

Input Voltage	Output voltage	Output current	Output Power	Efficiency	Dimension
10-20V	24V	50A	1200W	97.8%	140*120*42.5mm



The RW-1214-12-24V-1200W 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 140mm x 120mm x 42.5mm (5.51 in. x 4.72 in. x 1.67 in) and provides the rated output voltage of 24V and the maximum output current of 50A.

## Features

- Design meeting RoHS / CE
- High efficiency: 97.8% (@24Vin, 25°C)
- Non-isolated between input and output
- OT, OL, LV protections
- Support -30 °C environment
- 100% full stable current output
- 3 month warranty
- Waterproof level IP67
- 100% full load burn-in test

## Applications

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

## Model naming method

**RW-1214-12-24V-1200W**

RW-1214: SKU NAME  
12: Input voltage range  
24V: Output voltage  
1200W: POWER

### Datasheet

Parameter	Min	Typ	Max	Units	Remarks
<b>Absolute maximum ratings</b>					
Operating ambient temperature	-30	-	+50	°C	
Shell ambient temperature	-30	-	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
<b>Input characteristics</b>					
Input voltage	10	12	20	V	
Max. input voltage	-	-	23	V	Continuous
Undervoltage shutdown	9.3	9.6	9.8	V	Automatic recovery
Undervoltage recovery	10.0	10.3	11.0	V	Automatic recovery
Max. input current	-	-	125	A	V <sub>in</sub> =10V; I <sub>out</sub> =50A
No load current	-	140	200	mA	V <sub>in</sub> =12V
Positive electrode cable	4	-	-	AWG	If the wire length is greater than 50cm, it is recommended to use a thicker wire diameter.
Negative electrode cable	4	-	-	AWG	

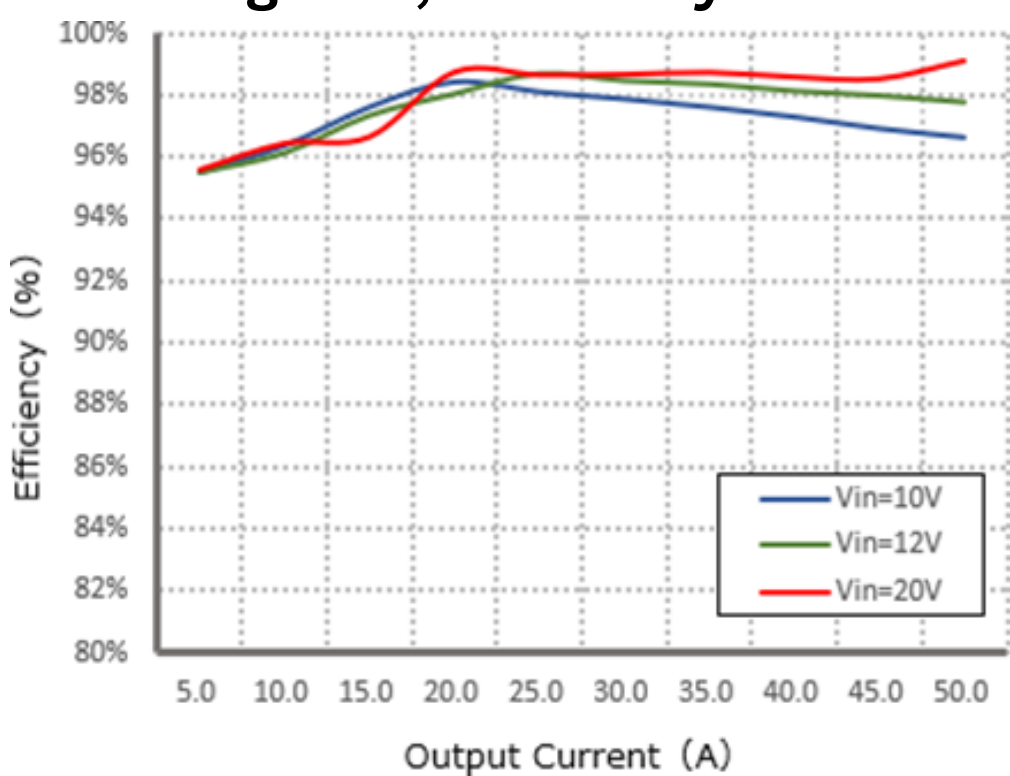
Enable PIN cable	-	NA	-	AWG	If the unit with this function
Fuse	120	-	-	A	Input positive has built-in fuse
<b>Output characteristics</b>					
Efficiency	-	97.8	-	%	Vin =12V; Iout =50A
Output voltage	11.9	12.0	12.3	V	Vin =12V; Iout =50A
Regulator accuracy	-	±3	-	%	
Voltage regulation	-	±2	-	%	
Load Regulation	-	±2	-	%	
Overvoltage protection	-	-	-	V	
Output current	0	-	50	A	Vin =10-20V
Overcurrent protection	68	69	70	A	Vin=12V
External capacitance	-	NA	-	μF	Don't need
Output ripple and noise	-	360	800	mVp-p	Vin =10-20V; Iout=50A, Oscilloscope bandwidth: 20 MHz
Output voltage risetime	-	200	300	mS	
Boot delay time	-	208	300	mS	
Out voltage overshoot	-	-	5	%	Vin =12V, 50%-75%Load step
Over temperatur protection	-	-	105	°C	Shell temperature

