

Typical Features

- ◆ Ultra Wide Input Voltage Range (4:1), Output Power 3W
- ◆ High Efficiency up to 84%
- ◆ With remote control Switch-off function
- ◆ Continuous Short Circuit protection, Self-recovery
- ◆ Input under voltage, output over current protection
- ◆ Isolation Voltage 1500VDC
- ◆ Operating Temperature: -40℃ ~ +85℃
- ◆ Plastic Case, meet UL94 V-0 standard



Test Condition: Unless otherwise specified, data in the datasheet should be tested under the conditions of inputting nominal voltage, pure resistance rated load and Ta=25℃

Application Field

It could be widely used for instrument, communication, pure digital circuit, general low frequency analog circuit, relay drive circuit, data exchange circuit, etc.

Typical Product List

Part No.	Input Voltage Range (VDC)		Output Voltage/Current (Vo/Io)		Input Current(mA) Nominal Voltage		Max. Capacitive Load	Ripple & Noise (Max.)	Efficiency (%)	
	Nominal	Range	Voltage (VDC)	Current(mA) MAX./Min.	Full load Typ.	No Load Typ.	uF	mVp-p	Min.	Typ.
CKW3-24S3V3ER3	24	9 - 36	3.3	728	134	4	2200	100	73	75
CKW3-24S05ER3			5	600	155	4	2200	100	78	80
CKW3-24S09ER3			9	333	152	4	1000	100	78	80
CKW3-24S12ER3			12	250	145	4	680	100	81	83
CKW3-24S15ER3			15	200	148	5	470	100	82	84
CKW3-24S18ER3			18	167	148	5	470	100	82	84
CKW3-24S24ER3			24	125	146	5	100	100	81	83
CKW3-24D05ER3	24	9 - 36	±5	±300	155	4	1000	100	78	80
CKW3-24D09ER3			±9	±167	152	4	680	100	78	80
CKW3-24D12ER3			±12	±125	145	4	470	100	81	83
CKW3-24D15ER3			±15	±100	148	5	330	100	82	84

1. The capacitive load of positive and negative output is same.

Input Specifications

Item	Test Condition	Min.	Typ.	Max.	Unit
Max Input Overshoot Voltage	9-36V Input	-0.7	-	50	VDC

Turn-on Voltage	9-36V Input	7	8.3	9	VDC
Control Pin (Ctrl)	High level or floating enable, with output	3.5	-	50	VDC
	Low level or connected to input ground, no output	0	-	1.2	
Stand-by Power Consumption	0.5W (Max.)				
Input Filter	Capacitor Filter				

Note: Voltage of control pin(Ctrl) is related to input GND.

Output Specifications

Positive Output Voltage Accuracy	Full voltage full load	+Vo	≤±2.0%	
Negative Output Voltage Accuracy		-Vo	≤±3.0%	
No Load Output Voltage Accuracy		Vo	Primary Output:≤±3.0%, Secondary Output:≤±5.0%	
Line Regulation	Nominal load, full voltage range	Vo	Primary Output:≤±0.2%, Secondary Output:≤±0.5%	
Load Regulation	10% ~ 100% nominal load	Vo	Primary Output:≤±0.5%, Secondary Output:≤±3%	
Cross Regulation	Dual output, Primary output 50% load, secondary output 10%-100% load		≤±5.0%	
Ripple & Noise*	Nominal load, nominal voltage	≤100mVp-p （20MHz bandwidth）		
Temperature Drift Coefficient	100 % full load	±0.03%/℃		
Dynamic Response	25% nominal load step change	△Vo/△t	≤±5.0%/0.5ms(Typ.)	
Output Short Circuit Protection	Continuous, Self-recovery			

