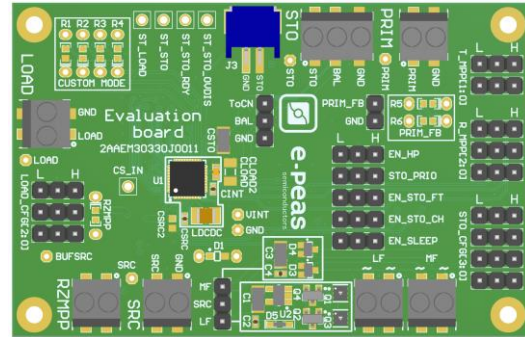


AEM30330

Quick Start Guide EVK



FEATURES

Connectors

- 1 screw connector for the Photovoltaic Cell + 2 screw connector for AC input signal
- 1 screw connector + 1 JST connector for the Storage Element
- 1 screw connector for LOAD
- 1 screw connector for RZMPP

Configuration

- 3 jumpers R_MPP[x] to define the MPP ratio linked to the harvester technology
- 2 jumper T_MPP[x] to define the MPP timing
- 4 jumpers STO_CFG[x] to define the storage element protection levels
- 3 jumper LOAD_CFG[x] to define the LOAD voltage
- 4 resistors footprint related to the custom mode (STO_CFG[3:0]=LHHH)
- 1 jumper to set the dual cell supercapacitor BAL feature
- 5 jumpers to enable the different mode
- 1 jumper to select the rectifier

Size

- 79mm x 49mm
- 4 x M2.5 Mounting holes

SUPPORT PCB

BOM around the AEM30330

| Designator | Description | Quantity | Manufacturer | Link |
|-----------------|--|----------|--------------|---------------------------|
| U1 | AEM30330 - Symbol QFN 40-pin | 1 | e-peas | order at sales@e-peas.com |
| LDCCD | Power inductor 10 μ H - 1.76A | 1 | Murata | DFE252010F-100M |
| CLOAD | Ceramic Cap 47 μ F, 6.3V, 20%, X5R 0603 | 1 | Murata | GRM188R60J476ME15 |
| CINT | Ceramic Cap 10 μ F, 6.3V, 20%, X5R 0402 | 1 | Murata | GRM155R60J106ME15 |
| CSRC | Ceramic Cap 15 μ F, 6.3V, 20%, X5R 0402 | 1 | Murata | GRM155R60J156ME05 |
| CSTO (optional) | Ceramic Cap 100 μ F, 6.3V, 20%, X5R 1206 | 1 | TDK | C3216X5R1A107M160AC |

Footprint & Symbol: Informations available on the datasheet



STEP 1: AEM30330 Configuration

| Configuration pins | | MPPT timing | |
|--------------------|----------|-------------------|-----------------|
| T_MPP[1] | T_MPP[0] | Sampling duration | Sampling period |
| 0 | 0 | 3.67 ms | 21.30 ms |
| 0 | 1 | 6.33 ms | 341.00 ms |
| 1 | 0 | 86.30 ms | 1.37 s |
| 1 | 1 | 1.37 s | 87.40 s |



- **MPP timing** : T_MPP[0] – T_MPP[1]
- **MPP ratio**: R_MPP[0] – R_MPP[1] – R_MPP[2]

| Configuration pins | | | MPPT ratio |
|--------------------|----------|----------|------------------------------------|
| R_MPP[2] | R_MPP[1] | R_MPP[0] | V _{MPP} / V _{OC} |
| 0 | 0 | 0 | 35% |
| 0 | 0 | 1 | 50% |
| 0 | 1 | 0 | 60% |
| 0 | 1 | 1 | 65% |
| 1 | 0 | 0 | 70% |
| 1 | 0 | 1 | 75% |
| 1 | 1 | 0 | 80% |
| 1 | 1 | 1 | ZMPP |

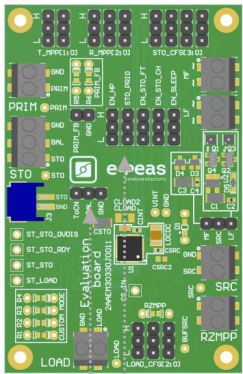
- **Storage Element voltages protection**: STO_CFG[3] – STO_CFG[2] – STO_CFG[1] – STO_CFG[0]

