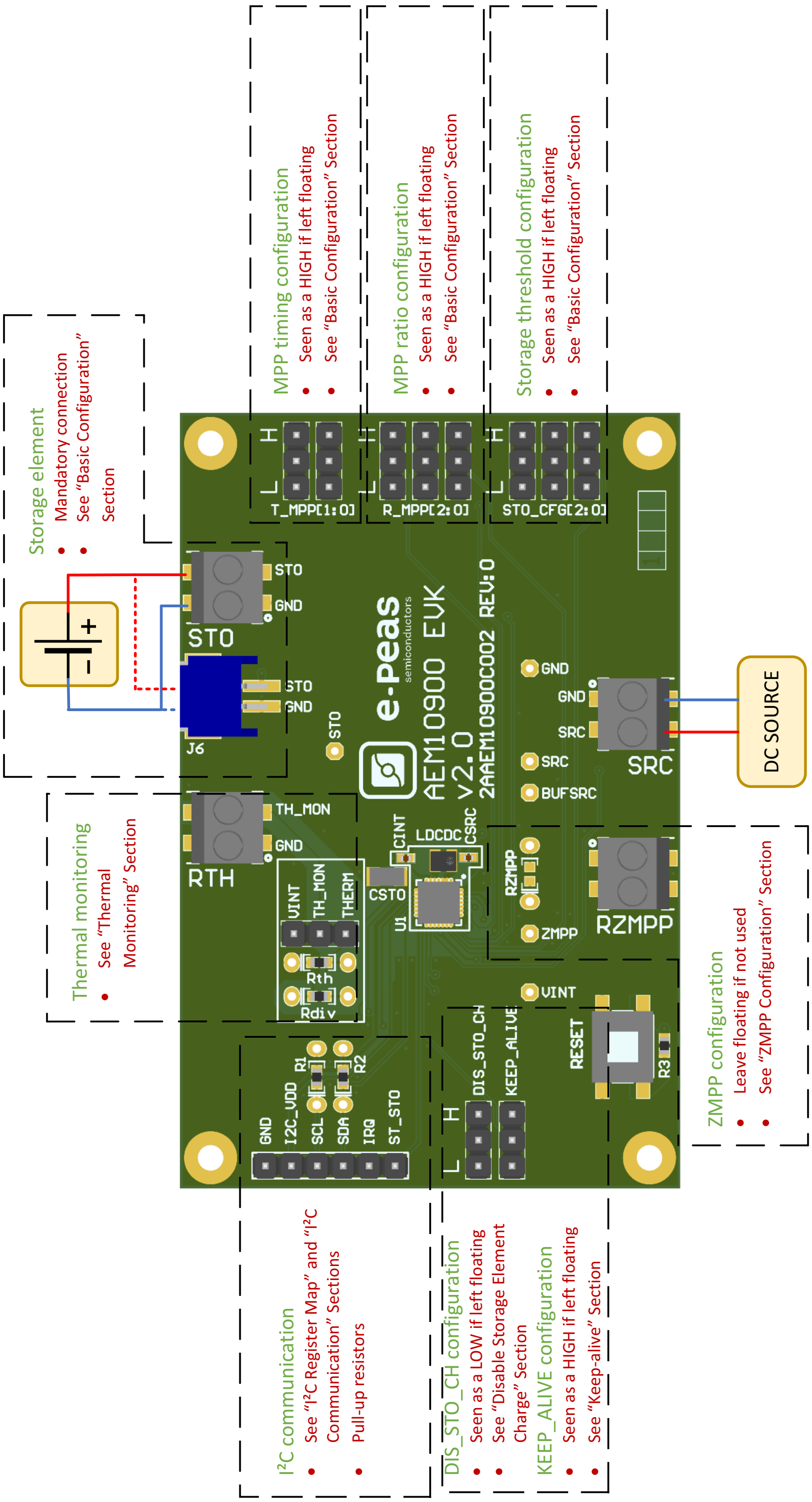


Figure 1: Connection diagram

2. Signals Description

NAME	FUNCTION	CONNECTION	
		If used	**If not used**
Power signals			
SRC	Connection to the harvested energy source.	Connect the source element.	Can be left floating.
STO	Connection to the energy storage element.	Cannot be left floating, voltage must always be above 2.5 V.	
I^{2}C _VDD	Connection to I^{2}C voltage supply.	Connect to I^{2}C supply.	Connect to GND.
ZMPP	Configuration of the constant impedance MPP.	Connect R_{ZMPP} resistor.	Leave floating.
VINT	AEM Internal voltage supply.		
BUFSRC	AEM connection to a capacitor buffering the boost converter input (no connector on EVK).		
Configuration signals			
R_MPP[2:0]	Configuration of the MPP ratio.	Connect jumpers.	Read as HIGH if left floating.
T_MPP[1:0]	Configuration of the MPP timing.	Connect jumpers.	Read as HIGH if left floating.
STO_CFG[2:0]	Configuration of the threshold voltages for the energy storage element.	Connect jumpers.	Read as HIGH if left floating.
TH_MON	Configuration of the thermal monitoring.	Connect a thermistor.	Connect to VINT.
Control signals			
DIS_STO_CH	Disabling pin for the storage charging.	Connect jumper (see Section 3.5.2).	Read as LOW if left floating.
KEEP_ALIVE	Enabling pin to supply internal circuitry from the storage element if no power on SRC.	Connect jumper (see Section 3.5.2).	Read as LOW if left floating.
I^{2}C signals			
SDA	Bidirectional data line.	Connect to host I^{2}C bus.	Connect I^{2}C _VDD to GND (SDA and SCL will be pulled down by R_1 and R_2).
SCL	Unidirectional serial clock.		
IRQ	Interrupt request.	Connect to host GPIO.	Leave floating.
Status signal			
ST_STO	Logic output. - Rises when V_{STO} is above V_{OVDIS} + 100 mV. - Falls after V_{STO} is held under V_{OVDIS} for 2.5 s. - Logic HIGH is at V_{STO} voltage.	Connect to application circuit.	leave floating.

Table 1: Pin description

3. General Considerations

3.1. Safety Information

Always perform these steps in the following order:

1. Reset the board: push the "RESET" switch during 5 seconds minimum.
2. Completely configure the PCB (jumpers/resistors):
   - Source configuration.
   - Battery configuration.
   - Mode configuration.
   - Thermal monitoring configuration.
3. Connect I2C_VDD:
   - To GND if I²C is not used (SDA and SCL will also be connected to GND through their pull up resistors).
   - To a power supply if I²C is used (1.5 V to 5 V).
4. Connect the storage elements on STO with a voltage higher than 2.5 V.
5. Connect the source to the SRC connector (open circuit voltage lower than 3 V).

