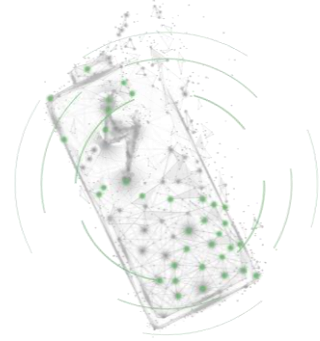
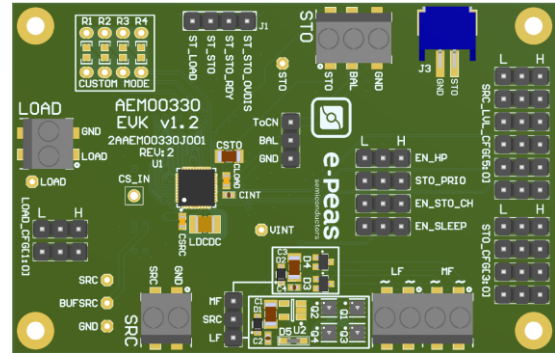




AEM00330

Quick Start Guide EVK



FEATURES

Connectors

- 1 screw connector for the source + 2 screw connectors for AC input signal.
- 1 screw connector + 1 JST connector for the storage element.
- 1 screw connector for the application circuit.

Configuration

- 6 headers SRC_LVL_CFG[5:0] to configure the source voltage regulation.
- 4 headers STO_CFG[3:0] to configure the storage element protection levels.
- 4 resistor footprints, R1 to R4, related to the custom mode (STO_CFG[3:0]=LHHH).
- 2 headers LOAD_CFG[1:0] to configure the LOAD voltage.
- 1 header to set the dual-cell supercapacitor BAL feature.
- 4 headers to configure the different modes.
- 1 header to select the rectifier.

Size

- 76mm x 49mm.
- 4 x M2.5 mounting holes.

SUPPORT PCB

BOM around the AEM00330

Designator	Description	Quantity	Manufacturer	Part Number
U1	AEM00330 - Symbol QFN 40-pin	1	e-peas	order at sales@e-peas.com
L _{DCDC}	Power inductor 10 μ H - 1.76A	1	Murata	DPE252010F-100M
C _{INT}	Ceramic Cap 10 μ F, 6.3V, 20%, X5R 0402	1	Murata	GRM155R60J106ME15
C _{SRC}	Ceramic Cap 22 μ F, 10V, 20%, X5R 0603	1	Murata	GRM188R61A226ME15D
C _{LOAD}	Ceramic Cap 47 μ F, 6.3V, 20%, X5R 0603	1	Murata	GRM188R60J476ME15
C _{STO} (optional)	Ceramic Cap 150 μ F, 6.3V, 20%, X5R 1206	1	Murata	GRM31CR60J157ME11L

Footprint & Symbol: Information available in the datasheet.





STEP 1: Configure the AEM00330



Source voltage regulation: SRC_LVL_CFG[5:0]

Configuration pins						Voltage Level
SRC_LVL_CFG[5:0]						V _{SRC,REG}
L	L	L	L	L	L	0.14 V
L	L	L	L	L	H	0.17 V
L	L	L	L	H	L	0.20 V
L	L	L	L	H	H	0.23 V
L	L	L	H	L	L	0.26 V
L	L	L	H	L	H	0.30 V
L	L	L	H	H	L	0.34 V
L	L	L	H	H	H	0.39 V
L	L	H	L	L	L	0.43 V
L	L	H	L	L	H	0.48 V
L	L	H	L	H	L	0.52 V
L	L	H	L	H	H	0.57 V
L	L	H	H	L	L	0.61 V
L	L	H	H	L	H	0.66 V
L	L	H	H	H	L	0.70 V
L	L	H	H	H	H	0.75 V
L	H	L	L	L	L	0.80 V
L	H	L	L	L	H	0.84 V
L	H	L	L	H	L	0.89 V
L	H	L	L	H	H	0.95 V
L	H	L	H	L	L	1.05 V
L	H	L	H	L	H	1.14 V
L	H	L	H	H	L	1.23 V
L	H	L	H	H	H	1.32 V
L	H	H	L	L	L	1.41 V
L	H	H	L	L	H	1.50 V
L	H	H	L	H	L	1.59 V
L	H	H	L	H	H	1.68 V
L	H	H	H	L	L	1.77 V
L	H	H	H	L	H	1.86 V