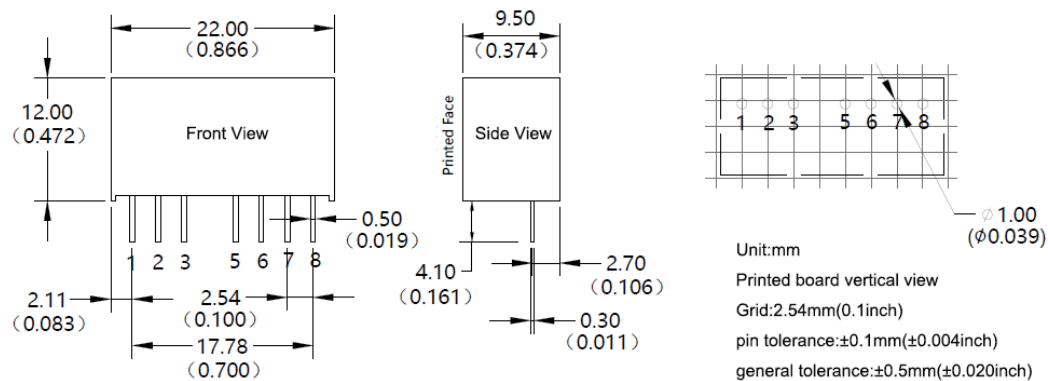
Note: 1. Un-balancing loads of dual output: $\pm 5\%$;

2. Ripple & Noise Tested by twisted-pair method, for details please check Design and Application Circuit.

General Specifications

Switching Frequency	typical	330KHz (Typ.)
Operating Temperature	Refer to Temperature Derating Curve	$-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
Storage Temperature		$-55^{\circ}\text{C} \sim +125^{\circ}\text{C}$
Max Case Temperature	Within Temperature Derating Curve	$+105^{\circ}\text{C}$
Relative Humidity	No condensing	5%~95%
Case Material		Black flame-retardant heat-resistant Plastic(UL94 V-0)
Pin withstand welding temp	Distance to case 1.5mm, 10s	300°C MAX
Isolation Voltage	Input to Output	$1500\text{Vdc} \leq 0.5\text{mA} / 1\text{min}$
MTBF	MIL-HDBK-217F@ 25°C	$2 \times 10^5\text{Hrs}$
Product Weight		4.5g(Typ.)
Package	Tube(225*20.5*12.5mm)	9PCS/Tube
	Inner Box(245*155*85mm)	432PCS(Total 48Tubes)

Packing Dimension



Packing Code	L x W x H	
E	22X9.5X12mm	0.866X0.374X0.472inch

Pin Function

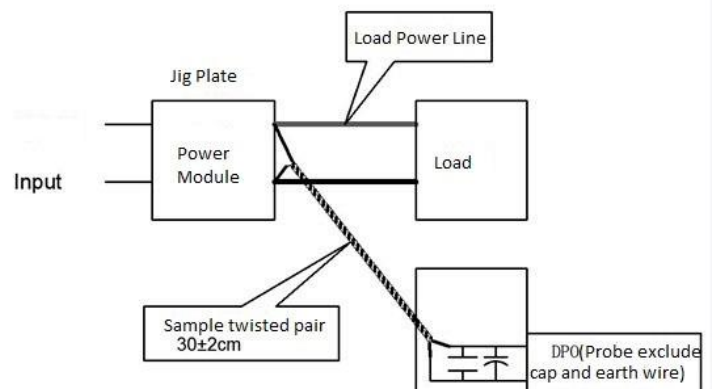
	1	2	3	4	5	6	7	8
Single(S)	GND	+Vin	Ctrl	NP	NC	+Vo	0V	CS
Dual(D)	GND	+Vin	Ctrl	NP	NC	+Vo	0V	-Vo

Note: if the definition of pin is not in accordance with the model selection manual, please refer to the label on actual item.

