

# DC/DC Converter

## UW2405D-20W

# MORNSUN®

20W, Ultra wide input isolated & regulated single output DC/DC converter



Patent Protection RoHS

## FEATURES

- Ultra Wide input voltage range (8:1)
- High efficiency up to 82%
- No-load power consumption as low as 0.4W
- Isolation voltage :1.5K VDC
- Operating temperature range: -40°C to +85°C
- Input under-voltage, over-voltage protection, output short circuit, over-current, over-voltage protection

UW2405D-20W products is of 20W output power, ultra wide range of voltage input of 6-50VDC, isolation voltage of 1500VDC, input over-voltage, under-voltage protection, output short circuit, over-current and over-voltage protection, these products are widely used in fields such as industrial control, electric power, instruments and communication.

## Selection Guide

Part No.	Input Voltage (VDC)		Output		Efficiency® (%Min./Typ.) @ Full Load	Max. Capacitive Load (µF)
	Nominal® (Range)	Max®	Output Voltage (VDC)	Output Current (mA) (Max./Min.)		
UW2405D-20W	24 (6-50)	70	5	4000/200	80/82	2000

Note:

- ① The input voltage to work in low-voltage power derating power, specific reference products derating chart;
- ② Absolute maximum rating without damage on the converter, but it isn't recommended;
- ③ Efficiency is measured in nominal input voltage and rated output load.

## Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	Nominal input voltage	--	1016/8	1042/15	mA
Reflected Ripple Current	Nominal input voltage, Full load	--	30	--	
Surge Voltage (1sec. max.)		-0.7	--	70	VDC
Input Under-voltage Protection	Starting Voltage	--	--	6	
	Under-Voltage Shutdown	2	--	--	
Input Over-voltage Protection	Starting Voltage	50	--	--	
	over-voltage Shutdown	--	--	58	
Starting Time	Nominal input voltage & constant resistance load	--	10	--	ms
Input Filter		Pi filter			
Hot Plug		Unavailable			

## Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		--	±1	±3	%
Line Regulation	Full load, the input voltage is from low voltage to high voltage	--	±0.2	±0.5	
Load Regulation	5% -100% load	--	±0.5	±1	
Transient Recovery Time	Nominal input voltage, 25% load step change	--	300	500	µs
Transient Response Deviation		--	±5	±8	%
Temperature Coefficient	Full load	--	±0.02	--	%/°C
Ripple & Noise*	20MHz bandwidth	--	70	120	mVp-p
Over-voltage Protection	Input voltage range	110	--	160	%Vo
Over-current Protection		110	--	190	%Io
Short circuit Protection		Hiccup, continuous, self-recovery			

Note: \*Ripple and noise are measured by "parallel cable" method, please see DC-DC Converter Application Notes for specific operation.