Configuration pins						Voltage Level
SRC_LVL_CFG[5:0]						V _{SRC,REG}
L	H	H	H	H	L	1.95 V
L	H	H	H	H	H	2.05 V
H	L	L	L	L	L	2.14 V
H	L	L	L	L	H	2.23 V
H	L	L	L	H	L	2.32 V
H	L	L	L	H	H	2.41 V
H	L	L	H	L	L	2.50 V
H	L	L	H	L	H	2.59 V
H	L	L	H	H	L	2.68 V
H	L	L	H	H	H	2.77 V
H	L	H	L	L	L	2.86 V
H	L	H	L	L	H	2.95 V
H	L	H	L	H	L	3.05 V
H	L	H	L	H	H	3.14 V
H	L	H	H	L	L	3.23 V
H	L	H	H	L	H	3.32 V
H	L	H	H	H	L	3.41 V
H	L	H	H	H	H	3.50 V
H	H	L	L	L	L	3.59 V
H	H	L	L	L	H	3.68 V
H	H	L	L	H	L	3.77 V
H	H	L	L	H	H	3.86 V
H	H	L	H	L	L	3.95 V
H	H	L	H	L	H	4.05 V
H	H	L	H	H	L	4.14 V
H	H	L	H	H	H	4.23 V
H	H	H	L	L	L	4.32 V
H	H	H	L	L	H	4.41 V
H	H	H	L	H	L	4.50 V

Storage element voltages protection: STO_CFG[3:0]

Configuration pins				Storage element threshold voltages			Typical use
STO_CFG[3:0]				V _{OVDIS}	V _{CHRDY}	V _{OVCH}	
L	L	L	L	3.00 V	3.50 V	4.05 V	LiCoO ₂ battery, Li-Po battery, Lithium Titanate (3.8 V) battery (long life).
L	L	L	H	2.80 V	3.10 V	3.60 V	LiFePO ₄ battery, Lithium capacitor (LiC).
L	L	H	L	1.85 V	2.40 V	2.70 V	Dual-cell NiMH battery, Lithium-Titanate (2.4V) battery.
L	L	H	H	0.20 V	1.00 V	4.65 V	Dual-cell supercapacitor.
L	H	L	L	0.20 V	1.00 V	2.60 V	Single-cell supercapacitor.
L	H	L	H	1.00 V	1.20 V	2.95 V	Single-cell supercapacitor.
L	H	H	L	1.85 V	2.30 V	2.60 V	Lithium-Titanate battery (2.4V).
L	H	H	H	Custom Mode (single-cell NiMH battery, LiC, etc.)			
H	L	L	L	1.10 V	1.25 V	1.50 V	Ni-Cd single-cell battery.
H	L	L	H	2.20 V	2.50 V	3.00 V	Ni-Cd dual-cell battery.
H	L	H	L	1.45 V	2.00 V	4.65 V	Dual-cell supercapacitor.
H	L	H	H	1.00 V	1.20 V	2.60 V	Single-cell supercapacitor.
H	H	L	L	2.00 V	2.30 V	2.60 V	Solid State battery.
H	H	L	H	3.00 V	3.50 V	4.35 V	LiCoO ₂ battery, Li-Po battery, Lithium Titanate (3.8 V) battery.
H	H	H	L	2.60 V	2.70 V	4.00 V	Tadiran TLI.
H	H	H	H	2.60 V	3.50 V	3.90 V	Tadiran HLC.

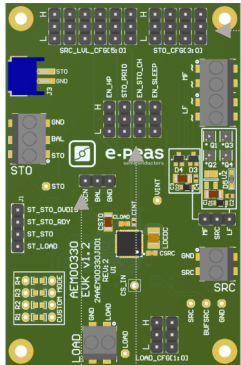
LOAD voltage: LOAD_CFG[1:0]

Configuration pins		LOAD output voltage			
LOAD_CFG[1:0]		V _{LOAD,MIN}	V _{LOAD,MID}	V _{LOAD,TYP}	V _{LOAD,MAX}
L	L	3.15 V	3.23 V	3.28 V	3.34 V
L	H	2.35 V	2.47 V	2.50 V	2.53 V
H	L	1.64 V	1.75 V	1.79 V	1.82 V
H	H	1.14 V	1.16 V	1.20 V	1.23 V

BAL option: Select “ToCn” to use the balancing or “GND” to disable it.

Configuration mode: Jumper to H to enable or to L to disable the features:

- EN_HP: High power mode enabling.
- STO_PRIO: Storage element charge priority over LOAD at start-up.
- EN_STO_CH: Storage element charge enabling.
- EN_SLEEP: Sleep State enabling.



