G-ENERGY

Non-Isolated DC/DC Converter Specification

RW-1211-24-48V-480W

Input voltage	Output voltage	Output current	Output power	Efficiency	Size
18-36V	48V	10A	480W	97.3%	100*80*39mm

The RW-1211-24-48V-480W is a Non-isolated DC-DC converter that uses a synchronous rectification technology, and features high efficiency and power density. It has the dimensions of 100*80*39mm and provides the rated output voltage of 48V and the maximum output current of 10A.

Features

- Design meeting RoHS / CE High efficiency:
- 97.3% (@24Vin, 25℃)
- Input transient absorption protection
- 100% full stable current output
- Support -40 °C environment
- 100% full load burn-in test
- Short circuit, Over load, Low voltage protections
- Waterproof level IP68
- 3 months warranty

Applications

- Industrial
- Alternative Energy
- Golf Cart
- Forklift
- Electromotor
- Telecommunications
- Boat & Yacht
- Medical
- LED Marketplaces and so on.

Model naming method

RW-1211-24-48V-480W

RW-1211: SKU NAME
24: Input voltage
48V : Output voltage
480W: Output Power

Electrical Specifications

Conditions: TA = 25 °C (77°F), Airflow = 1 m/s (200LFM), Vin =12V, Vout =5V, unless otherwise specified

Parameter	Min.	Typ	Max.	Units	Remarks
Absolute maximum ratings					
Operating ambient temperature	-40	-	+50	°C	
Shell ambient temperature	-40	-	80	°C	
Storage temperature	-55	-	100	°C	
Operating humidity	5	-	95	%	Non-condensing
Atmospheric pressure	62	-	106	Kpa	
Altitude	-	-	4000	m	
Cooling way	-	-	-		Natural cooling

Input characteristics

Input voltage	18	24	36	V	-
Max. input voltage	-	-	40	V	Continuous
Undervoltage shutdown	9.2	9.6	10.0	V	Automatic recovery
Undervoltage recovery	9.6	10.2	10.6	V	Automatic recovery
Max. input current	-	-	28	A	Vin =18V; Iout =10A
No load current	-	200	250	mA	Vin =24V

Positive electrode cable	12	-	-	AWG	If the wire length is greater than 50cm, it is recommended to use a thicker wire diameter.
Negative electrode cable	12	-	-	AWG	
Enable PIN cable		NA	-	AWG	If the product comes with this feature
Fuse	-	30	-	A	Input positive has built-in fuse

Output characteristics

Efficiency	-	97.3	-	%	Vin =24V; Iout =10A
Output voltage	23.8	24.2	24.4	V	Vin =24V; Iout =10A
Regulator accuracy	-	±1	-	%	
Voltage regulation	-	±1	-	%	
Load Regulation	-	±1	-	%	
Overvoltage protection	-	NA	-	V	
Output current	0	-	10	A	
Overcurrent protection	15	20	25	A	Vin=24V
External capacitance		2000	10000	μF	Don't need
Output ripple and noise	-	230	300	mVp-p	Vin=1836V;Iout=10ABa ndwidth: 20 MHz
Output voltage rise time	-	25	30	mS	
Boot delay time	-	50	80	mS	
Out voltage overshoot	-	2	3	%	Vin=24V，50%-75% Load step；
Over temperature protection	-	-	80	°C	Without overtemperature protectiong
Short circuit protection	-	-	-		
Positive electrode cable	16	-	-	AWG	If the wire length is greater than 50cm, it is recommended to use a thicker wire diameter.
Negative electrode cable	16	-	-	AWG	

Feature Description

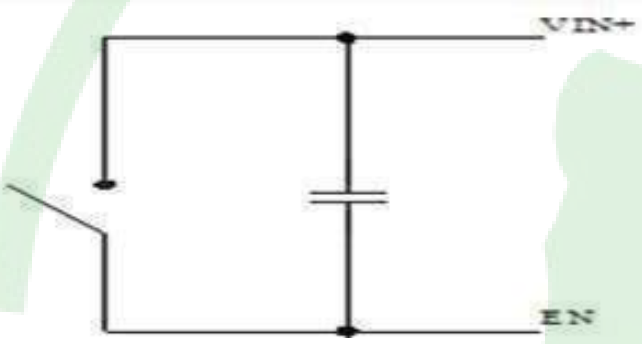
Remote On/Off (EN) (Optional)

