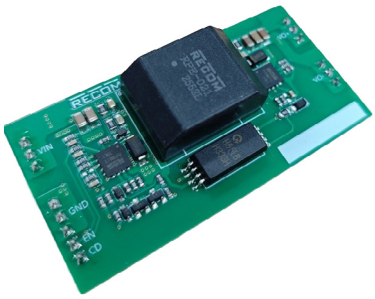
DS-RVPW011-RPE-021-RVSW013-2403-1

5~8W ◊ Regulated Isolated Output ◊ 2:1 Input

RECOM
DC/DC Converter

FEATURES

- Wide input range (16V - 32V)
- Bidirectional Balancing Power Supply
- Isolation voltage 6kVDC/min
- Operating temperature: -40°C to +85°C



Dimensions (LxWxH): 66.04 x 33.02 x 12.0 mm(2.6 x 1.3 x 0.47 inch)
12.85g (0.028lbs)

DESCRIPTION

This solution is a bidirectional charging module with an input voltage range of 16V–32V and a typical constant output current of 2A. The output voltage ranges from 2V to 4V, and the conversion efficiency reaches up to 82%. It features an isolation voltage of 6000VDC and is suitable for active voltage balancing applications between storage batteries or supercapacitor banks. When the EN pin is disabled, the module's standby current is less than 5uA, which prevents battery power consumption during standby mode. The solution is equipped with output no-load protection and output short-circuit protection, and it can operate reliably within a temperature range of -40°C to 85°C, ensuring high reliability in various working conditions.

SELECTION GUIDE

Part Number	Input Voltage Range [VDC]	Output Voltage [VDC]	Output Current max. [mA]	Efficiency typ. [%]
DS-RVPW011-RPE-021-RVSW013-2403-1	16-32	2.5-4	2000	82

BASIC CHARACTERISTIC (measured @ T_{AMB}= 25°C, nominal Input and full load after warm-up time unless otherwise stated)

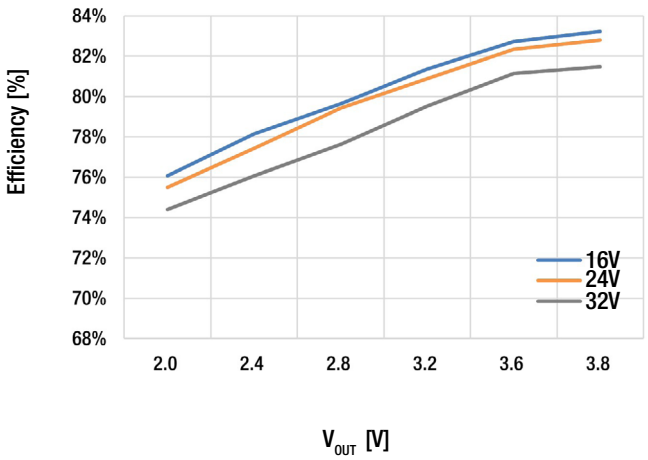
Parameter	Condition	Min.	Typ.	Max.
Forward Operation	Input voltage range (voltage across V_{IN} and GND)	16VDC	24VDC	32VDC
	Output voltage range (voltage across V_{OUT+} and V_{OUT-})	2.5VDC		4VDC
Reverse Operation	Input voltage range (voltage across V_{OUT+} and V_{OUT-})	2.5VDC		4.5VDC
	Output voltage range (voltage across V_{IN} and GND)	16VDC		32VDC
Internal Operating Frequency			200kHz	

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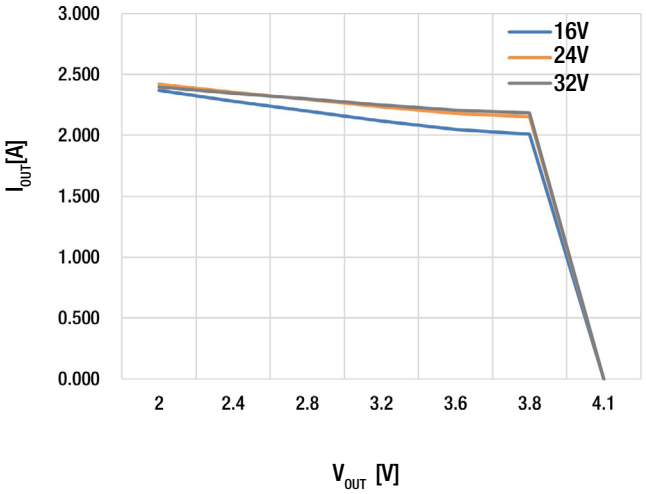
SPECIFICATIONS (measured @ T_{AMB}= 25°C, nominal Input and full load after warm-up time unless otherwise stated)