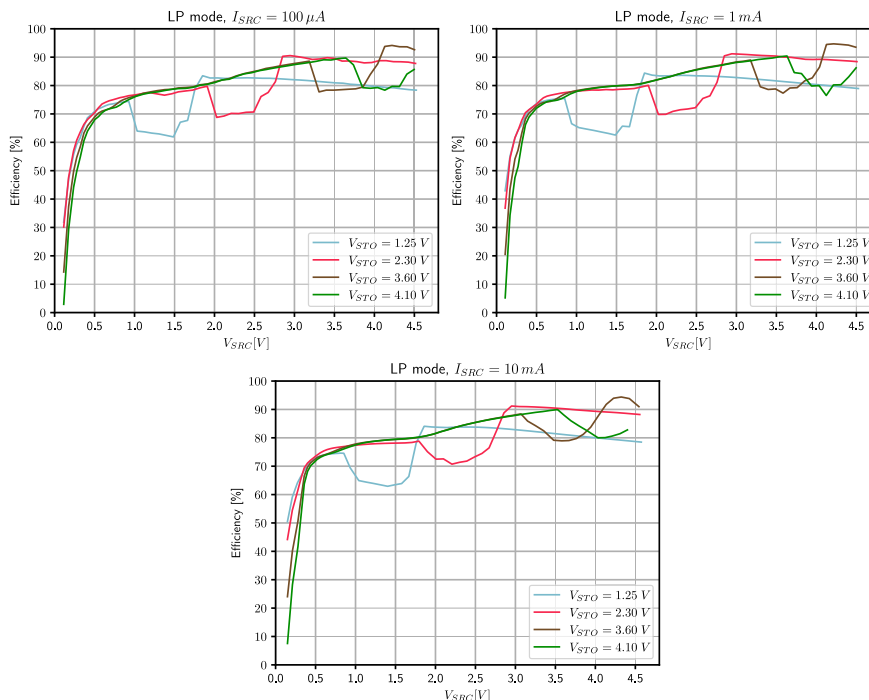


STEP 2: Connect the storage element

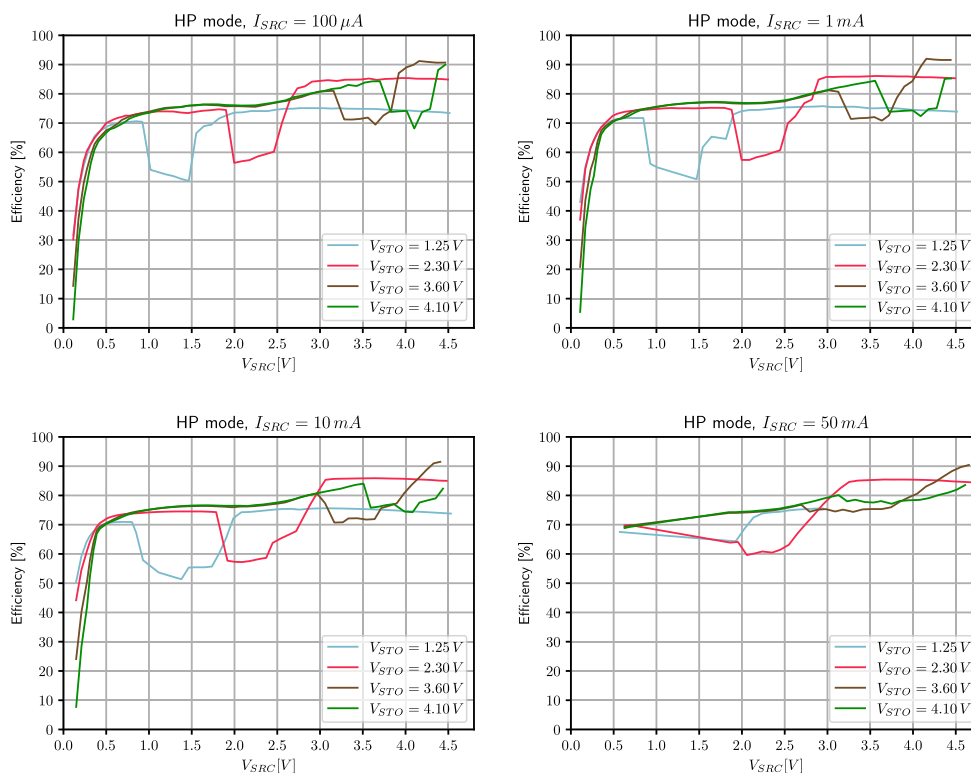
STEP 3: Connect the harvester



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



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



STEP 4: Check the status

Status Pins				
ST_LOAD	36	Logic Output	HIGH: V_{LOAD} LOW: V_{LOAD}	HIGH when the LOAD voltage V_{LOAD} rises above the $V_{LOAD, TYP}$ threshold. LOW when V_{LOAD} drops below $V_{LOAD, MIN}$ threshold.
ST_STO_RDY	37	Logic Output	HIGH: V_{STO} LOW: V_{STO}	HIGH when V_{STO} is above V_{CHRDY} . LOW when V_{STO} drops below V_{CHRDY} .
ST_STO_OVDIS	38	Logic Output	HIGH: V_{LOAD} LOW: V_{LOAD}	HIGH when the AEM00330 state is SHUTDOWN STATE. LOW when in any other state.
ST_STO	40	Logic Output	HIGH: V_{STO} LOW: V_{STO}	HIGH when the storage device voltage V_{STO} rises above V_{CHRDY} threshold. LOW when V_{STO} drops below the V_{OVDIS} threshold.