Logic Enable	Low level (0-15Vdc)	High level (15-40Vdc)	Left open
Positive logic	Off	On	Off

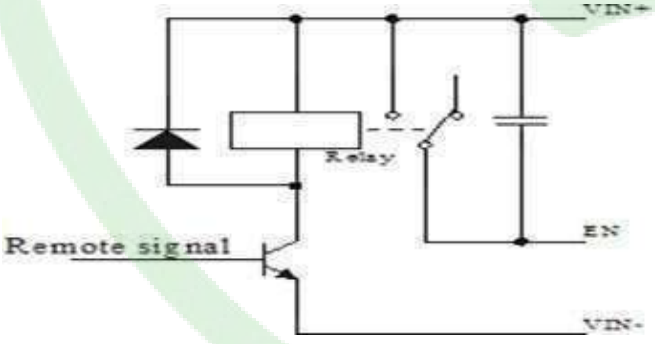
Input Undervoltage Protection

The converter will shut down after the input voltage drops below the under-voltage protection threshold for shutdown. The converter will start to work again after the input voltage reaches the input under voltage protection threshold for startup. For the Hysteresis, see

Various circuits for driving the EN



Simple control



Transistor control

Output Overcurrent Protection

The converter equipped with current limiting circuitry can provide protection from an output overload or short circuit condition. If the output current exceeds the output overcurrent protection set point, the converter enters hiccup mode. When the fault condition is removed, the converter will automatically restart.

Wiring Instructions

The input and output of this product is terminals. The user should ensure that the input and output wires and terminals are connected reliably, and pay attention to the wire diameterto meet the requirements of the power supply current. If the cable to be used is long, it needs Considering the voltage drop of the wire, if the voltage drop is too large,the voltage output at the load end may not meet the load demand.In this case, consider usinga thicker wire diameter or reducing the length of the wire. Generally, if long wiring is required. Long line should be used on the side wherethe current is relatively small.For example, this product is a stepdown product, so long lines shouldbe used on the input side

DIAGRAM WIRING

INPUT+ TO BATTERY+

INPUT- TO BATTERY-

OUTPUT+ TO LOAD+

OUTPUT- TO LOAD-

Notes: Never reverse the input polarity, or it burns the converter.

REVISION HISTORY

rev.	description	date
1.0	initial release	April 2022
2.0	revision	Nov 2024

Safety and EMC features

Anti-electric Strength	Input to Output		V	Leakage current ≤ 3.5mA, 1min, no breakdown, no arcing
	Input to Shell	≥500	V	
	Output to Shell	≥500	V	
Insulation resistance	Input to Output	≥50	MΩ	Test voltage = 500V
	Input to Shell			
	Output to Shell			

Other characteristics

Weight	≤ 550	g	
Package	White box		
MTBF	≥200,000	H	Vin= 24V; Iout= 10A
Switching frequency	220±10	KHz	

