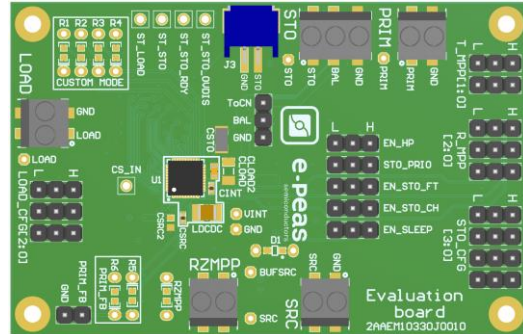


AEM10330

Quick Start Guide EVK



FEATURES

Connectors

- 1 screw connector for the Photovoltaic Cell
- 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 modes

Size

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

SUPPORT PCB

BOM around the AEM10330

Designator	Description	Quantity	Manufacturer	Link
U1	AEM10330 - Symbol QFN 40-pin	1	e-peas	order at sales@e-peas.com
LDCDC	Power inductor 10 µH - 1.76A	1	Murata	DFE252010F-100M
CLOAD	Ceramic Cap 47 µF, 6.3V, 20%, X5R 0603	1	Murata	GRM188R60J476ME15
CINT	Ceramic Cap 10 µF, 6.3V, 20%, X5R 0402	1	Murata	GRM155R60J106ME15
CSRC	Ceramic Cap 15 µF, 6.3V, 20%, X5R 0402	1	Murata	GRM155R60J156ME05
CSTO (optional)	Ceramic Cap 100 µF, 6.3V, 20%, X5R 1206	1	TDK	C3216X5R1A107M160AC

Footprint & Symbol: Informations available on the datasheet





STEP 1: AEM10330 Configuration



- **MPP timing** : $T_MPP[0] - T_MPP[1]$

Configuration pins		MPPT timing	
$T_MPP[1]$	$T_MPP[0]$	Sampling duration	Sampling period
0	0	5.33 ms	341 ms
0	1	85.3 ms	5.46 s
1	0	341 ms	21.8 s
1	1	1.37 s	87.40 s

- **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	60%
0	0	1	65%
0	1	0	70%
0	1	1	75%
1	0	0	80%
1	0	1	85%
1	1	0	90%
1	1	1	ZMPP

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

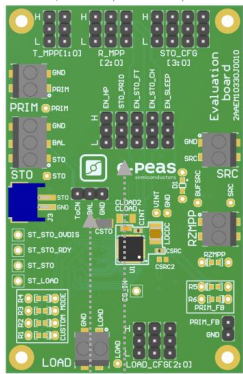
Configuration pins				Storage element threshold voltages			Typical use
$STO_CFG[3]$	$STO_CFG[2]$	$STO_CFG[1]$	$STO_CFG[0]$	V_{OVDIS}	V_{CHRDY}	V_{OVCH}	
0	0	0	0	3.00 V	3.50 V	4.05 V	Li-Ion battery
0	0	0	1	2.80 V	3.10 V	3.60 V	LiFePO4 battery
0	0	1	0	1.85 V	2.40 V	2.70 V	NiMH battery
0	0	1	1	0.20 V	1.00 V	4.65 V	Dual-cell supercapacitor
0	1	0	0	0.20V	1.00V	2.60 V	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_MD}	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



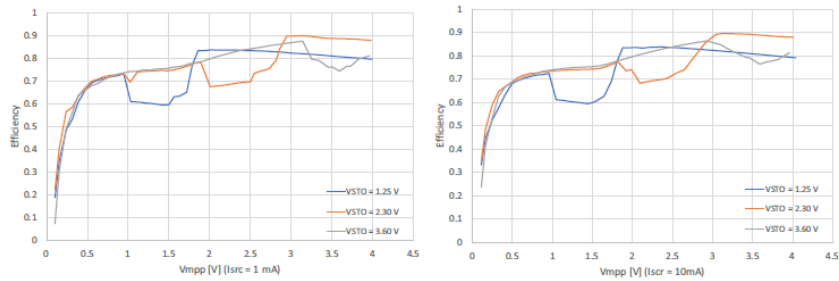


STEP 2: Connect the Storage Element

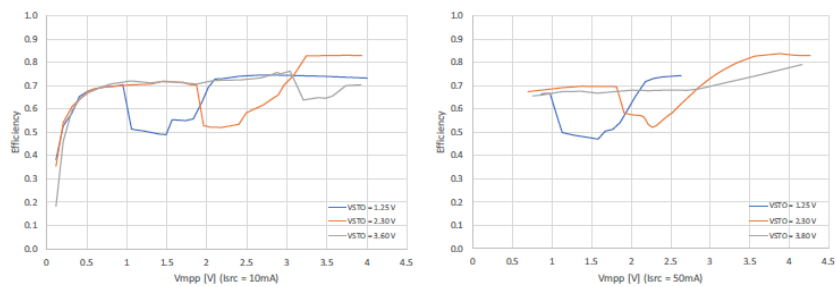
STEP 3: Connect the Load to LOAD

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}