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General Specifications

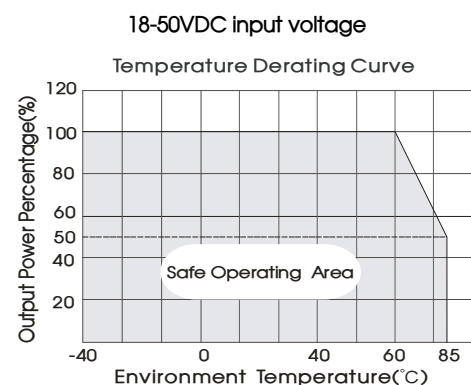
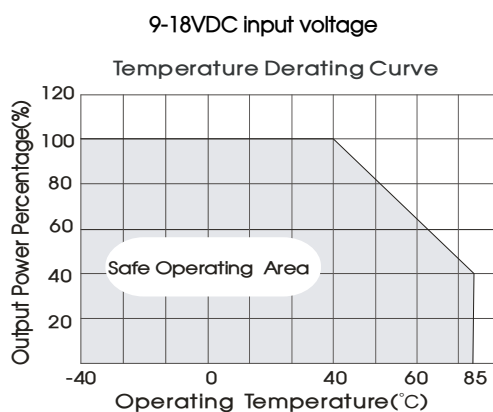
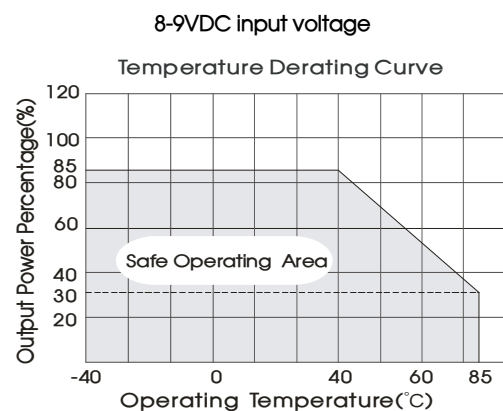
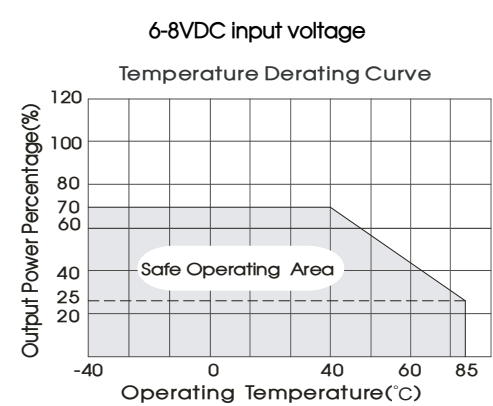
Item	Operating Conditions	Min.	Typ.	Max.	Unit
Insulation Voltage	Input-output, with the test time of 1 minute and the leak current lower than 1mA	1500	--	--	VDC
Insulation Resistance	Input-output, insulation voltage 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V	--	2000	--	pF
Operating Temperature	see Fig. 1	-40	--	+85	°C
Storage Temperature		-55	--	+125	
Storage Humidity	Non-condensing	5	--	95	%RH
Pin Welding Resistance Temperature	Welding spot is 1.5mm away from the casing, 10 seconds	--	--	+300	°C
Vibration		10-55Hz, 10G, 30 Min. along X, Y and Z			
Switching Frequency*	PWM mode	--	300	--	KHz
MTBF	MIL-HDBK-217F@25°C	1000	--	--	K hours

Note:\* This series of products using reduced frequency technology, the switching frequency is test value of full load,When the load is reduced to below 50%, the switching frequency decreases with decreasing load.

Physical Specifications

Casing Material	Aluminum alloy
Package Dimensions	50.80*40.60*11.80 mm
Weight	40g(Typ.)
Cooling Method	Free air convection

Product Characteristic Curve



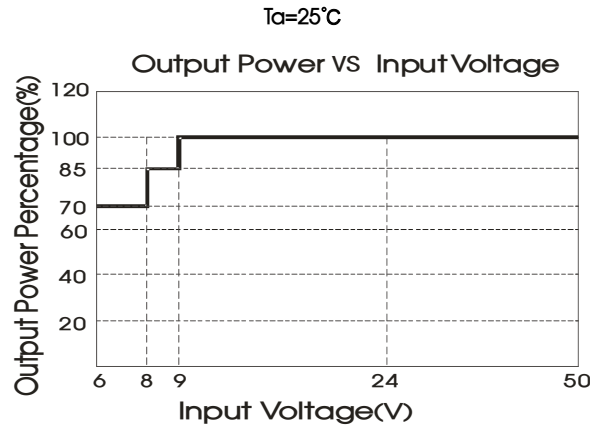
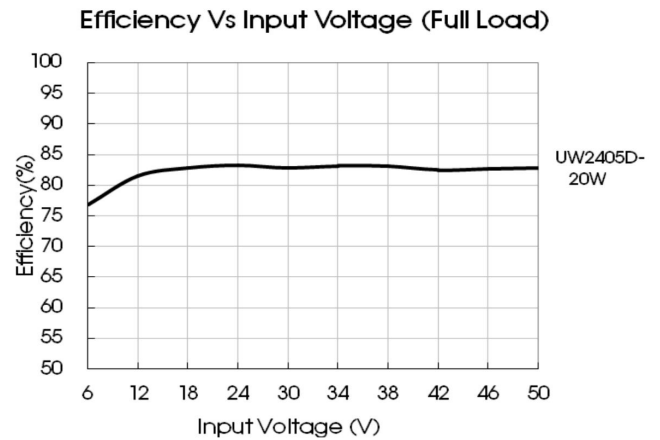
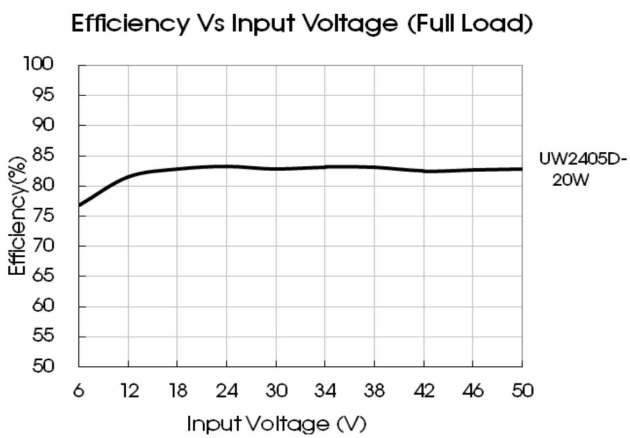