| Configuration pins | | | | Storage element threshold voltages | | | Typical use |
|--------------------|------------|------------|------------|------------------------------------|--------------------|-------------------|----------------------------|
| STO_CFG[3] | STO_CFG[2] | STO_CFG[1] | STO_CFG[0] | V _{OVDIS} | V _{CHRDY} | V _{OVCH} | |
| 0 | 0 | 0 | 0 | 3.00 V | 3.50 V | 4.05 V | Li-Ion battery |
| 0 | 0 | 0 | 1 | 2.80 V | 3.10 V | 3.60 V | LiFePO4 battery |
| 0 | 0 | 1 | 0 | 1.85 V | 2.40 V | 2.70 V | NiMH battery |
| 0 | 0 | 1 | 1 | 0.20 V | 1.00 V | 4.65 V | Dual-cell supercapacitor |
| 0 | 1 | 0 | 0 | 0.20V | 1.00V | 2.60V | Single-cell supercapacitor |
| 0 | 1 | 0 | 1 | 1.00 V | 1.20 V | 2.95 V | Single-cell supercapacitor |
| 0 | 1 | 1 | 0 | 1.85 V | 2.30 V | 2.60 V | NGK |
| 0 | 1 | 1 | 1 | Custom Mode | | | |
| 1 | 0 | 0 | 0 | 1.10 V | 1.25 V | 1.50 V | Ni-Cd 1 cells |
| 1 | 0 | 0 | 1 | 2.20 V | 2.50 V | 3.00 V | Ni-Cd 2 cells |
| 1 | 0 | 1 | 0 | 1.45 V | 2.00 V | 4.65 V | Dual-cell supercapacitor |
| 1 | 0 | 1 | 1 | 1.00 V | 1.20 V | 2.60 V | Single-cell supercapacitor |
| 1 | 1 | 0 | 0 | 2.00 V | 2.30 V | 2.60 V | ITEN / Umal Murata |
| 1 | 1 | 0 | 1 | 3.00 V | 3.50 V | 4.35 V | Li-Po battery |
| 1 | 1 | 1 | 0 | 2.60 V | 2.70 V | 4.00 V | Tadiran TLI1020A |
| 1 | 1 | 1 | 1 | 2.60 V | 3.50 V | 3.90 V | Tadiran HLC1020 |

- **LOAD voltage**: LOAD_CFG[2] – LOAD_CFG[1] – LOAD_CFG[0]

| Configuration pins | | | LOAD output voltage | | | |
|--------------------|-------------|-------------|-----------------------|-----------------------|-----------------------|-----------------------|
| LOAD_CFG[2] | LOAD_CFG[1] | LOAD_CFG[0] | V _{LOAD,MIN} | V _{LOAD,MID} | V _{LOAD,TYP} | V _{LOAD,MAX} |
| 0 | 0 | 0 | 3.15 V | 3.23 V | 3.28 V | 3.34 V |
| 0 | 0 | 1 | 2.35 V | 2.47 V | 2.50 V | 2.53 V |
| 0 | 1 | 0 | 1.64 V | 1.75 V | 1.79 V | 1.82 V |
| 0 | 1 | 1 | 1.14 V | 1.16 V | 1.20 V | 1.23 V |
| 1 | 0 | 0 | 1.39 V | 1.56 V | 1.61 V | 2.63 V |
| 1 | 0 | 1 | 1.39 V | 1.56 V | 1.61 V | 4.65 V |
| 1 | 1 | 0 | Reserved, do not use | | | |
| 1 | 1 | 1 | Reserved, do not use | | | |

- **BAL option**: Select “ToCn” for dual-cells supercapacitor and “GND” for any other storage
- **Configuration mode**: EN_HP – STO_PRIO – EN_STO_FT – EN_STO_CH – EN_SLEEP
Connect to H for enabling the feature, connect to L for disabling the feature



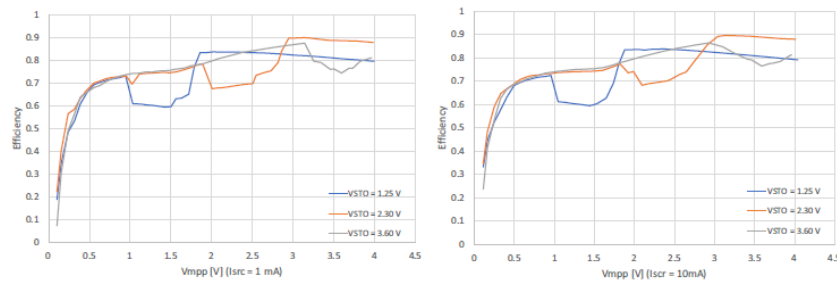


STEP 2: Connect the Storage Element

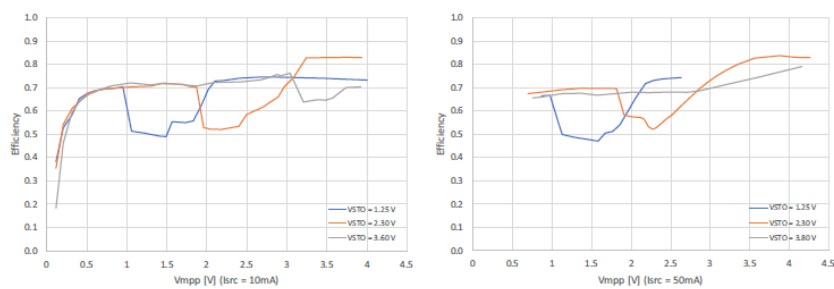
STEP 3: Connect the Load on LOAD

STEP 4: Connect the Photovoltaic Cell

- Internal Boost efficiency Vs. input voltage in Low Power mode:



- Internal Boost efficiency Vs. input voltage in High Power mode:



STEP 5: Check the Status

| Symbol | Logic Level | Low | High |
|--------------------------|--|-----|------------|
| Logic output pins | | | |
| ST_STO | Logic output levels on the status STO pins | GND | V_{STO} |
| ST_LOAD | Logic output levels on the status LOAD pins | GND | V_{LOAD} |
| ST_STO_RDY | Logic output levels on the status STO_READY pins | GND | V_{LOAD} |
| ST_STO_OVDIS | Logic output levels on the status BACKUP pins | GND | V_{LOAD} |

