AC Power Cell
OPP-00002-00

Product Description

The AC Power Cell contains microGen's AC Power Generator on a break outboard for easy mounting and connections. The AC Power Generator is a MEMS-based piezoelectric vibration energy harvester that utilizes a cantilever design. Fixed frequency and/or sharp impulse vibration sources cause the cantilever to flex, creating a time-modulated strain and resulting charge generation in the piezoelectric material. This charge can be extracted as an alternating current (AC) output voltage. The breakout board has resistors and connections which give the user configurability of the device and easy connection to microGen's Power Management AC to DC conversion boards (not included).

Specifications

Overview			
Manufacture model number		OPP-1001-00	
Mass (g)		14.4	
Capacitance (nF)		1.8 - 2.1	
Dimensions (mm)		40.6 x 40.6 x 6.85	
Device Package		68 pin QFN	
Resonance Mode			
Resonant Frequency (Hz)		500 - 700	
Q Factor		> 200	
Min acceleration low frequency (g)		0.5	
Recommended max acceleration (g)		2.5	
Maximum average AC power (uWatts)		200	
Impulse Mode			
Max acceleration (g)		~300	
Recommended impulse duration (ms)		< 1	
Impulse frequency* (Hz)	1-5	Est. power (µWatts)	5-40
*half-sine, 0.7ms base width, 300G peak	5-10		40-70
	10-20		70-100

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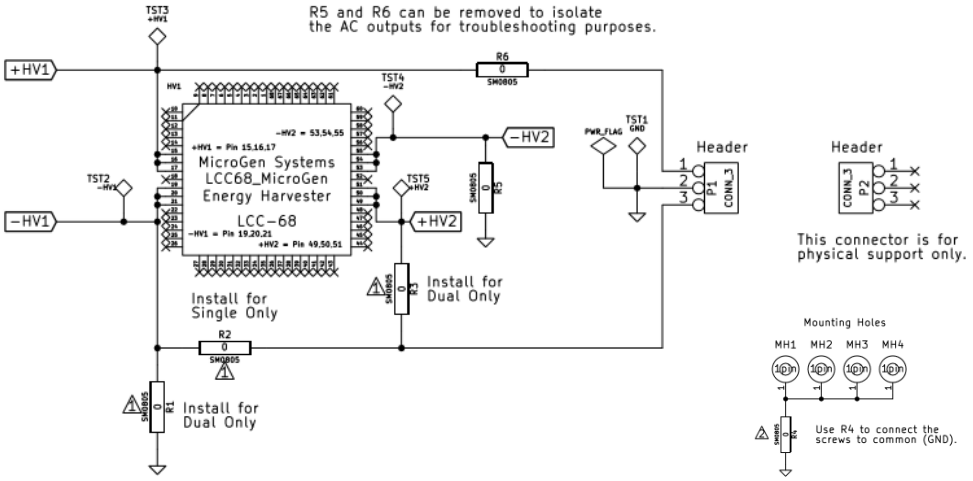

Figure 1: AC Power Cell Schematic

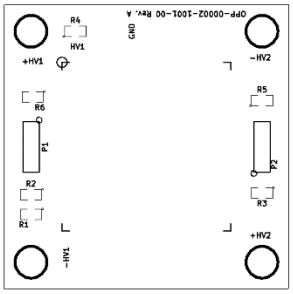

Figure 2: Component layout

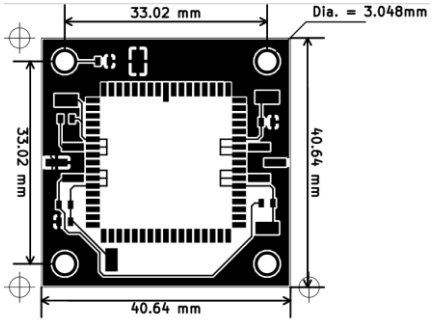

Figure 3: Board Mechanical Dimensions

Connector	Pin Number(s)	Connection Type	IO Type	Description
P1	1	Header	Output	AC+ Cantilever 1
P1	2	Header	Output	Ground
P1	3	Header	Output	Physical Support Only
P2	1	Header	N/A	Physical Support Only
P2	2	Header	N/A	Physical Support Only
P2	3	Header	N/A	Physical Support Only

Reference Designator	Value	Description
+HV1, -HV1	NA	Harvester probe points
+HV2, - HV2	NA	Not used
R1	0 Ohm	Install for dual cantilever harvester only
R2	0 Ohm	Install for single cantilever harvester only
R3	0 Ohm	Install for dual cantilever harvester only
R4	0 Ohm	Connect screw holes to common
R5	0 Ohm	Connect –HV2 to ground
R6	0 Ohm	Connect +HV1 to output P1

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