Forward Operation

Typical Effiency vs. Output Voltage Curve

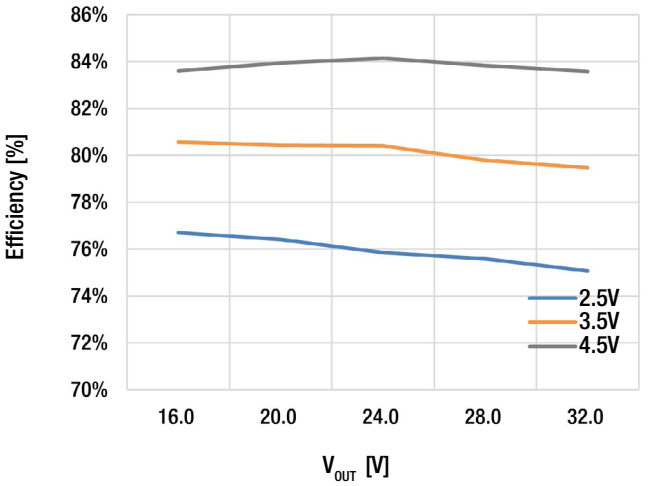


Typical Output Current vs. Output Voltage Curve

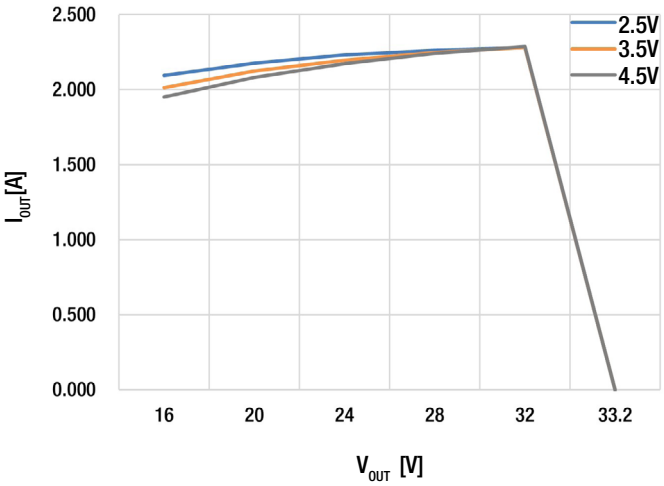


Reverse Operation

Typical Effiency vs. Output Voltage Curve



Typical Output Current vs. Output Voltage Curve



REGULATIONS

Parameter	Condition	Values
Isolation Voltage	tested for 1 minute	6kVDC per min.
Insulation Grade		basic

ENABLE LOGIC

Logic State	Description
EN = 0, CD = 0	Bidirectional balancing is disabled
EN = 1, CD = 0	Bidirectional balancing operates in forward direction
EN = 1, CD = 1	Bidirectional balancing operates in reverse direction
Note: Control pin voltage levels: Voltage < 1V = Logic Low (0) Voltage 2.8V–3.8V = Logic High (1)	

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DS-RVPW011-RPE-021-RVSW013-2403-1

5~8W ◊ Regulated Isolated Output ◊ 2:1 Input

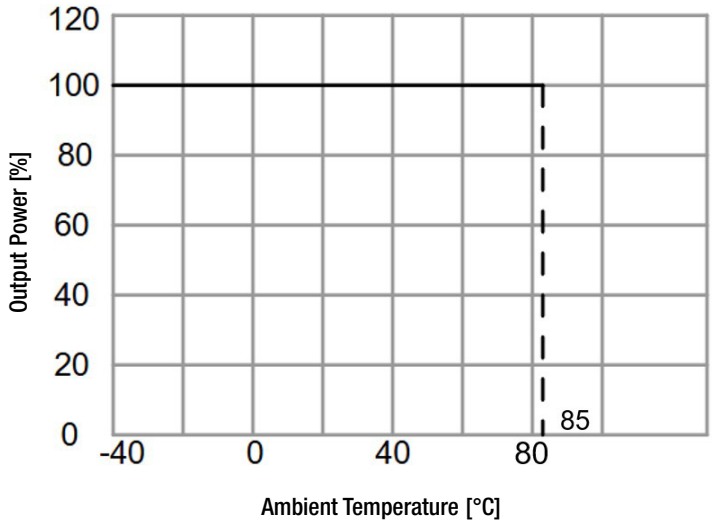
DC/DC Converter

ENVIRONMENT

Parameter	Condition	Values
Operating Temperature Range	full load	-40°C to +85°C

Derating Graph

(@ Chamber and natural convection 0.1m/s)