Figure 1, Efficiency

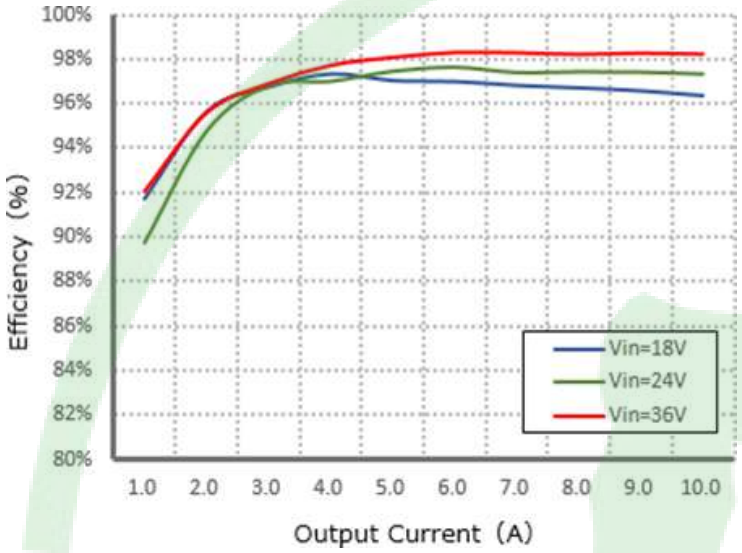


Figure 2, Power dissipation

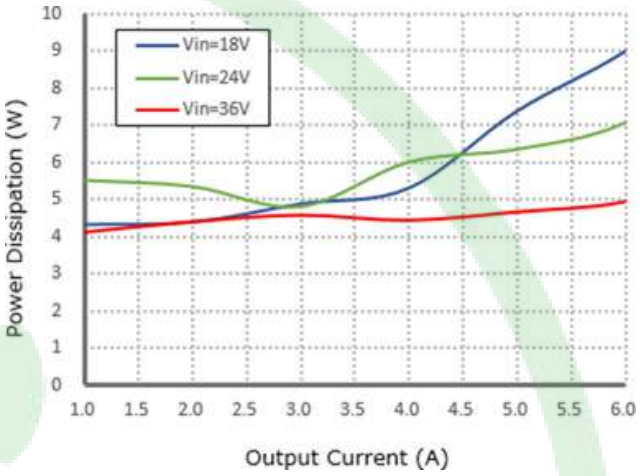
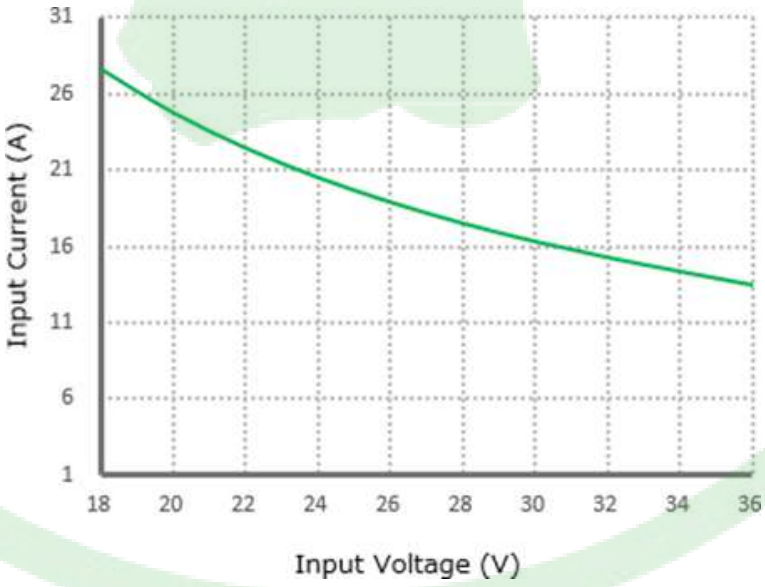


Figure 3, Input V-I, Iout=10A



Typical Waveforms

Conditions: TA = 25°C (77°F), Vin = 24V, unlessotherwise specified.