Short circuit protection	-	NO	-		Boost converter can't short circuit for output
Positive electrode cable	8	-	-	AWG	If the wire length is greater than 50cm, it is recommended to use a thicker wire diameter
Negative electrode cable	8	-	-	AWG	
<b>Safety and EMC features</b>					
Anti-electric Strength	Input to Output	-		V	Leakage current $\leq$ 3.5mA, 1min, no breakdown, no arcing
	Input to Shell	$\geq 500$		V	
	Output to Shell	$\geq 500$		V	
Insulation resistance	Input to Output				Test voltage = 500V
	Input to Shell	$\geq 10$		M $\Omega$	
	Output to Shell				
<b>Other characteristics</b>					
Weight	$\leq 1.2$		kg		
Package	white box				
MTBF	$\geq 200,000$		H		Vin= 12V; Iout= 50A
Switching frequency	80 $\pm$ 10		KHz		

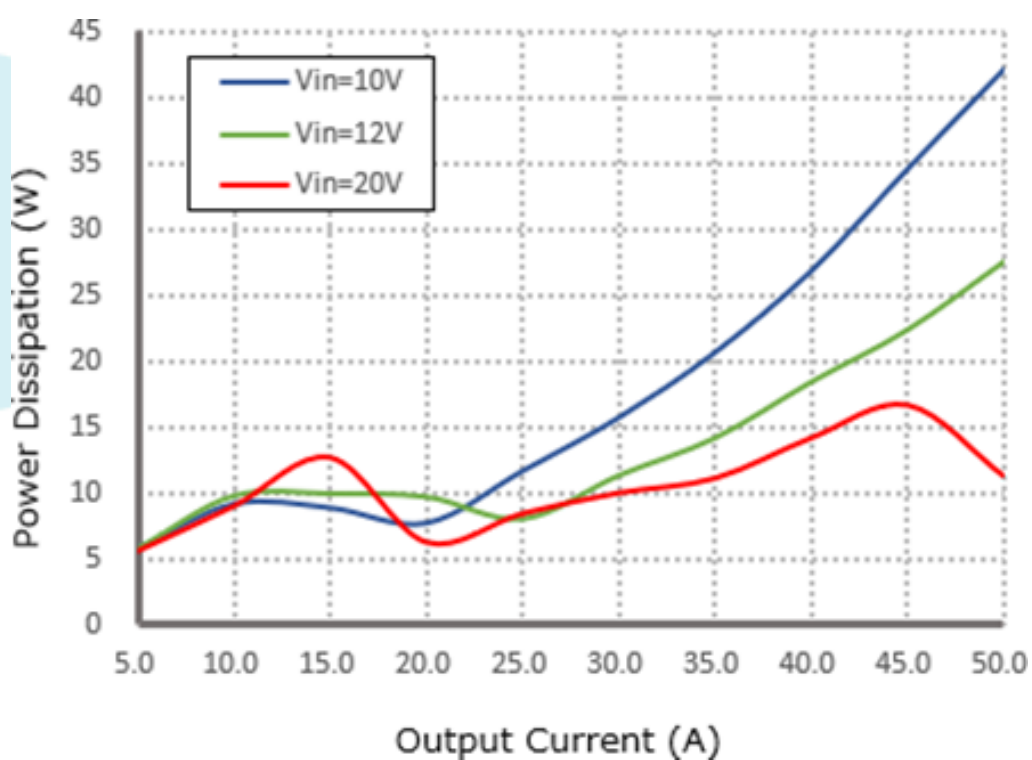
## Characteristic Curves

Conditions:  $T_A = 25^\circ\text{C}$  (77°F),  $V_{in} = 12\text{V}$ ,  $V_{out} = 24\text{V}$ , unless otherwise specified