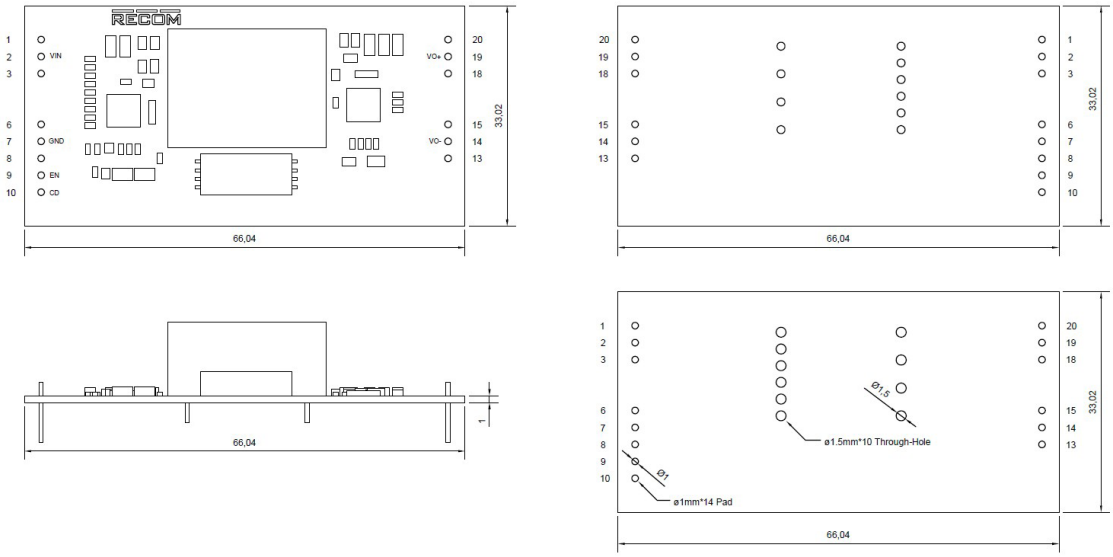


DIMENSION & PHYSICAL CHARACTERISTICS

Parameter	Type	Values
Material	PCB	FR4, (UL94 V-0)
Dimension (LxWxH)		66.04 x 33.02 x 12.0 mm
Weight		12.85g (0.028lbs)

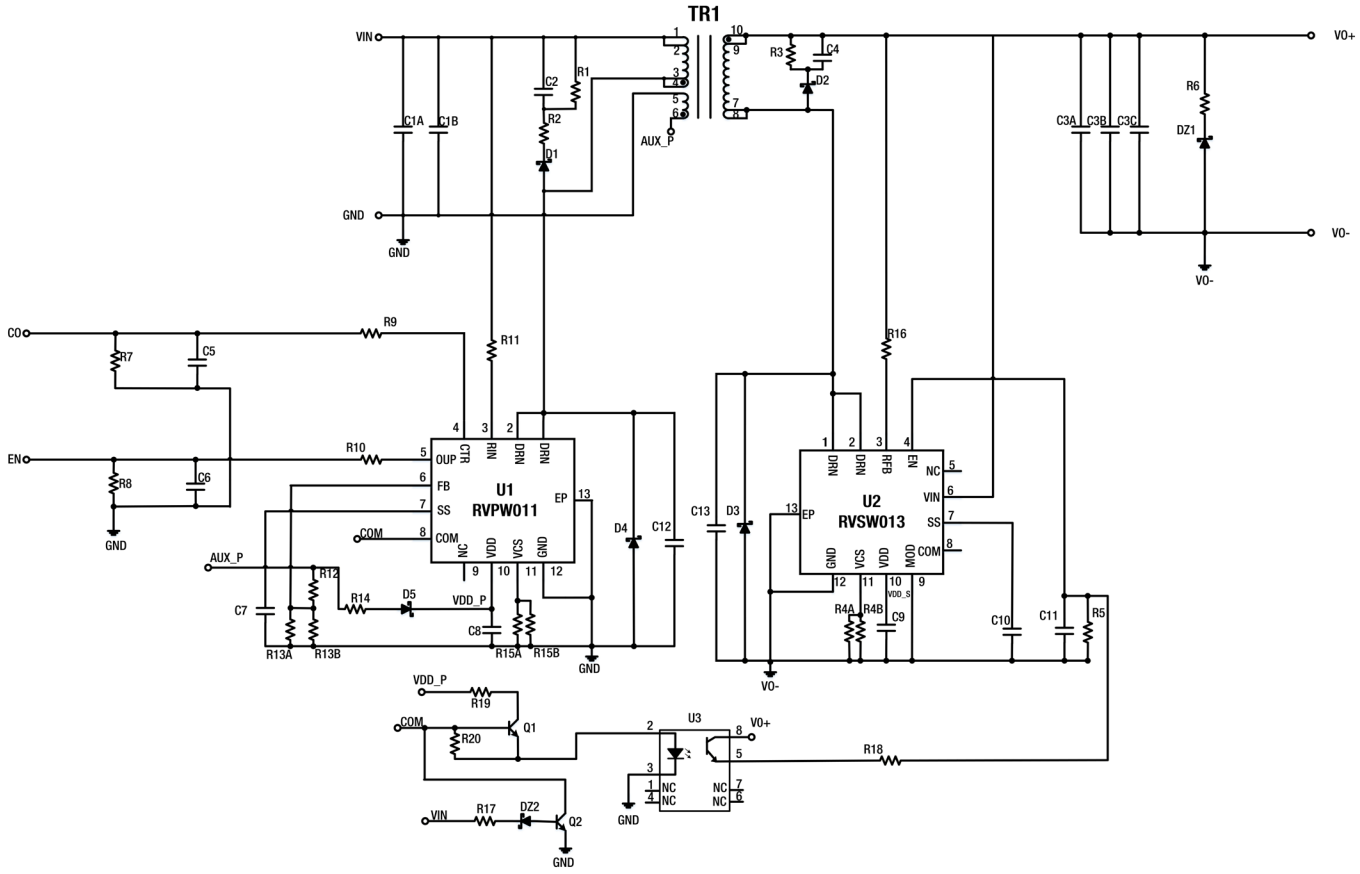
Dimension Drawing (mm)