3.2. Basic Configurations

Configuration	Availability Through Pins		MPPT ratio
R_MPP[3:0]	I²C Interface[a]	Configuration pins[b]	V_{MPP} / V_{OC}
LLLL	yes	yes	ZMPP
LLLH	yes	yes	90%
LLHL	yes	yes	65%
LLHH	yes	yes	60%
LHLL	yes	yes	85%
LHLH	yes	yes	75%
LHHL	yes	yes	70%
LHHH	yes	yes	80%
HLLL	yes	no	35%
HLLH	yes	no	50%

Table 2: Configuration of R_{MPPT}

a. For I²C configuration, R_MPP[3:0] value is set thanks to the MPPTCFG[3:0] register.
b.Only R_MPP[2:0] settings are available by GPIO configuration (R_MPP[3] = L in that case).

Configuration	Availability Through Pins		MPP Timing	
T_MPP[2:0]	I²C Interface[a]	Configuration pins[b]	Sampling duration T_{VOC} [ms]	Sampling period T_{MPPT} [ms]
LLL	yes	no	2	64
LLH	yes	no	256	16384
LHL	yes	no	64	4096
LHH	yes	no	8	1024
HLL	yes	yes	4	256
HLH	yes	yes	2	128
HHL	yes	yes	4	512
HHH	yes	yes	2	256

Table 3: Configuration of T_{MPPT}

a. For I²C configuration, T_MPP[2:0] value is set thanks to the MPPTCFG[6:4] register (see Table 5).
b. Only T_MPP[1:0] settings are available by GPIO configuration (T_MPP[2] = H in that case).

Configuration	Configuration availability		Storage Element Threshold Voltage		Battery type
STO_CFG[2:0]	I²C Interface	Configuration pins	V_{OVCH}	V_{OVDIS}	
LLL	yes	yes	4.50 V	3.30 V	NiCd 3 cells
LLH	yes	yes	4.00 V	2.80 V	Tadrian TLI1020A
LHL	yes	yes	3.63 V	2.80 V	LiFePO4
LHH	yes	yes	3.90 V	2.80 V	Tadrian HCL1020
HLL	yes	yes	3.80 V	2.50 V	LIC
HLH	yes	yes	3.90 V	3.01 V	Li-ion (long life)
HHL	yes	yes	4.35 V	3.01V	LiPo
HHH	yes	yes	4.12 V	3.01 V	Li-ion/solid-state/ NiMH

Table 4: Usage of STO_CFG[2:0]

3.3. I²C Register Map

Address	Name	Bit	Field Name	Access	RESET	Description
0x00	VERSION	[7:0]	VERSION	R	-	Version number
0x01	MPPTCFG	[3:0]	RATIO	R/W	0x07 (80%)	MPPT ratios
		[6:4]	TIMING	R/W	0x07 (2ms/ 256ms)	MPPT timings
0x02	VOVDIS	[5:0]	THRESH	R/W	0x2D (3.05V)	Overdischarge level of the storage element
0x03	VOVCH	[5:0]	THRESH	R/W	0x33 (4.1V)	Overcharge level of the storage element
0x04	TEMPCOLD	[7:0]	THRESH	R/W	0x8F (0°C)	Cold temperature level
0x05	TEMPHOT	[7:0]	THRESH	R/W	0x2F (45°C)	Hot temperature level
0x06	PWR	[0:0]	KEEPALEN	R/W	0x01	Keep-alive enable
		[1:1]	HPEN	R/W	0x01	High-power mode enable
		[2:2]	TMONEN	R/W	0x01	Temperature monitoring enable
		[3:3]	STOCHDIS	R/W	0x00	Battery charging disable
0x07	SLEEP	[0:0]	EN	R/W	0x01	Sleep mode enable
		[3:1]	THRESH	R/W	0x00	Sleep threshold
0x08	RSVD	[2:0]	-	R/W	-	This register can be written in but it will have no effect
0x09	APM	[0:0]	EN	R/W	0x00	APM enable
		[1:1]	MODE	R/W	0x00	APM mode
		[3:2]	WINDOW	R/W	0x00	APM computation window
0x0A	IRQEN	[0:0]	I2CRDY	R/W	0x01	IRQ serial interface ready enable
		[1:1]	VOVDIS	R/W	0x00	IRQ STO OVDIS enable
		[2:2]	VOVCH	R/W	0x00	IRQ STO OVCH enable
		[3:3]	SLPTHRESH	R/W	0x00	IRQ SRC LOW enable
		[4:4]	TEMP	R/W	0x00	IRQ temperature enable
		[5:5]	APMDONE	R/W	0x00	IRQ APM done enable
		[6:6]	APMERR	R	0x00	IRQ APM error enable
0x0B	CTRL	[0:0]	UPDATE	R/W	0x00	Load I²C registers configuration
		[2:2]	SYNCBUSY	R	0x00	Synchronization busy flag
0x0C	IRQFLG	[0:0]	I2CRDY	R	0x00	IRQ serial interface ready flag
		[1:1]	VOVDIS	R	0x00	IRQ STO OVDIS flag
		[2:2]	VOVCH	R	0x00	IRQ STO OVCH flag
		[3:3]	SLPTHRESH	R	0x00	IRQ SRC LOW flag
		[4:4]	TEMP	R	0x00	IRQ temperature flag
		[5:5]	APMDONE	R	0x00	IRQ APM done flag
		[6:6]	APMERR	R	0x00	IRQ APM error flag
0x0D	STATUS	[1:1]	VOVDIS	R	0x00	Status STO OVDIS
		[2:2]	VOVCH	R	0x00	Status STO OVCH
		[3:3]	SLPTHRESH	R	0x00	Status SRC LOW
		[4:4]	TEMP	R	0x00	Status temperature
		[6:6]	CHARGE	R	0x00	Status STO Charge
0x0E	APM0	[7:0]	DATA	R	0x00	APM data 0

Table 5: Register summary

Address	Name	Bit	Field Name	Access	RESET	Description
0x0F	APM1	[7:0]	DATA	R	0x00	APM data 1
0x10	APM2	[7:0]	DATA	R	0x00	APM data 2
0x11	TEMP	[7:0]	DATA	R	0x00	Temperature data
0x12	STO	[7:0]	DATA	R	0x00	Battery voltage
0x13	SRC	[7:0]	DATA	R	0x00	SRC ADC value
0xE0	PN0	[7:0]	DATA	R	0X30	Part number 0 data
0xE1	PN1	[7:0]	DATA	R	0X30	Part number 1 data
0xE2	PN2	[7:0]	DATA	R	0X39	Part number 2 data
0xE3	PN3	[7:0]	DATA	R	0X30	Part number 3 data
0xE4	PN4	[7:0]	DATA	R	0X31	Part number 4 data

Table 5: Register summary

3.4. I²C Communication

The device address on the I²C bus is 0x41. All information about the I²C communication is available in the AEM10900 datasheet, “System configuration” Section.

I2C_VDD must be connected to an external power supply which voltage is within the 1.5 V to 5.0 V range. On the Evaluation Board, 1 kΩ pull-up on SDA and SCL (R1 and R2) to I2C_VDD are provided.

In case one or more configurations are set by I²C communication, none of the configuration pins (GPIOs) will be taken into account anymore. Thus, applying the default values to any registers that have not been explicitly configured by I²C.

3.5. Advanced Configurations

A complete description of the system constraints and configurations is available in Section “System configuration” of the AEM10900 datasheet.