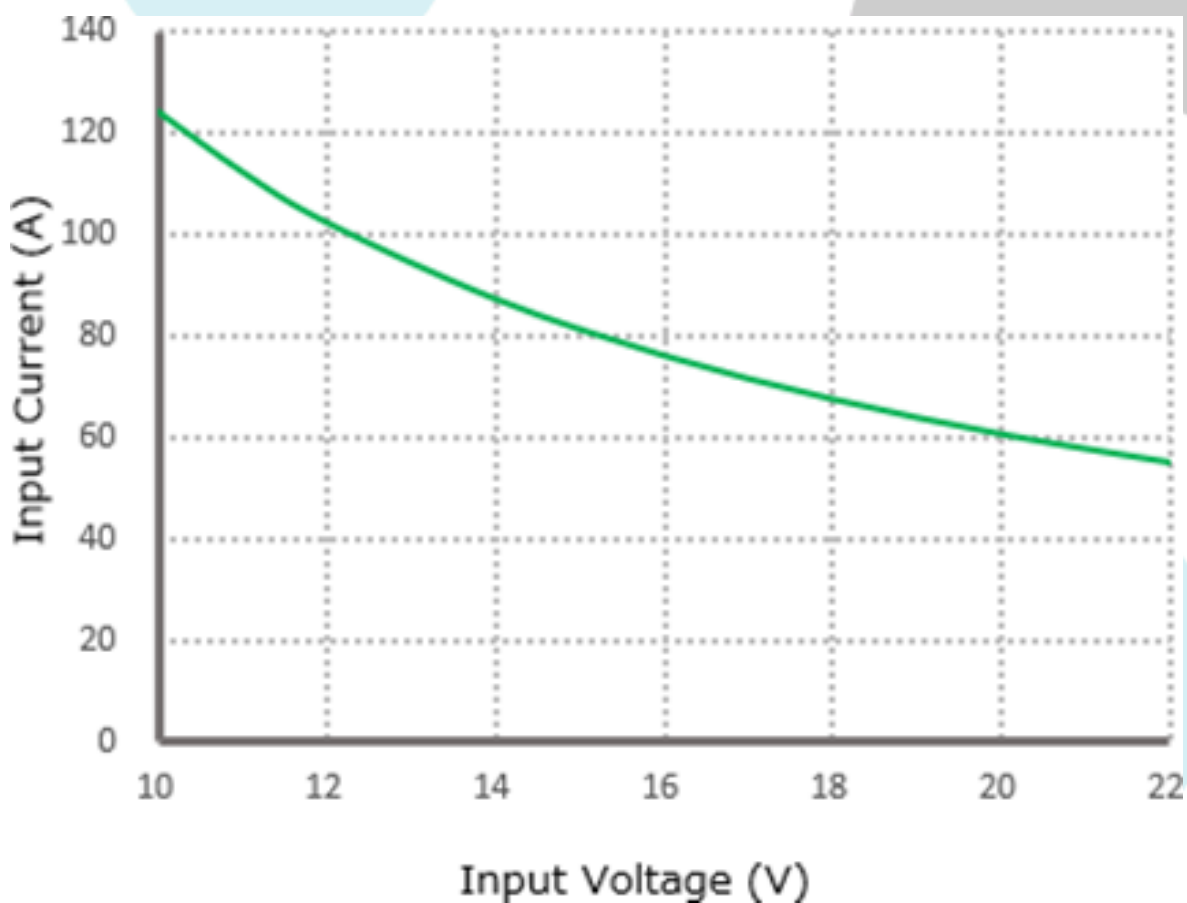
**Figure 1, Efficiency**



**Figure 2, Power dissipation**



**Figure 3, Input V-I, Iout=50A**



### Typical Waveforms

Conditions: TA = 25°C (77°F), Vin = 12V, unless otherwise specified.