Fig. 1



## Design Reference

### 1. Typical application

All the DC/DC converters of this series are tested according to the recommended circuit (see Fig. 2) before delivery.

If it is required to further reduce input and output ripple, properly increase the input & output of additional capacitors Cin and Cout or select capacitors of low equivalent impedance provided that the capacitance is no larger than the max. capacitive load of the product.



Fig. 2

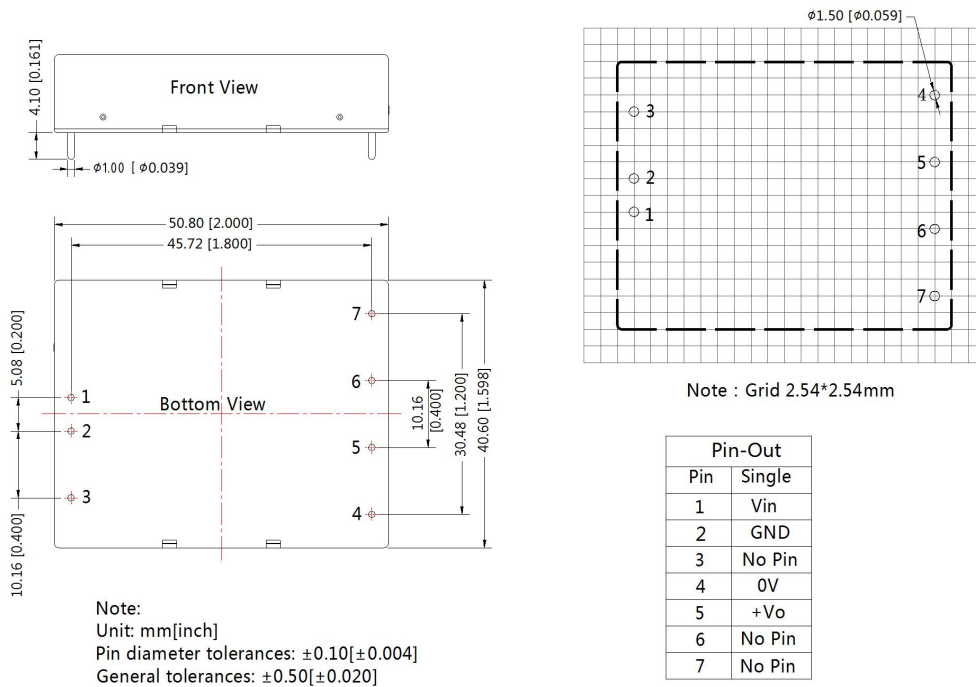
Vout (VDC)	Cin (μF)	Cout (μF)
5	100	470

2. It is not allowed to connect modules output in parallel to enlarge the power

3. For more information please find the application notes on [www.mornsun-power.com](http://www.mornsun-power.com)

Dimensions and Recommended Layout

THIRD ANGLE PROJECTION 



Notes:

1. Packing information please refer to Product Packing Information which can be downloaded from [www.mornsun-power.com](http://www.mornsun-power.com). Packing bag number :58200024;
2. Recommend to use module with more than 5% load, if not, the ripple of the product may exceeds the specification, but does not affect the reliability of the product;
3. The maximum capacitive load offered were tested at input voltage range and full load;
4. Unless otherwise specified, parameters in this datasheet were measured under the conditions of  $T_a=25^{\circ}\text{C}$ , humidity<75%RH with nominal input voltage and rated output load;
5. All index testing methods in this datasheet are based on Company's corporate standards;
6. We can provide product customization service, please contact our technicians directly for specific information;
7. Products are related to laws and regulations: see "Features" and "EMC";
8. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

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