Figure 4, 25% - 50%load dynamic

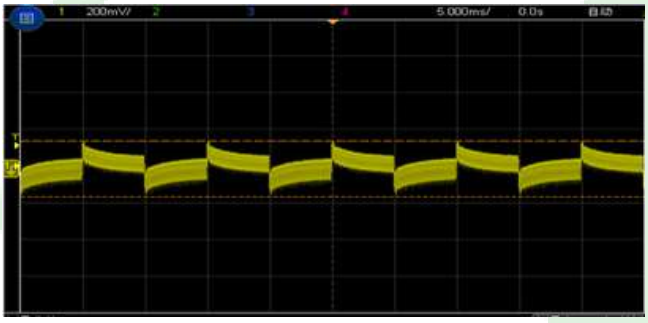


Figure 5, 50% - 75%load dynamic

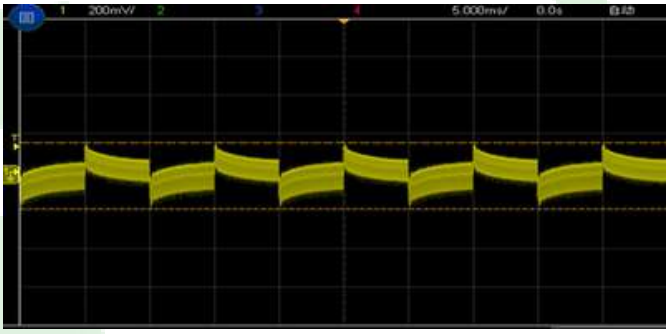


Figure 6, Output voltageestablished (Iout = 10A)

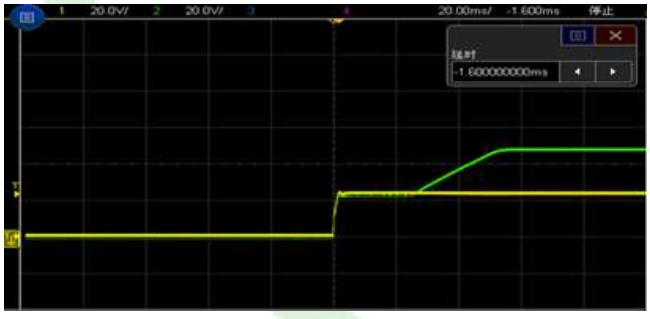
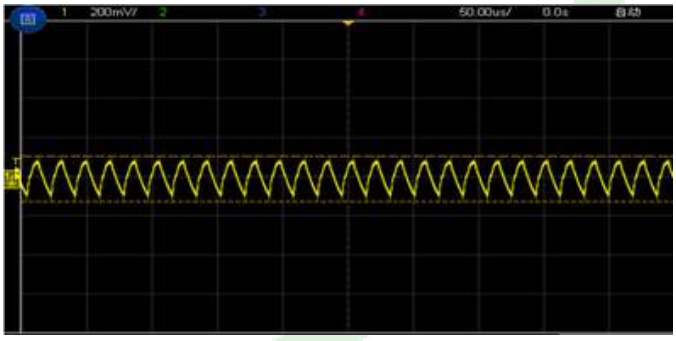
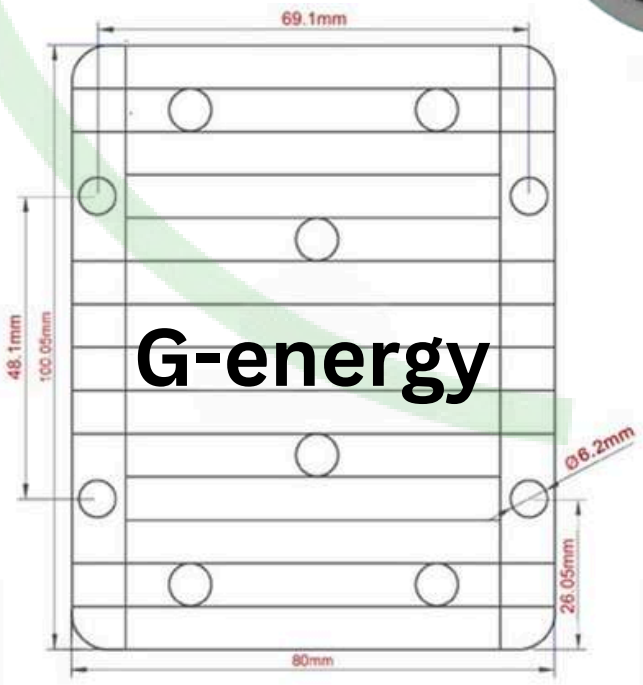


Figure 7, Output ripple& noise (Iout =10A)



Thermal Consideration

Sufficient airflow should be provided to help ensure reliable operating of the RW-1211-24-48V-480W Therefore, thermal components are mounted on the top surface of the RW-1211-24-48V-480W to dissipate heat to the surrounding environment by conduction, convection, and radiation. Proper airflow can be verified by measuring the temperature at the middle of the base plate.



Shell installation diagram

Thickness： 39mm

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