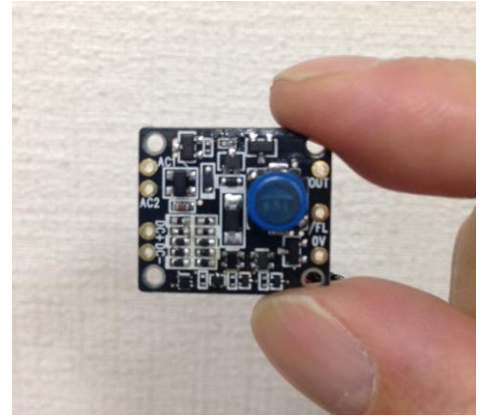


High efficiency and low power consumption Energy harvesting power management module

EHPM series

A power management module specialized for energy harvesting elements with ultra-low current output such as power electret generation elements and piezoelectric power generation elements.



■ Features

- Compatible with energy harvesting elements with high voltage output, high output impedance, and ultra-low current output
 - Lineup in 5V steps from 10V to 50V input voltage
 - Added 100V input voltage to the lineup
 - Step-down operation possible from an average input current of $0.5\mu\text{A}$
- Ultra-low power consumption (standby power $2\mu\text{W}$ or less)
- High efficiency >60% at average input current of $1\mu\text{A}$
- Selectable output voltage 3.3V, 5V
- Input supports both DC and AC

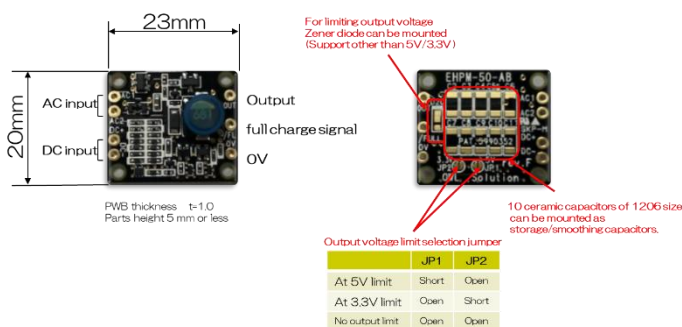
■ Application

- Electret power generation element
- Piezoelectric power generation element
- Others Energy harvesting element with high voltage output, high output impedance, and ultra-low current output

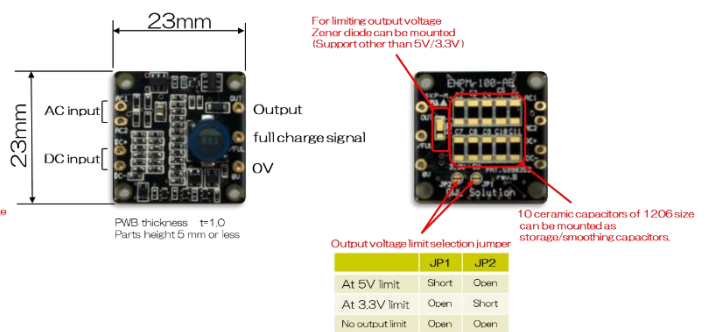
■ Appearance

■ EHPM-XX-AB

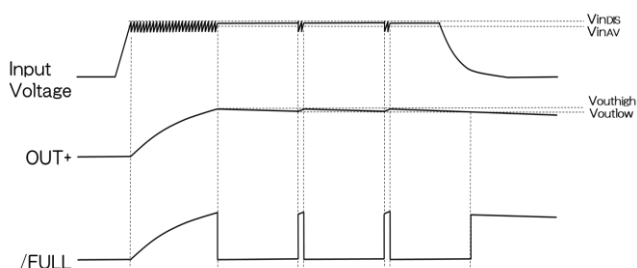
XX : 10, 15, 20, 25, 30, 35, 40, 45, 50



■ EHPM-100-AB

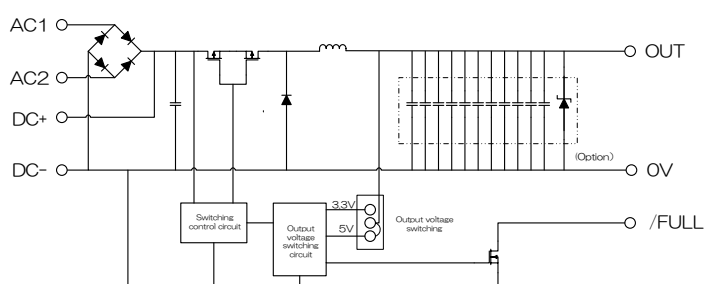


■ Time Chart



(Note) The /FULL signal above is the waveform when pulled up at OUT+ (Output voltage)

