

## MEB-EH1

# Energy Harvesting Board including EDLC

This board is a board for stably supplying electric power obtained by environmental power generation (solar battery etc.) to the target equipment. Utilizing this board makes it possible to operate equipment operating with coin type lithium batteries (CR2032) with power from environmental power generation.

Stable power supply by environmental power generation realizes a no maintenance power supply circuit.

The key device adopted the LTC 3129. The LTC3129 is a high efficiency 200 mA buck-boost DC / DC converter with wide input voltage and output voltage range.

This device incorporates a high precision RUN pin threshold that makes the regulator turn-on predictable and a maximum power point control (MPPC) function to reliably extract the maximum power from a non-ideal power supply such as a solar cell It is.

If necessary, up to six electric double layer capacitors (EDLC) can be mounted. Please use it as energy harvest power board.

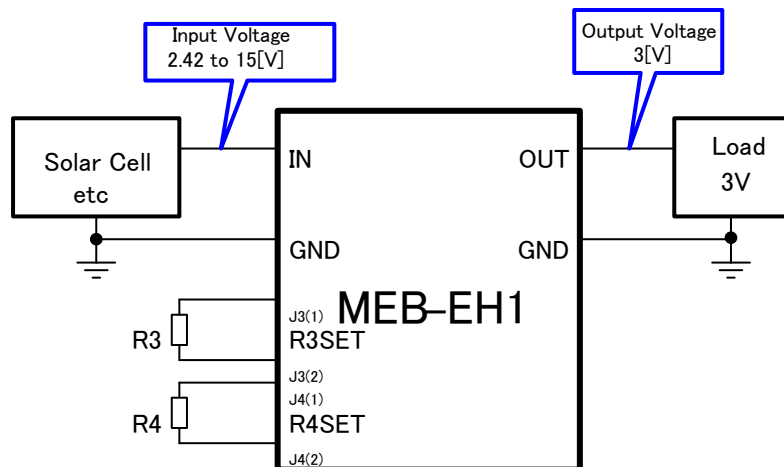
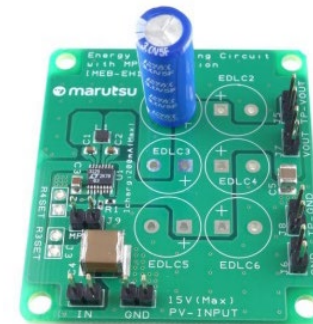
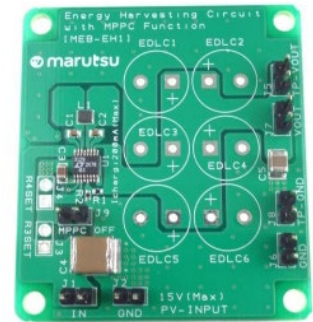


Fig1. Application block diagram of MEB-EH1

## Features

- Programmable Maximum Power Point Control
- It inputs from the solar cell and supplies power stably
- Extensive Input Voltage range: 2.42 to 15[V]
- Output is 3[V], Replaceable with 3V coin type Lithium Battery(CR2032)
- EDLC is included, 1p. Up to 6 mountable on the Board

## Specification

Table1. Input / output specifications

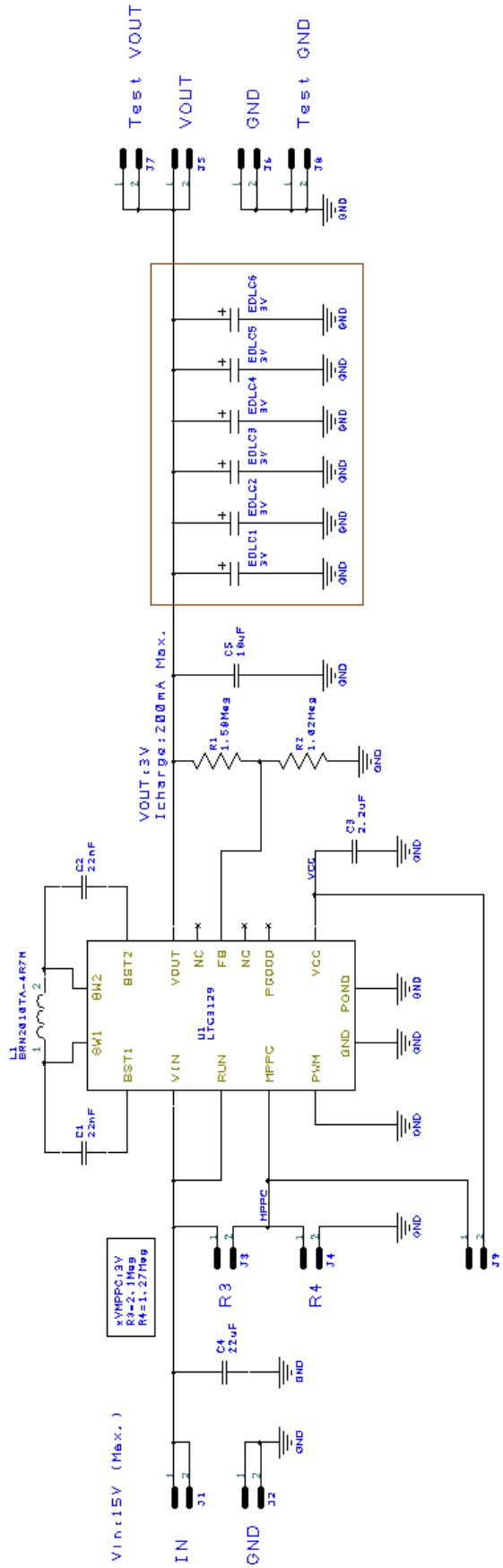
Item	Value
Input Voltage	2.42 to 15[V]
Output Voltage	3[V]
Max Output Current	0.2[A]

