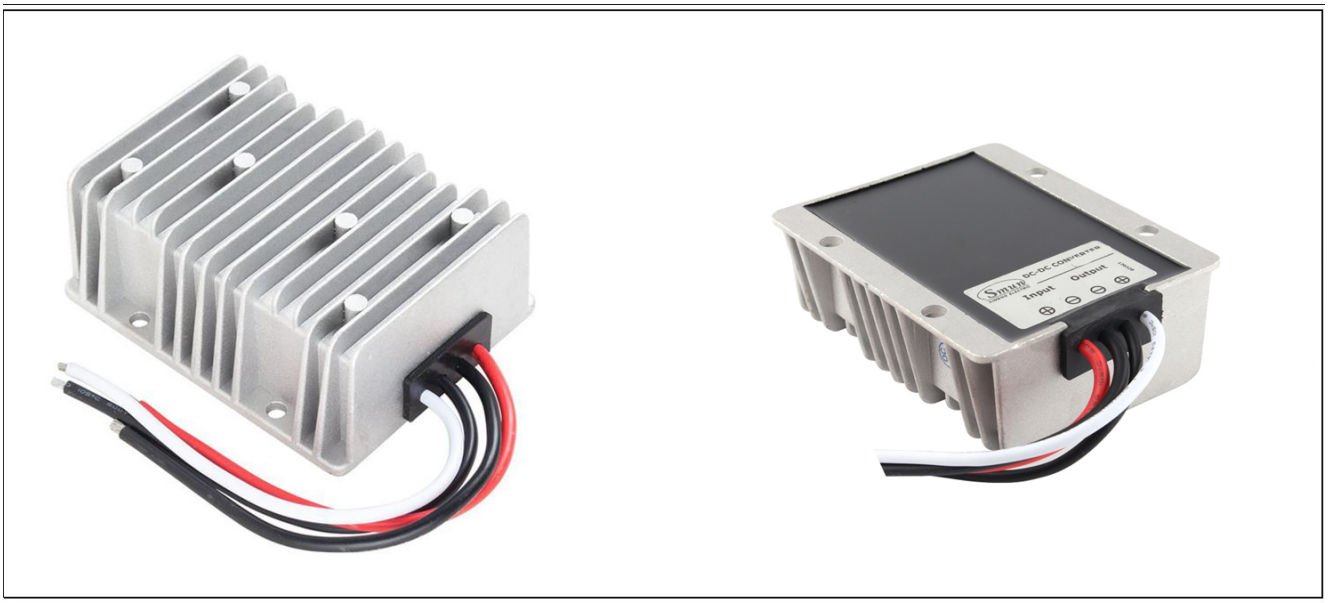
Smun
XIMENG ELECTRIC

Non-Isolated DC/DC Converter Specification

Model No.:SDJ-1224S0550Z

Input voltage	Output voltage	Output current	Output power	Efficiency	Size
10-36V DC	5V DC	50 Amps	250 Watts	88%	100*80*39mm



The SDJ-1224S0550Z 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 100mm x 80mm x 39mm (3.94 in. x 3.15 in. x 1.54 in) and provides the rated output voltage of 5V and the maximum output current of 50A.

Features

- Design meeting RoHS/CE
- 100% full stable current output
- Input transient absorption protection
- Support -40 °C environment
- High efficiency: 88% (@ 12Vin, 25℃)
- 100% full load burn-in test
- Short circuit, Over load, Over temperature protections
- Waterproof level IP68
- 1 Year warranty

Applications

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

Model naming method

SDJ-1224S0550Z

SDJ: Step down type
1224 : Input rated voltage
S : Single output type
05 : Output voltage
50 : Output current
Z : min type