Figure 4, 25% - 50%load dynamic

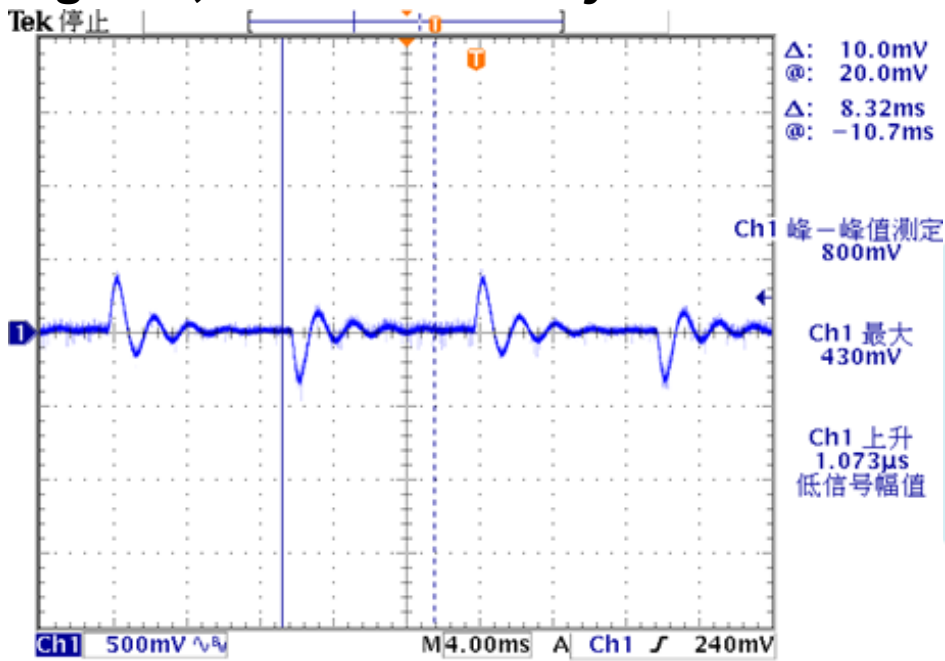


Figure 5, 50% - 75%load dynamic

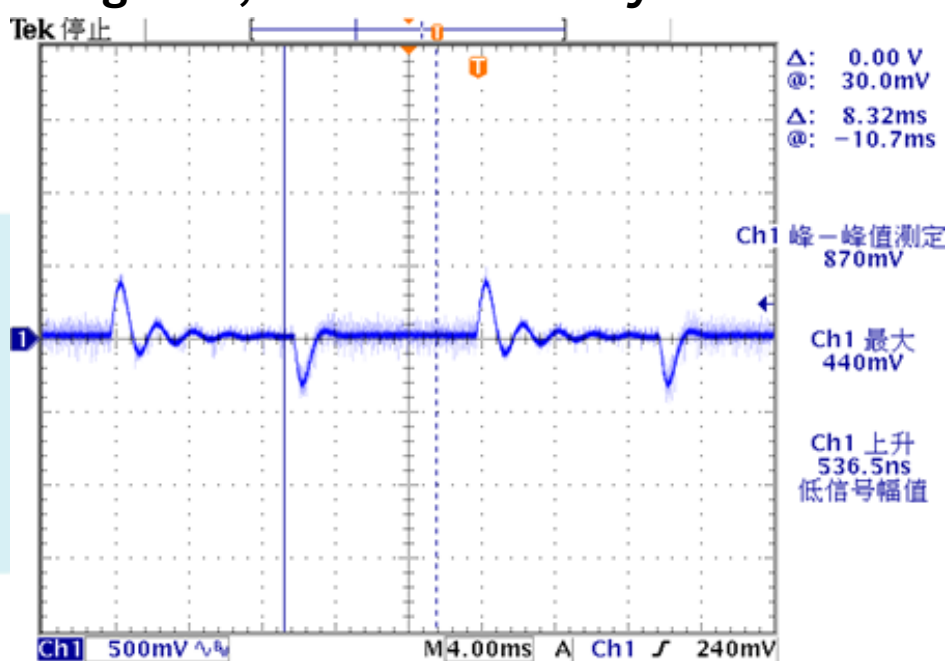