3.5.1. ZMPP Configuration

If ZMPP configuration is chosen (see Table 2), the AEM10900 regulates V_{SRC} at a voltage equals to the product of R_{ZMPP} times the current available at the source SRC.

- $33\ \Omega \leq R_{ZMPP} \leq 200\ k\Omega$

If unused, leave both the R_{ZMPP} resistor footprint and screw connector empty.

3.5.2. Mode Configuration

DIS_STO_CH

Enabling/disabling battery charging can be done by setting a jumper on the corresponding 3-pin header.

- Use a jumper to connect the DIS_STO_CH to H to disable the charge of the storage element.
- Use a jumper to connect the DIS_STO_CH to L to enable the charge of the storage element.

KEEP_ALIVE

The KEEP_ALIVE feature allows to supply the internal circuitry from the storage element when no power is available on the source terminal.

- Use a jumper to connect the KEEP_ALIVE to H to enable the feature.
- Use a jumper to connect the KEEP_ALIVE to L to disable the feature.

3.5.3. Thermal Monitoring

The thermal monitoring feature protects the battery by disabling the battery charging when ambient temperature is outside a specified range. The higher and lower thresholds are configurable using the I²C communication (see datasheet).

- Place a jumper between TH_MON and VINT to disable the feature.
- Place a jumper between TH_MON and THERM to enable the feature.

4. Circuit Behavior

4.1. Startup and Supply

4.1.1. Configuration

- SRC is supplied by a 1.0 V voltage source with 5 mA current compliance.
  - V_{OC} = 1.0 V
  - I_{SRC} = 5 mA
- R_MPP[2:0] = HHL
  - R_MPP = 70 %
- T_MPP[1:0] = HL
  - T_{MPPT} = 4096 ms
  - T_{VOC} = 64 ms
- STO_CFG[2:0] = HHL
  - V_{OVDIS} = 3.01 V
  - V_{OVCH} = 4.35 V
- Temperature monitoring disabled.
- DIS_STO_CH = L
  - Storage element charge is enabled.
- <KEEP_ALIVE= H
  - Keep-alive functionality is enabled.

4.1.2. Observations

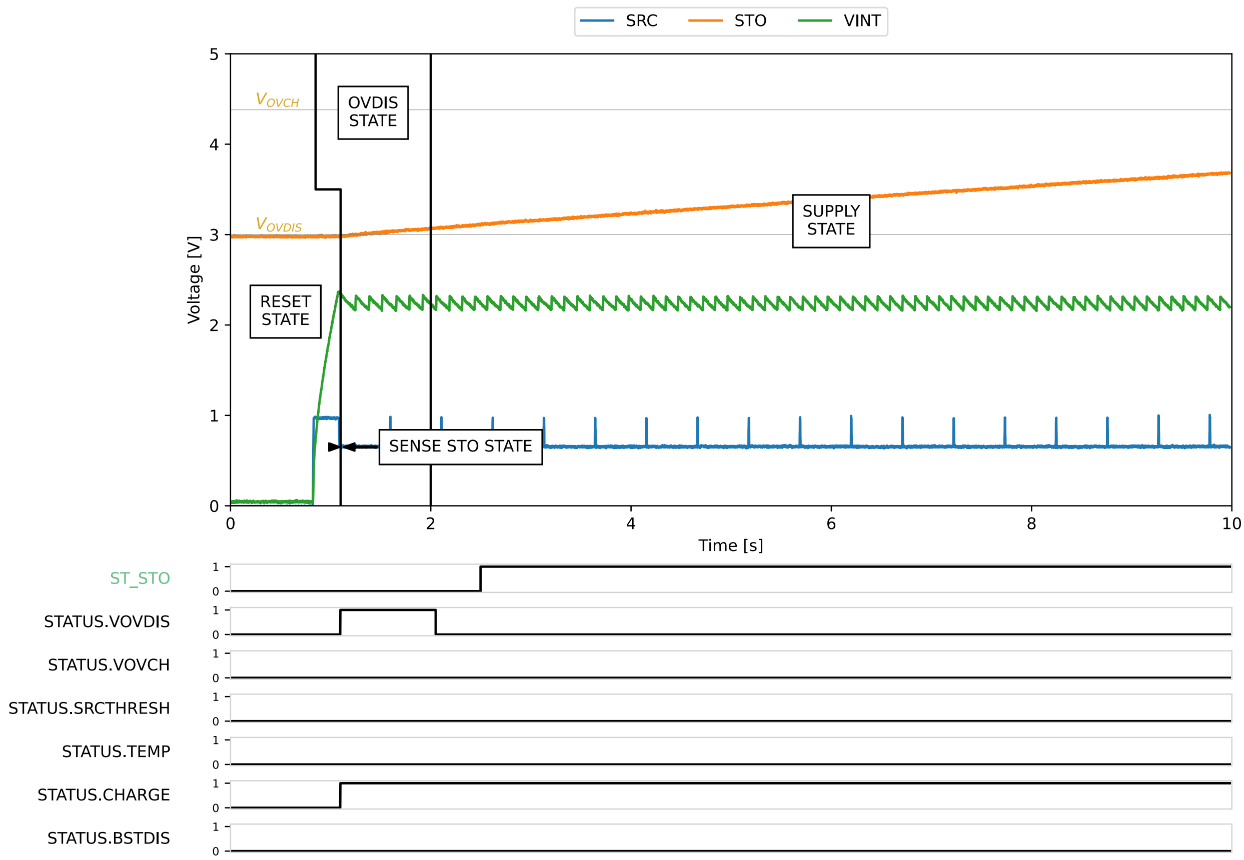


Figure 2: Startup and overcharge behavior

- The AEM10900 is initially in RESET STATE.
- Once the supply connected on SRC is switched on, the AEM10900 coldstarts. C_{INT} is charged until VINT reaches $V_{INT,CS}$. Then, the AEM10900 switches to SENSE STO STATE.
- In SENSE STO STATE, the AEM10900 measures V_{STO}, which is slightly below V_{OVDIS}. The AEM10900 goes into OVDIS STATE.
- In OVDIS STATE, the AEM10900 performs a first V_{OC} evaluation and charges the storage element on STO by harvesting the energy from SRC. V_{SRC} is regulated at 0.7 V. VINT is supplied by SRC. Once V_{STO} reaches V_{OVDIS}, the AEM10900 switches to SUPPLY STATE.
- In SUPPLY STATE, the AEM10900 charges the storage element.
  - Once V_{STO} reaches V_{OVDIS} + 100 mV, the ST_STO toggles from LOW to HIGH.

4.2. Supply and Overcharge

4.2.1. Configuration

- SRC is supplied by a 1.0 V voltage source with 5 mA current compliance.
  - V_{OC} = 1.0 V
  - I_{SRC} = 5 mA
- R_MPP[2:0] = HHL
  - R_MPP = 70 %
- T_MPP[1:0] = HL
  - T_{MPPT} = 4096 ms
  - T_{VOC} = 64 ms
- STO_CFG[2:0] = HHL
  - V_{OVDIS} = 3.01 V
  - V_{OVCH} = 4.35 V
- Temperature monitoring disabled.
- DIS_STO_CH = L
  - Storage element charge is enabled.
- KEEP_ALIVE = H
  - Keep-alive functionality is enabled.