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	10	12/24	36	V	-
Max. input voltage	-	-	40	V	Continuous
Undervoltage shutdown	9.2	9.6	10	V	Automatic recovery
Undervoltage recovery	9.6	10.2	10.6	V	Automatic recovery
Max. input current	-	-	36	A	Vin =8V; Iout =50 A
No load current	-	20	35	mA	Vin =12V
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	
Fuse	-	50	-	A	Input positive has built-in fuse
Output characteristics					
Efficiency	-	88	-	%	Vin =12V; Iout =50 A
Output voltage	4.85	5.2	5.3	V	Vin =12V; Iout =50A
Regulator accuracy	-	±1	-	%	
Voltage regulation	-	±1	-	%	
Load Regulation	-	±1	-	%	
Overvoltage protection		NC		V	
Output current	0	-	50	A	
Overcurrent protection	65	70	80	A	Vin =12V
External capacitance	-	NA	-	μF	Don't need
Output ripple and noise	-	50	100	mVp-p	Vin =8–36V; Iout=50A Oscilloscope bandwidth: 20 MHz;
Output voltage rise time	-	250	300	mS	
Boot delay time	-	500	650	mS	
Out voltage overshoot	-	0.1	0.2	%	
Over temperature protection	-	-	100	°C	Without over-temperature protectiong
Short circuit protection	-	-	-		
Positive electrode cable	10	-	-	AWG	If the wire length is greater than 50cm, it is recommended to use a thicker wire diameter.
Negative electrode cable	10	-	-	AWG	

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	≥10	MΩ	Test voltage = 500V
	Input to Shell			
	Output to Shell			
Other characteristics				
Weight	≤ 550		g	
Package	White box			
MTBF	≥200,000		H	Vin =12V; Iout =50A
Switching frequency	220±10		KHz	

Characteristic Curves

Conditions: TA = 25°C (77°F), Vin = 12 V, Vout = 5 V , unless otherwise specified.

Figure 1, Efficiency

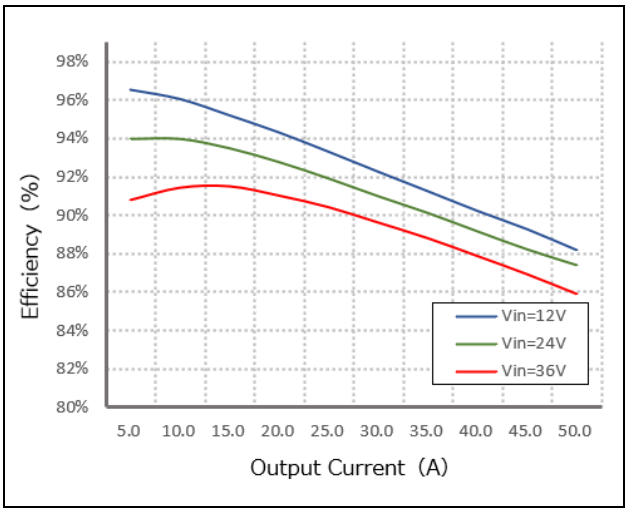


Figure 2, Power dissipation

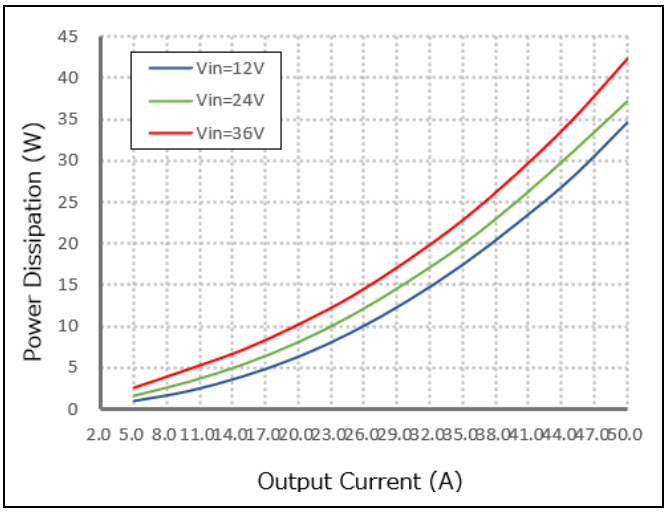
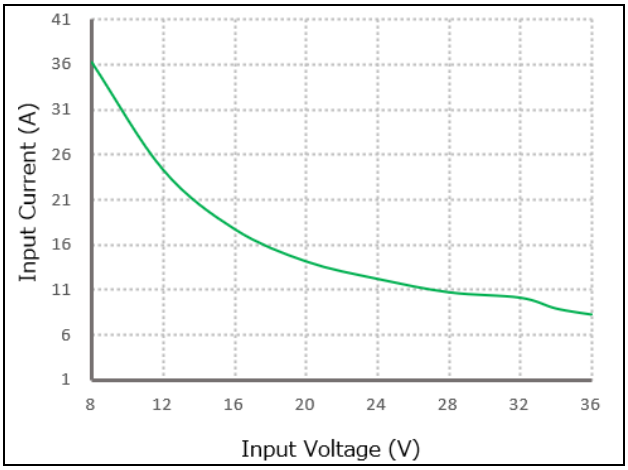