Figure 6, Output voltage established (Iout = 50A)

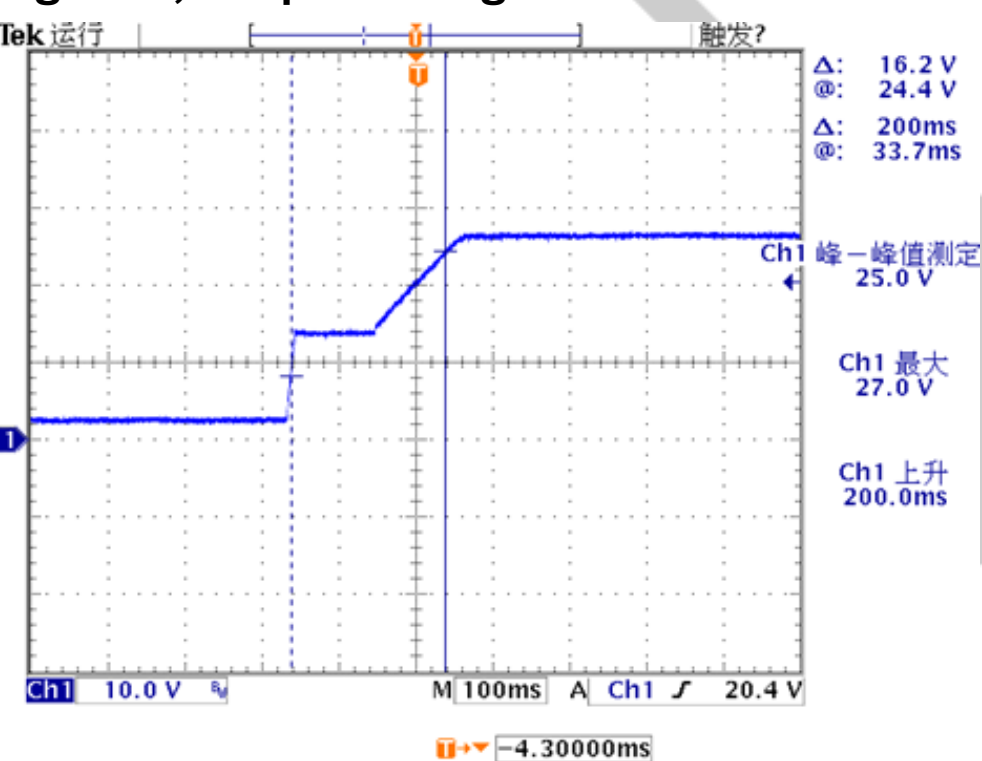


Figure 7, Output ripple & noise (Iout = 50A)