4.2.2. Observations

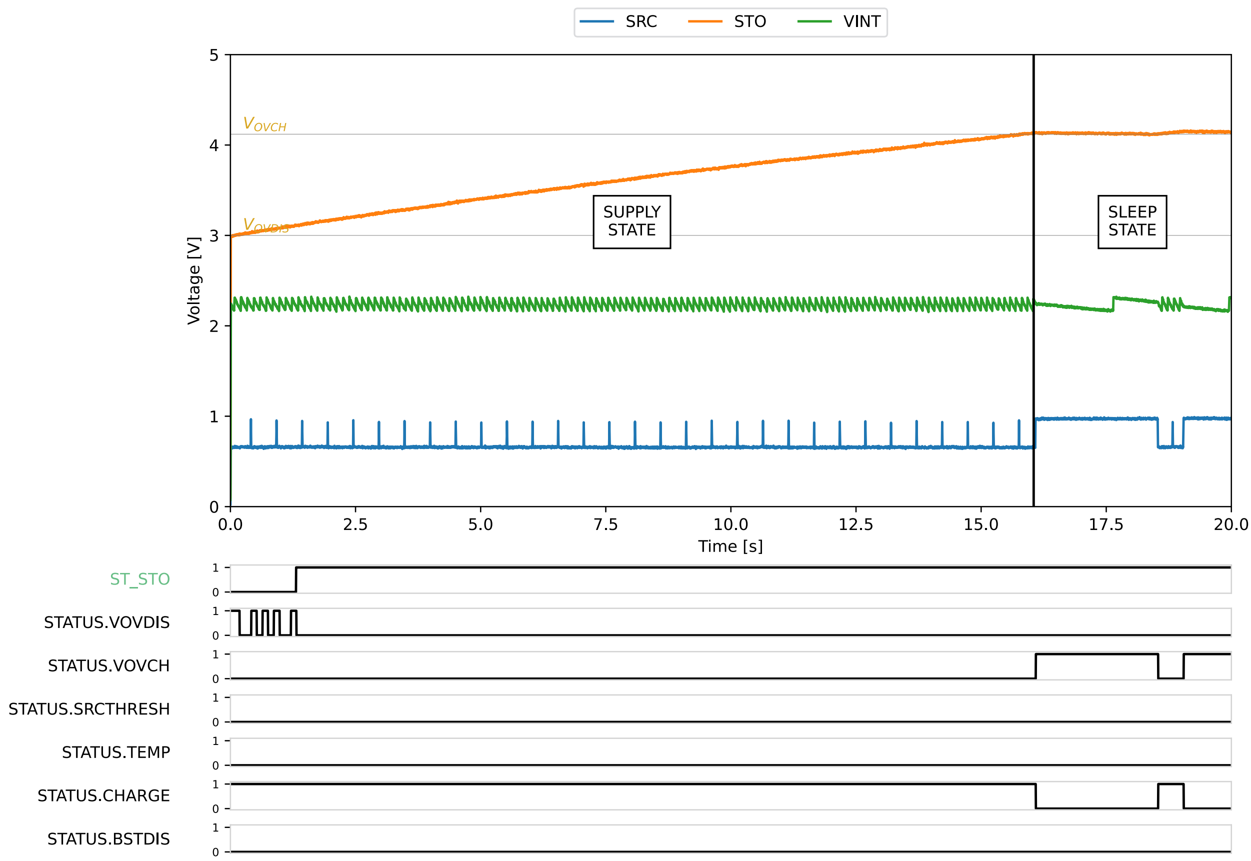


Figure 3: Supply and overcharge behavior

- SUPPLY STATE
  - Once V_{STO} reaches V_{OVDIS} + 100 mV, the ST_STO toggles from LOW to HIGH.
  - Once V_{STO} reaches V_{OVCH}, the AEM10900 switches to SLEEP STATE.
- In SLEEP STATE, STO and VINT are fully charged. The AEM10900 stops harvesting energy from SRC. Please note that around 19 s, the AEM10900 recharges VINT from STO, thus briefly switching to SUPPLY STATE to compensate for the energy taken from STO.

4.3. Overdischarge

4.3.1. Configuration

- SRC is supplied by a 1.0 V voltage source with 5 mA current compliance.
  - V_{OC} = 1.0 V
  - I_{SRC} = 5 mA
- R_MPP[2:0] = HHL
  - R_MPP = 70 %
- T_MPP[1:0] = HL
  - T_{MPPT} = 4096 ms
  - T_{VOC} = 64 ms
- STO_CFG[2:0] = HHL
  - V_{OVDIS} = 3.01 V
  - V_{OVCH} = 4.35 V
- Temperature monitoring disabled.
- DIS_STO_CH = L
  - Storage element charge is enabled.
- KEEP_ALIVE = H
  - Keep-alive functionality is enabled.