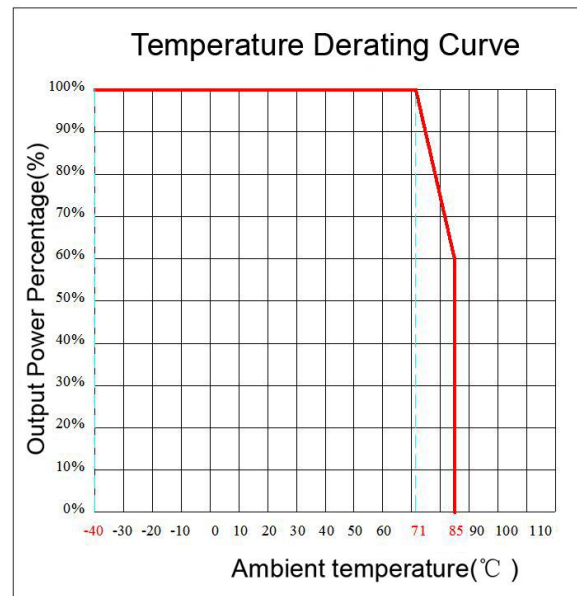
Ripple& Noise Test: (Twisted Pair Method 20MHZ bandwidth)

a. 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 10uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.

b. Input terminal connect to power supply, output terminal connect to electronic load through jig plate, Use 30cm±2 cm sampling line, Power line selected from corresponding diameter wire with insulation according to the flow of output current.



Temperature Curve



Design and Application Circuit Recommended

1.CS terminal

This terminal provides a connection point to connect the inside main filter capacitor of output terminal for the DC/DC converter(capacitor positive) , and can further improve the output ripple and noise through connecting a low ESR capacitor(Normal $CS \leq 47\mu F$) between this terminal and the 7 pin (capacitor negative).

2. Output Load Request

a. To ensure this module operate efficiently and reliably, the minimum load recommended not to be less than 10% of the nominal load. If the actual power is too small, please connect a resistor in parallel at output terminal, the resistance equal to 10% nominal load. If use positive negative dual output product, please try to avoid big unbalances between loads, or the original output voltage accuracy cannot be ensured.

b. The maximum capacitive load is tested under nominal input full load; if use it under no load condition, should try to decrease the output capacitive load or connect a resistor in parallel at output terminal, the resistance equal to 10% nominal load, otherwise it may cause the output voltage be un-stable or even exceed the original output voltage accuracy range

3.Recommended Circuit

DC/DC test circuit: If customers want to further decrease input& output ripple, the capacitance of external capacitor can be increased properly, but the maximum capacitance of the filter capacitor should be less than the maximum capacitive load, otherwise it will make it difficult to turn-on the module.

Single



Dual

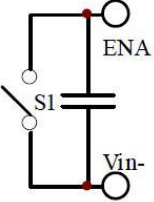
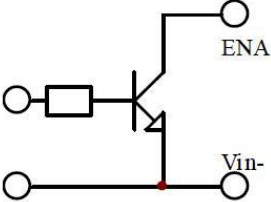
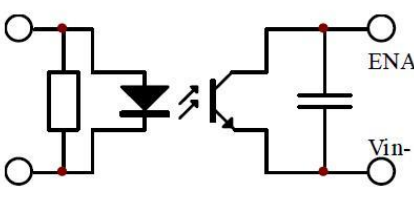
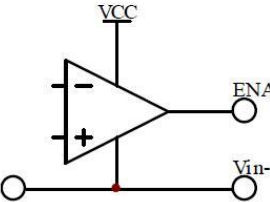


Recommended capacitive load value table (Photo 1)

single Vout (Vdc)	Cin (μF)	Cout (μF)	Dual Vout (Vdc)	Cin (μF)	Cout (μF)
3.3/5/9	100 μF/50V	10 μF/16V	±3.3/±5/±9	100 μF/50V	10 μF/16V
12/15		10 μF/25V	±12/±15		10 μF/25V
24		10 μF/50V	±24		10 μF/50V

4.CTRL Terminal

Positive logic is enabled, the module works normally when the control pin is connected to a high level or suspended, and is turned off when it is grounded or low.

			
on-off mode	Triode control mode	Optical coupler isolation control mode	Logic gate control mode



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Note:

- 1.This product cannot be used in parallel, and do not support hot-plugging;
- 2. All index testing methods in this datasheet are based on our Company's corporate standards
- 3. The product specification may be changed at any time without prior notice.