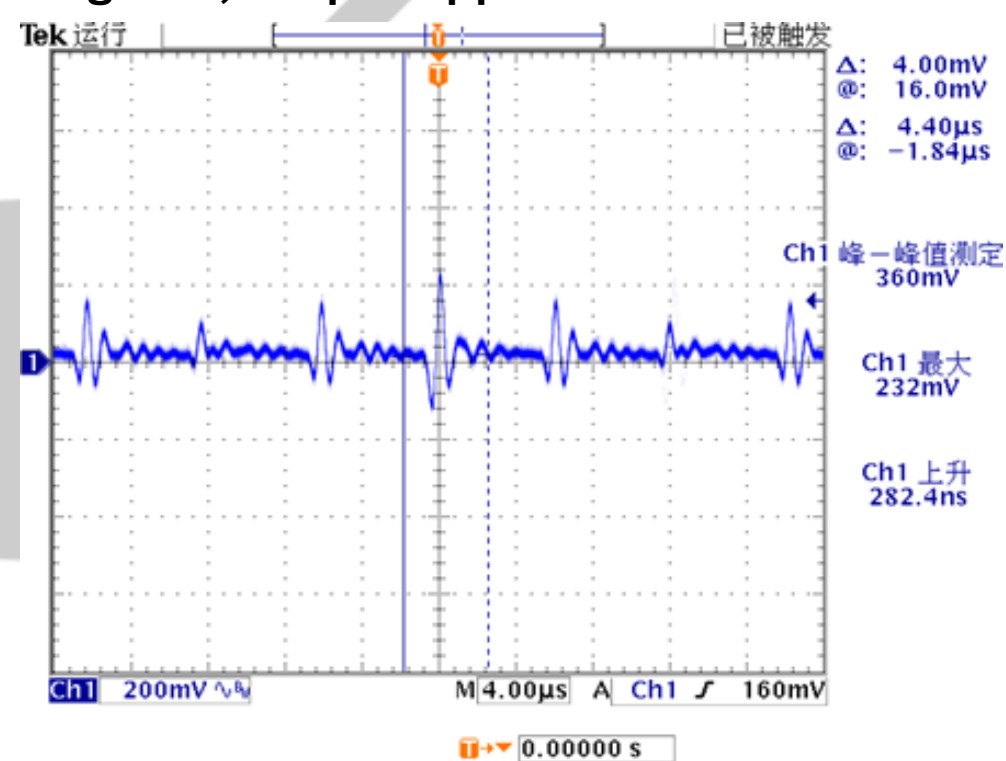
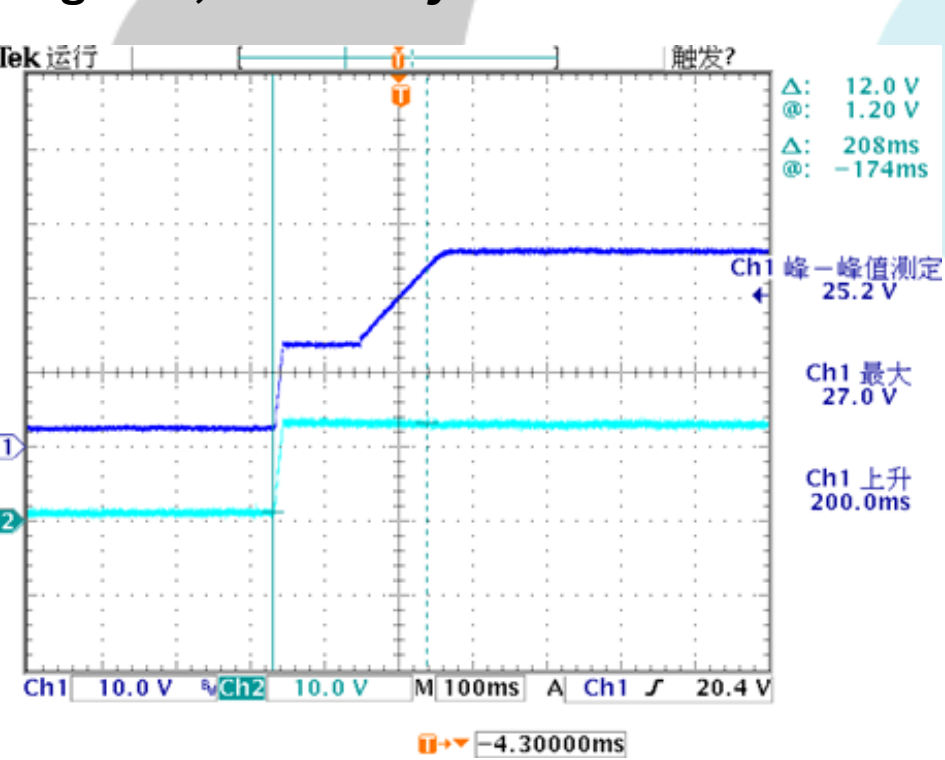