Table2. BOM

Designator	Part Number	Description	Quantity
U1	LTC3129IMSE#PBF	Buck-Boost Switching Regulator IC Positive Adjustable 1.4V 1-Output 200mA	1
L1	SRN2010TA-4R7M	4.7μH Unshielded Wirewound Inductor 900mA 360 mOhm	1
R1	RMCF0402FT1M58	RES 1.58M OHM 1% 1/16W 0402	1
R2	RMCF0402FT1M02	RES 1.02M OHM 1% 1/16W 0402	1
C1,C2	CGA3E2X7R1H223K080AD	0.022μF ±10% 50V Ceramic Capacitor X7R	2
C3	GRM219B31E225KA75D	2.2μF ±10% 25V Ceramic Capacitor B	1
C4	C2220C2226M5R2CAUTO7186	22μF ±20% 50V Ceramic Capacitor X7R	1
C5	UMJ325KB7106KMHT	10μF ±10% 50V Ceramic Capacitor X7R	1
J1,J2,J5-J9	GB-SPH-252	2-pin (2.54mm) pitch header	7
EDLC1	SCCR25E505SRB	5F (EDLC) Supercapacitor 3V Radial, Can 85mOhm @ 1kHz 1000 Hrs @ 60°C	6 (MAX)
EDLC2 to EDLC6			

Please refer to Linear Technology's website for specifications of LTC 3129

# Circuit Diagram



If MPPC function is not needed, tie the pin to VCC (with Jumper)

Fig2. Circuit diagram

If you do not use the MPPC function, short J9.

The setting when setting MPPC to 3 [V] is as follows  
 R3 = 2.1[MΩ] (Connect 2.1 MΩ to R3 SET terminal)  
 R4 = 1.27[MΩ] (Connect 1.27 MΩ to R4 SET terminal)

Up to 6 electric double layer capacitors (EDLC) can be mounted on the board as necessary.

## About EDLC

When connecting a solar cell to the input, there is a problem that power can not be obtained at night. When EDLC is mounted on this board, you can supply power to the equipment connected to the output by discharging EDLC at night by charging EDLC in the daytime. Although the capacity increases as the number of EDLCs to be installed increases, there is a disadvantage that the charging time becomes longer. If necessary EDLC, Please use it.

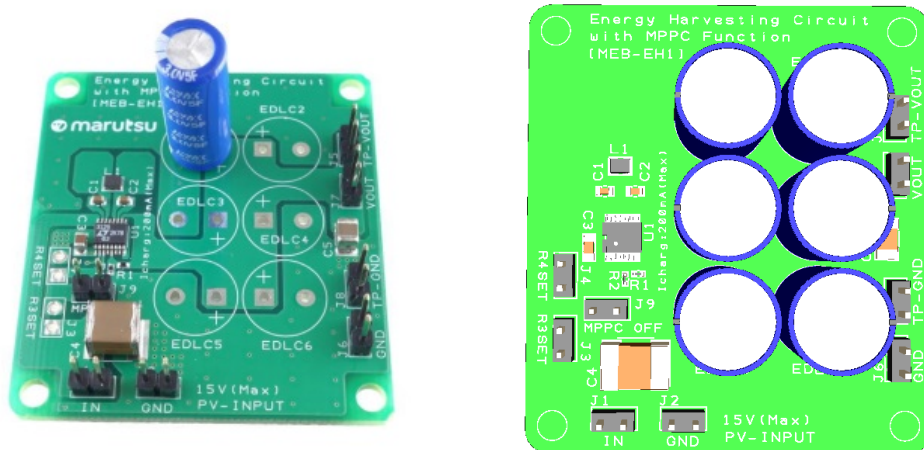


Fig 3. Image when EDLC is mounted  
(Left figure: EDLC 1p , Right figure:EDLC 6pcs)

### ◆ Important Note ◆

● This product was not designed for use with devices which could cause personal injury in the event of failure or malfunction, including devices for use in areas including medical, military, aviation, aerospace, nuclear control, other types of safety mechanisms, etc., or for use in devices which require a high standard of safety. Do not use this product for such applications. This company assumes no liability for damages which may result from use of the product.

Manufactured and Distributed by



Marutsuelec Co., Ltd.

5-2-2, Seiki Daiichi Building 7F, Sotokanda,  
Chiyoda-ku, Tokyo 101-0021, Japan

Tel: +81-3-6803-0209 FAX: +81-3-6803-0213