Figure 3, Input V-I



Typical Waveforms

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

Figure 4, 25% - 50% load dynamic

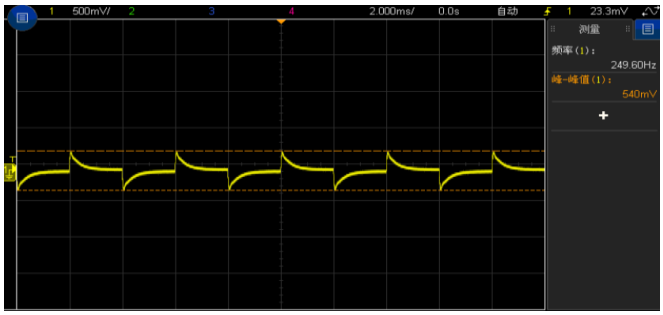


Figure 5, 50% - 75% load dynamic

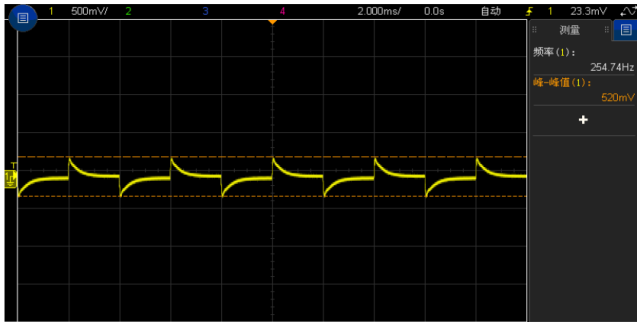


Figure 6, Output voltage established (Iout = 50A)

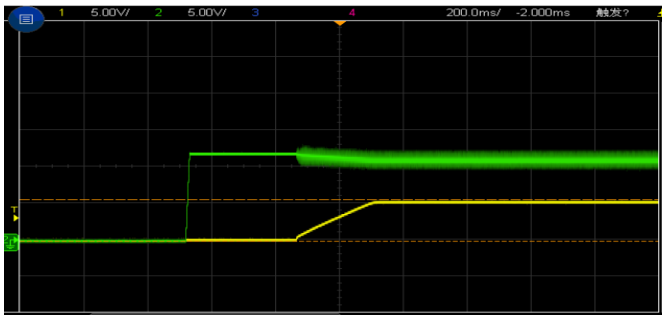
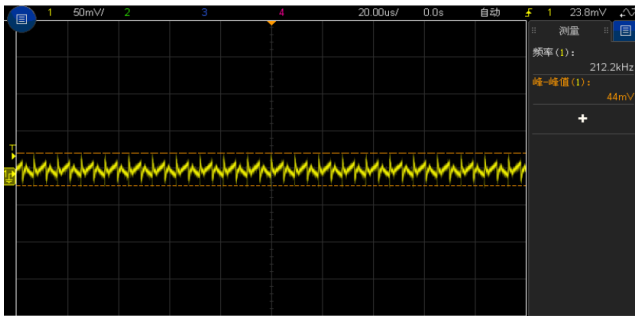


Figure 7, Output ripple & noise (Iout = 50A)

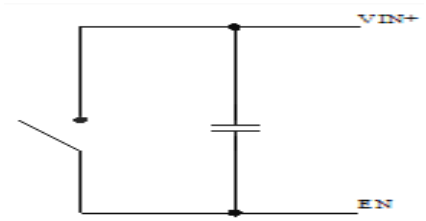


Feature Description

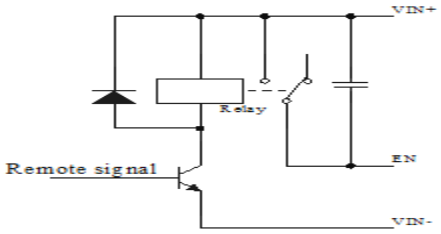
Remote On/Off (EN) (Optional)

Logic Enable	Low level (0 - 10Vdc)	High level (10 - 36Vdc)	Left open
Positive logic	Off	On	Off

Various circuits for driving the EN



Simple control



Transistor control

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.

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.

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

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 SDJ-1224S0550Z. Therefore, thermal components are mounted on the top surface of the SDJ-1224S0550Z 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.

Dimension