4.3.2. Observations

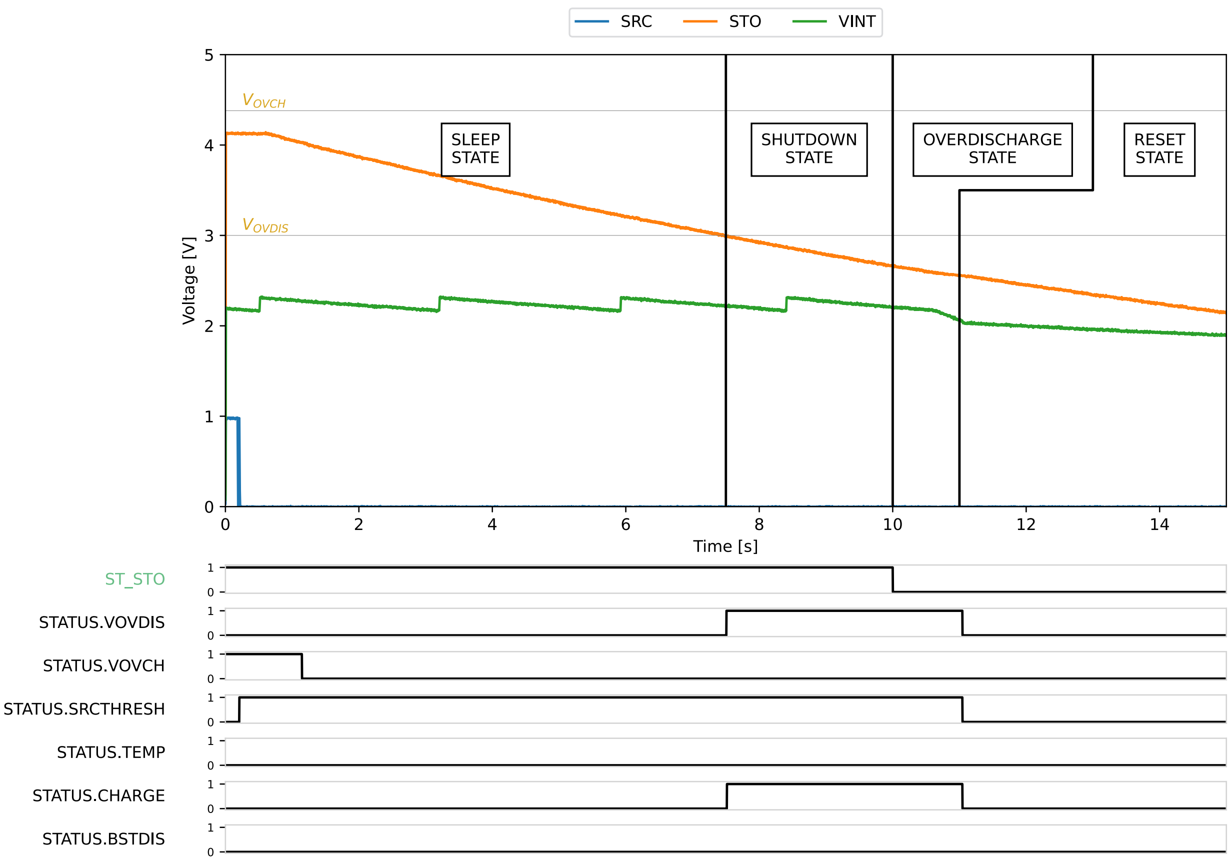


Figure 4: Overdischarge behavior

- The AEM10900 is initially in SLEEP STATE since the sleep condition is satisfied: SLEEP.EN & KEEP_ALIVE & (V_{STO} > V_{OVCH} | STATUS.TEMP | <Pin Control>DIS_STO_CH | V_{MPP} < SLEEP.SRCTHRESH).
- Once V_{STO} reaches V_{OVDIS}, the AEM10900 briefly enters SUPPLY STATE and goes to SHUTDOWN STATE.
- After 2.5 s in SHUTDOWN STATE, the AEM10900 goes in OVDIS STATE and ST_STO toggles from HIGH to LOW. V_{INT} is no longer supplied and C_{INT} starts to discharge.
- Once V_{INT} falls below 2 V, the AEM10900 goes in RESET STATE. All STATUS signals are set to LOW.

4.4. Keep-alive

4.4.1. Configuration

- SRC is supplied by a 1.0 V voltage source with 5 mA current compliance.
  - V_{OC} = 1.0 V
  - I_{SRC} = 5 mA
- R_MPP[2:0] = HHL
  - R_MPP = 70 %
- T_MPP[1:0] = HL
  - T_{MPPT} = 4096 ms
  - T_{VOC} = 64 ms
- STO_CFG[2:0] = HHL
  - V_{OVDIS} = 3.01 V
  - V_{OVCH} = 4.35 V
- Temperature monitoring disabled.
- DIS_STO_CH = L
  - Storage element charge is enabled.
- KEEP_ALIVE: is enabled on Figure 5 and disabled on Figure 6.