Pinning Information	
Pin #	**Single**
1,2,3	V_{IN}
6,7,8	GND
9	EN
10	CD
13,14,15	V_{OUT-}
18,19,20	V_{OUT+}



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SCHEMATIC



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Component Designator	Description	Package	Manufacturer Part Number	Manufacturer
C1A,C1B	4.7uF±10%/50V/X7R	1206	CL31B475KBHNNNE	SAMSUNG
C2,C4	47nF±10%/100V/X7R	0805	CC0805KKX7R0BB473	YAGEO
C3A,C3B,C3C	22uF±10%/10V/X7R	1206	CL31B226KPHNNNE	SAMSUNG
C5,C6,C7,C10	100nF±10%/50V/X7R	0603	CC0603KRX7R9BB104	YAGEO
C8,C9	2.2uF±10%/16V/X7R	0603	CC0603KRX7R7BB225	YAGEO
C11	NC	-	-	-
C12,C13	1nF±10%/200V/X7R	0805	CC0805KRX7RABB102	YAGEO
D1,D2,D5	200V/200mA	SOD-323	BAV21WS	CJ
D3,D4	100V/5A	SMA	SS510A	YANGJIE
DZ1	4.3V	SOD-123	BZT52C4V3	CJ
DZ2	33V	SOD-323	BZT52C33S	CJ
Q1,Q2	60V/1A	SOT-23-3	FMMT491	CJ
R1	15kΩ±1%	0805	RC0805FR-0715KL	YAGEO
R2	10Ω±1%	0805	RC0805FR-0710RL	YAGEO
R3	5.1kΩ±1%	0805	RC0805FR-075K1L	YAGEO
R4A	39kΩ±1%	0603	RC0603FR-0739KL	YAGEO

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BOM

Component Designator	Description	Package	Manufacturer Part Number	Manufacturer
R4B,R15B	200kΩ±1%	0603	RC0603FR-07200KL	YAGEO
R5	5.1KΩ	0603	RC0603FR-075K1L	YAGEO
R6	51Ω±1%	0805	RC0805FR-0751RL	YAGEO
R7,R8,R9,R10	51kΩ±1%	0603	RC0603FR-0751KL	YAGEO
R11	390kΩ±1%	0603	RC0603FR-07390KL	YAGEO
R12,R17,R20	10kΩ	0603	RC0603FR-0710KL	YAGEO
R13A	NC	-	-	-
R13B	6.2kΩ±1%	0603	RC0603FR-076K2L	YAGEO
R14	10Ω±1%	0603	RC0603FR-0710RL	YAGEO
R15A	43kΩ±1%	0603	RC0603FR-0743KL	YAGEO
R16	160kΩ±1%	0603	RC0603FR-07160KL	YAGEO
R18	100Ω±1%	0603	RC0603FR-07100RL	YAGEO
R19	1kΩ±1%	0603	RC0603FR-071KL	YAGEO
TR1	-	THC	RPE-021	RECOM
U1	-	QFN-5*5	RVPW011	RECOM
U2	-	QFN-5*5	RVSW013	RECOM
U3	CTR=130%~260%, Viso=7.5KVDC	LSOP-8	QXH65LB-CuH-L	NQUNXIN

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