■ Block Diagram



■ Specification

Model		EHPM-10-AB	EHPM-15-AB	EHPM-20-AB	EHPM-25-AB	EHPM-30-AB
Average input voltage (V)	VinAV	10	15	20	25	30
Input discharge start voltage (V)	Vindis	11	17	23	28	34
Average output voltage (V)	VoutAV	3.38V or 5.13V (selectable)				
Output upper limit voltage (V)	Vouthigh	3.47V or 5.25V				
Output lower limit voltage (V)	Voutlow	3.3V or 5.0V				
Operable average input current (uA)	IinMIN	0.5	0.5	0.5	0.5	0.5
Maximum average input current (mA)	IinMAX	10.0	10.0	5.0	5.0	5.0
Maximum output current (mA)	IoutMAX(3.3V)	2.0	5.0	9.0	11.0	13.0
	IoutMAX(5V)	2.0	5.0	6.0	8.0	9.0
full charge signal		Available (open drain, active low, maximum voltage 60V, sink current 100mA, voltage 0.9V or less at low)				
AC power input		Possible (AC1, AC2 input)				

Model		EHPM-35-AB	EHPM-40-AB	EHPM-45-AB	EHPM-50-AB	EHPM-100-AB
Average input voltage (V)	VinAV	35	40	45	50	100
Input discharge start voltage (V)	Vindis	40	45	51	57	114
Average output voltage (V)	VoutAV	3.38V or 5.13V (selectable)				
Output upper limit voltage (V)	Vouthigh	3.47V or 5.25V				
Output lower limit voltage (V)	Voutlow	3.3V or 5.0V				
Operable average input current (uA)	IinMIN	0.5	0.5	0.5	0.5	0.5
Maximum average input current (mA)	IinMAX	5.0	5.0	5.0	5.0	5.0
Maximum output current (mA)	IoutMAX(3.3V)	15.0	18.0	20.0	20.0	40.0
	IoutMAX(5V)	11.0	13.0	14.0	15.0	30.0
full charge signal		Available (open drain, active low, maximum voltage 60V, sink current 100mA, voltage 0.9V or less at low)				
AC power input		Possible (AC1, AC2 input)				

■ Efficiency

Model			EHPM-10-AB	EHPM-15-AB	EHPM-20-AB	EHPM-25-AB	EHPM-30-AB
Efficiency (%) (Typical value)	Average input current at 1uA	Ef1in(Vout=3.3V)	60	65	66	68	68
		Ef1in(Vout=5V)	60	65	68	70	70
	Average input current at 5uA	Ef5in(Vout=3.3V)	77	77	75	75	75
		Ef5in(Vout=5V)	80	79	79	79	79
	Average output current at 5uA	Ef5out(Vout=3.3V)	71	70	68	68	67
		Ef5out(Vout=5V)	76	74	74	73	72

Model			EHPM-35-AB	EHPM-40-AB	EHPM-45-AB	EHPM-50-AB	EHPM-100-AB
Efficiency (%) (Typical value)	Average input current at 1uA	Ef1in(Vout=3.3V)	68	69	70	69	65
		Ef1in(Vout=5V)	71	72	73	72	70
	Average input current at 5uA	Ef5in(Vout=3.3V)	74	74	74	74	69
		Ef5in(Vout=5V)	78	78	78	78	74
	Average output current at 5uA	Ef5out(Vout=3.3V)	65	65	65	65	60(※)
		Ef5out(Vout=5V)	71	71	71	70	68(※)

(※) Measured at 10 μ A output current

If you need other input voltage, please feel free to contact us

■ Contact us

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