4.4.2. Observations

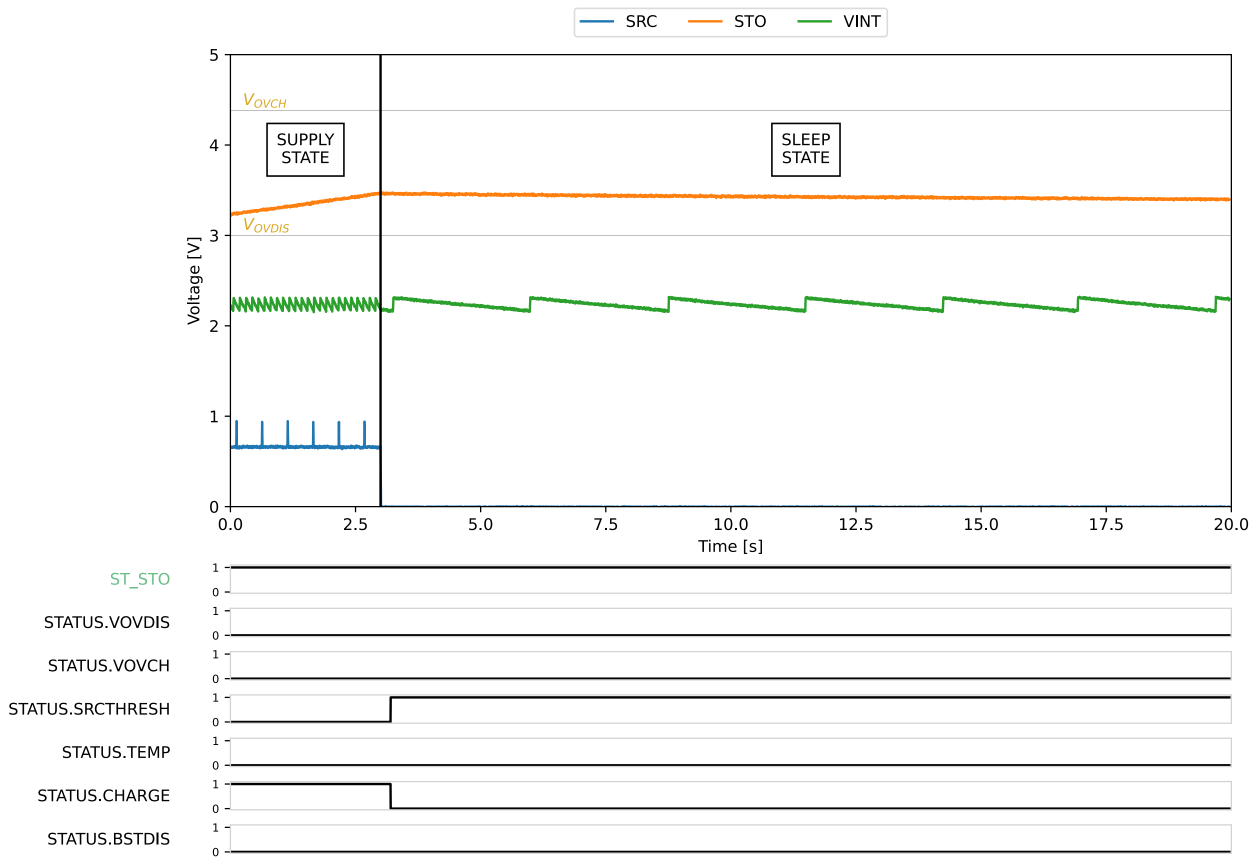


Figure 5: KEEP_ALIVE HIGH behavior

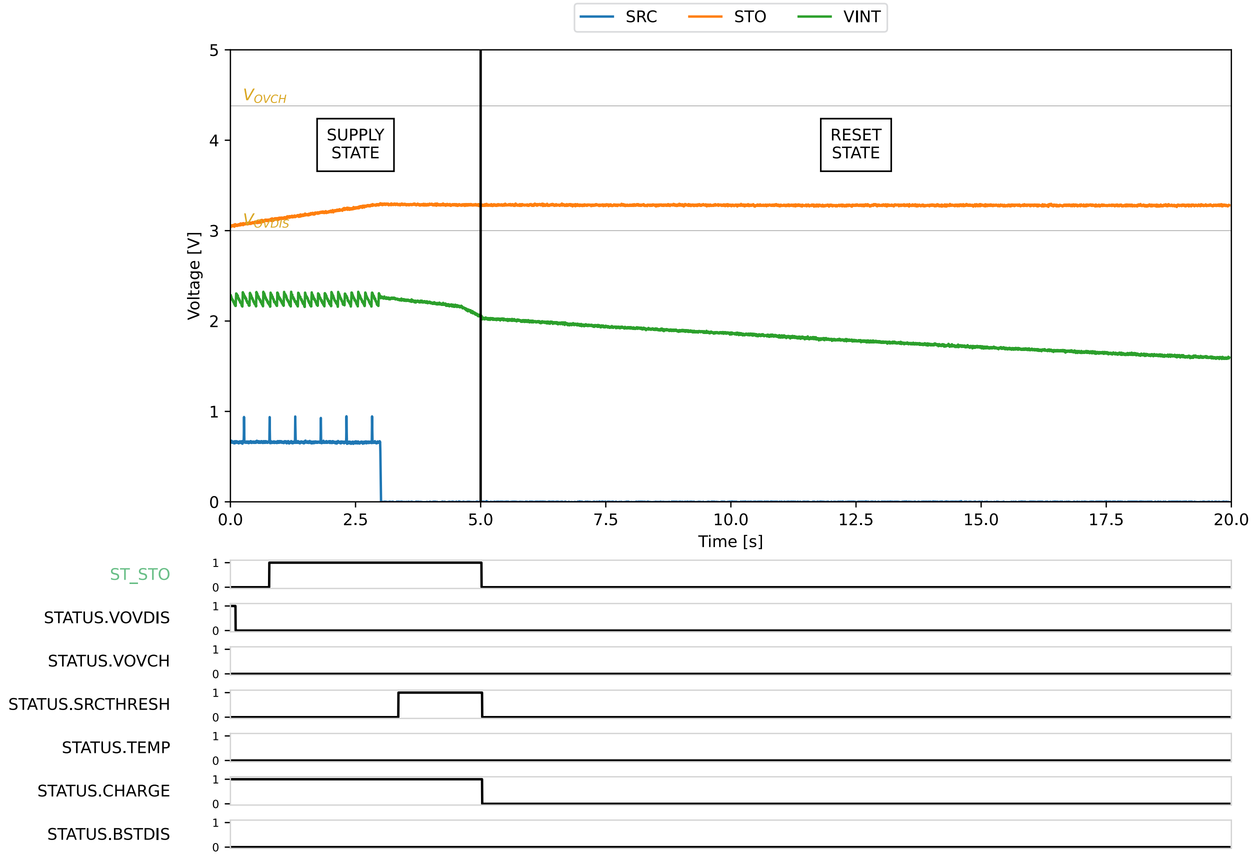


Figure 6: KEEP_ALIVE LOW behavior

In both cases, the AEM10900 is first in SUPPLY STATE. The storage element connected to STO is charged by extracting power from SRC.

At 3 s, the energy source connected to the SRC pin is switched off in both cases. The behavior after that depends on whether the Keep-alive functionality is enabled or not:

- KEEP_ALIVE = H (Keep-alive enabled, Figure 5): the AEM10900 switches to SLEEP STATE, so VINT keeps being supplied from the storage element connected to STO. The AEM10900 will be able to harvest again as soon as power is restored to the SRC pin. On the other hand, a small current is pulled from the storage element (I_{QSLEEP}, see Table 3).
- KEEP_ALIVE = L (Keep-alive disabled, Figure 6): VINT can only be supplied from the energy available on SRC, so as soon as the power source is switched off, VINT stops being supplied. The AEM10900 switches to RESET STATE, so that no current is pulled from the storage element. The stored energy is thus preserved. On the other hand, when power is restored to the SRC pin, the AEM10900 must perform a cold start to resume harvesting.

4.5. Temperature Monitoring

4.5.1. Configuration

- SRC is supplied by a 1.0 V voltage source with 5 mA current compliance.
  - V_{OC} = 1.0 V
  - I_{SRC} = 5 mA
- R_MPP[2:0] = HHL
  - R_MPP = 70 %
- T_MPP[1:0] = HL
  - T_{MPPT} = 4096 ms
  - T_{VOC} = 64 ms
- STO_CFG[2:0] = HHL
  - V_{OVDIS} = 3.01 V
  - V_{OVCH} = 4.35 V
- Temperature monitoring is enabled with default values:
  - The temperature range in which the AEM10900 charges the storage element is 0 °C to 45 °C.
- DIS_STO_CH = L
  - Storage element charge is enabled.
- KEEP_ALIVE = H
  - Heep-alive feature is enabled.