Figure 8, Boot delay time (Iout = 50A)



### Feature Description

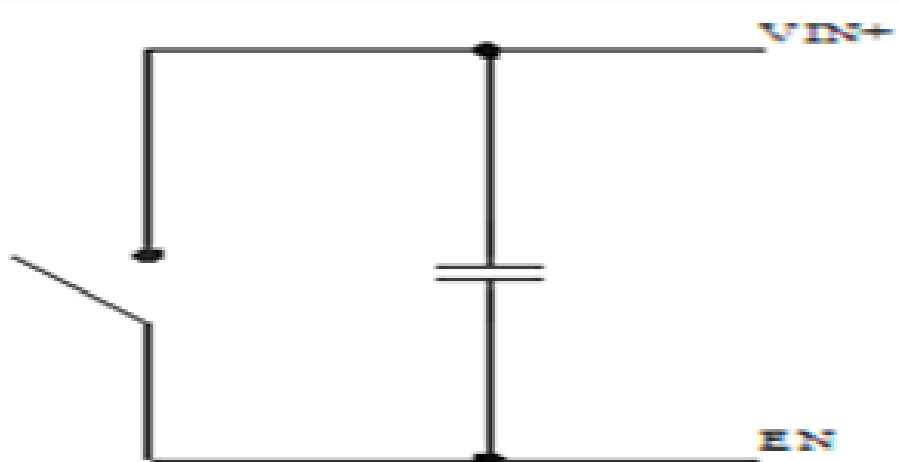
#### Remote On/Off (EN) (Optional)

Logic Enable	Low level (0-10Vdc)	High level (10-20Vdc)	Left open
positive logic	Off	On	Off

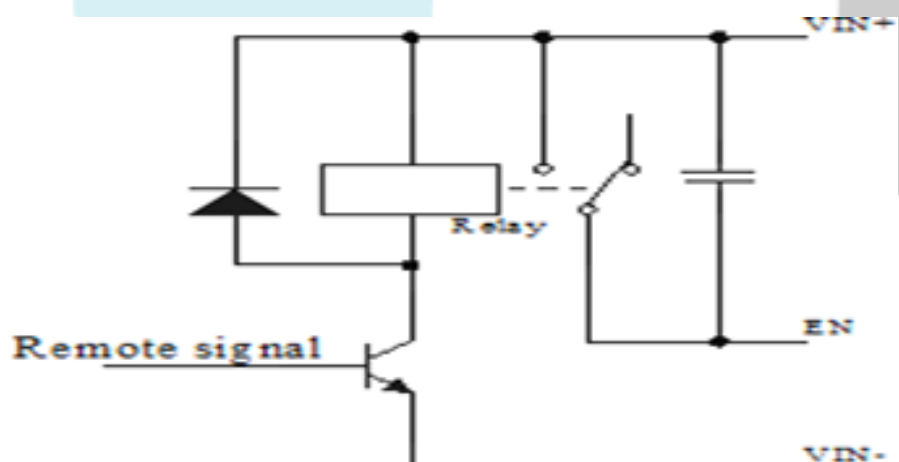
#### Input Undervoltage Protection

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 the Protection characteristics.

#### Various circuits for driving the EN



Simple control



Transistor control

#### Overtemperature Protection

A temperature sensor on the converter senses the average temperature of the module. It protects the converter from being damaged at high temperatures. When the temperature exceeds the over temperature protection threshold, the output will shut down. It will allow the converter to turn on again when the temperature of the sensed location falls by the value of Over temperature Protection Hysteresis

#### 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 diameter to 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 using a thicker wire diameter or reducing the length of the wire. Generally, if long wiring is required. Long line should be used on the side where the current is relatively small. For example, this product is a step-down product, so long lines should be used on the input side



### Thermal Consideration

Sufficient airflow should be provided to help ensure reliable operating of the RW-1214-12-24V-1200W. Therefore, thermal components are mounted on the top surface of the RW-1214-12-24V-1200W 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.