4.5.2. Observations

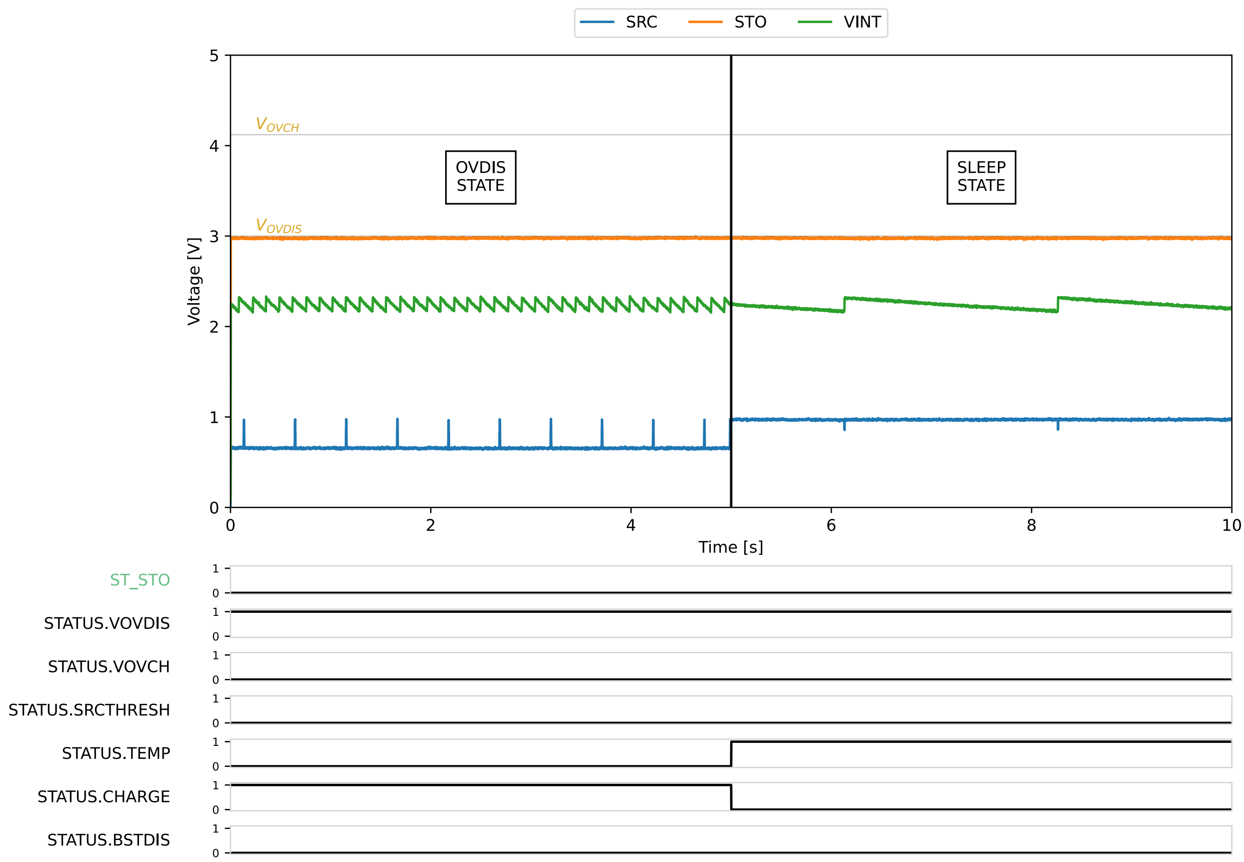


Figure 7: Temperature monitoring behavior

Figure 7 shows the AEM10900 charging the storage element while being in OVDIS STATE. At 5 s, the temperature drops below 0 °C, causing the AEM10900 to stop charging the storage element. The AEM10900 goes in SLEEP STATE

5. Functional Tests

This section presents a few simple tests that allow users to understand the functional behavior of the AEM10900. To avoid damaging the board, follow the procedure found in Section 3.1. If a test has to be restarted, make sure to properly reset the system to obtain reproducible results.

The measurements use the following equipment:

- Two Source Measurement Units (SMU, four-quadrant power supply).
- One 2-channel oscilloscope.

The following functional tests were made using the following setup:

- EVK jumpers configuration:
  - R_MPP[2:0] = HHL (70 %).
  - T_MPP[1:0] = HH (2 ms / 256 ms).
  - STO_CFG[2:0] = HHH (3.01 V - 4.12 V).
  - DIS_STO_CH = L.
  - KEEP_ALIVE = H.
  - Place the jumper to connect TH_MON with VINT.
- Place a jumper to connect I2C_VDD and GND if the I²C communication is not used.

Users can adapt the setup to match the use case system as long as the input limitations are respected, as well as the minimum storage voltage and cold-start constraints (see "Introduction" Section of AEM10900 datasheet).

5.1. Cold-start

The following test allows users to observe the minimum voltage required to coldstart the AEM10900. To prevent current leakage caused by the probe impedance, users should avoid probing any unnecessary node. Make sure to properly reset the board to observe the cold-start behavior.

Setup

- Place oscilloscope probe on SRC.
- Referring Figure 1, follow steps 1 to 5 explained in Section 3.1.
- SRC: SMU set as 20 µA current source with 0.3 V voltage compliance.
- STO: SMU as 3.0 V voltage source with 100 µA current compliance.

Observations and measurements

- SRC voltage clamped at the cold-start voltage during the cold-start phase and then regulated at the selected MPPT percentage of V_{OC} configured thanks to R_{MPPT} when cold start is over. The duration of the cold-start phase decreases as the input power increases. Select the input power accordingly to be able to observe the cold-start phase.
- STO: SMU starts absorbing current sourced by the STO pin once the cold-start phase is completed.

5.2. I²C Communication

This test allows users to change a configuration through the I²C communication.

Setup

- Place the oscilloscope probe on SRC.
- Referring to Figure 1, follow steps 1 to 5 explained in Section 3.1. Configure theboard in the desired state and start the system.
- Connect I2C_VDD to the I²C supply (between 1.8 V and 5.5 V).
- Write '0010 0011' (0x23) on the MPPTCFG register (0x01):
    - VMPP / VOC = 60 %.
    - 64 ms V OC sampling duration.
    - 4 s VOC sampling period.
- Write '1' to the CTRL register (0x0B) to load the I²C register configuration (at startup the AEM10900 loads its configurations from the pins settings)

Observations and measurements

- SRC: observe that the voltage regulation switches to 60% of the open circuit voltage VOC as defined by the SRC SMU voltage compliance, when the register value is loaded.
- SRC: observe that the timing between two MPP evaluation is 4 s and the duration of the MPP is 64 ms.

5.3. Efficiency

This test allows users to reproduce the efficiency graphs of the boost converter (see "DCDC Conversion Efficiency" Section in the AEM10900 datasheet.

Setup

- Referring to Figure 1, follow steps 1 to 5 explained in Section 3.1. Configure the board in the desired state and start the system (see Section 3.1)
- STO: connect SMU configured as a 4.7 V voltage source with a 100 mA current compliance.
- SRC: connect SMU configured as a source current with a voltage compliance of 1.0 V to ensure the AEM10900 coldstarts.

Manipulations

- STO: set the SMU to the desired voltage, between V_{OVDIS} and V_{OVCH}. Make sure the SMU integration time is as long as possible.
- SRC: sweep the voltage compliance of the SMU from 0.12 V to 1.5 V to let the AEM10900 set VMPP according to the MPP ratio.

Observations and measurements

- For each data point of the SRC voltage sweep, note the SRC SMU voltage and current, as well as the STO SMU voltage and current. Repeat the measurement for each data point a copious number of times to ensure capturing current peaks.
- The efficiency η in percent is computed by applying the following formula:

$$\eta = 100 \cdot \frac{V_{STO} \cdot I_{STO}}{V_{SRC} \cdot I_{SRC}}$$

6. DCDC Conversion Efficiency

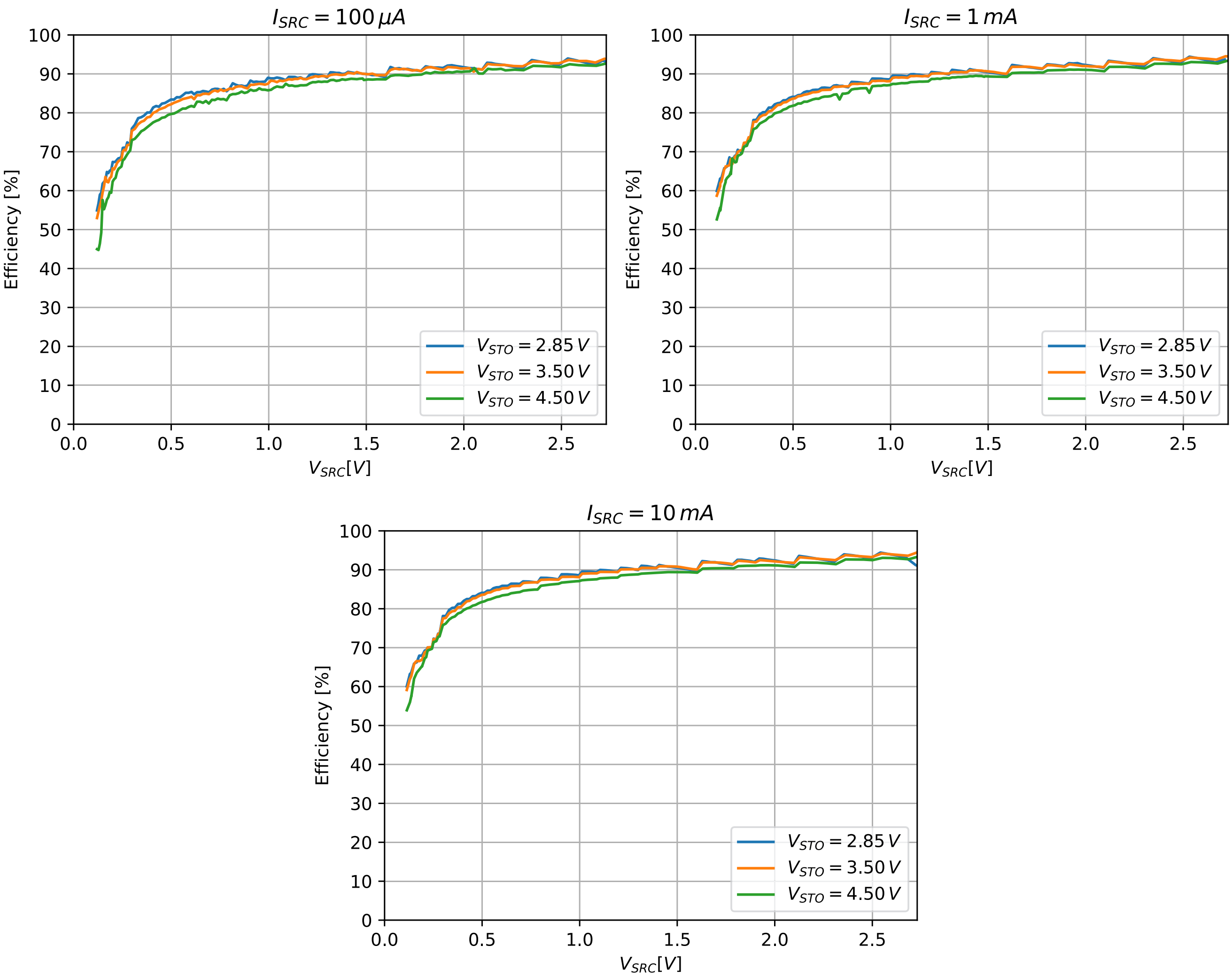


Figure 8: AEM010900 DCDC conversion efficiency (LDCDC: TDK VLS252012HBX-6R8M-1)

7. Schematics

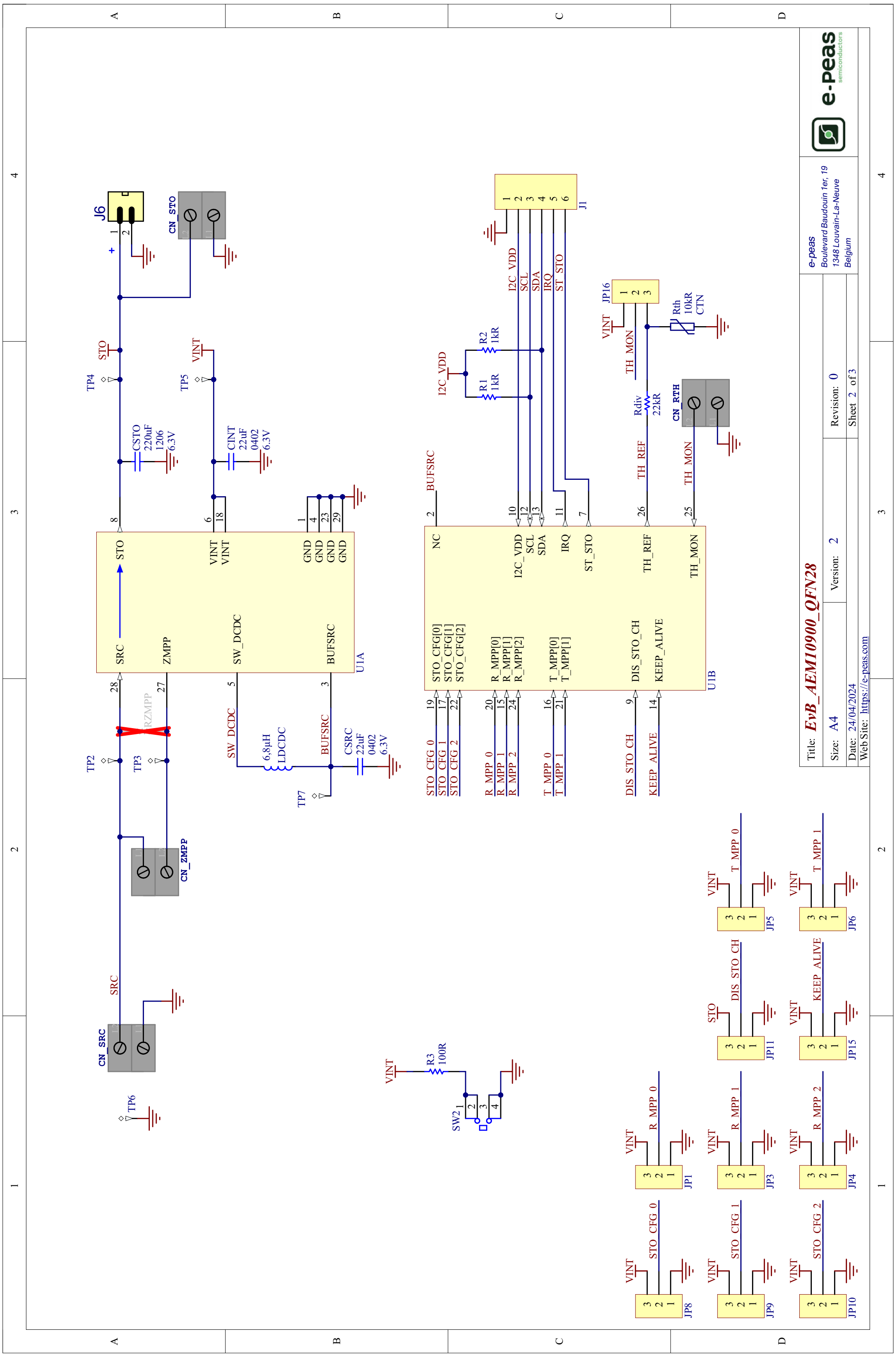


Figure 9: AEM10900 Evaluation Board Schematic

8. Revision History

EVK Version	User Guide Revision	Date	Description
Up to 1.2	0.9	February, 2022	Creation of the document.
1.3	1.0	September, 2023	Fixed some inconsistencies and updated images.

2.0	1.0	November, 2024	- Added ST_STO
			- Removed user warning on silkscreen
			- Added extended range on SRC
			- Changed regmap:
			    - Changed version register
			    - Added APM IRQ flag and error registers
			    - Added part number registers
			- Added circuit behavior section

Table 6: Revision History